oregano, and potatoes for their supper. (Twenty-five crops were listed on the blackboard the day I visited.) Sixty-four people farm this tiny spread. Their chief is Miguel Salcines López, a tall, middle-aged, intense, and quite delightful man.

"This land was slated for a hospital and sports complex," he said, leading me quickly through his tiny empire. "But when the food crisis came, the government decided this was more important." Until then, Salcines said, "I was an agronomic engineer. I was fat, a functionary. I was a bureaucrat." Salcines showed off a pyramidal minigreenhouse in which he raises seedlings, in the belief that its shape "focuses energy." Magnets on his irrigation lines, he believes, help "reduce the surface tension" of the water. Give Salcines a ponytail and he'd fit right in at the Marin County farmers' market; but he is not obsessive, even about organicity. Like gardeners everywhere, he has trouble with potato bugs, and he doesn't hesitate to use what man-made pesticide he can lay his hands on to fight them. He doesn't use artificial fertilizer, both because it is expensive and because he doesn't need it—indeed, the garden makes money selling its own compost, produced with the help of millions of worms (*Eisenia foetida:* aka California reds) in a long series of shaded trenches.

While we ate rice and beans and salad and a little chicken, Salcines laid out the finances of his cooperative farm. For the last six months, he said, the government demanded that the *organopónico* produce 835,000 pesos' worth of food. It actually produced more than a million pesos' worth. Writing quickly on a piece of scrap paper, Salcines predicted that the profit for the whole year would be 393,000 pesos. Half of that he would reinvest in enlarging the farm; the rest would go into a profit-sharing plan. It's not an immense sum when divided among sixty-four workers—about $150 apiece—but for Cuban workers this is considered a good job indeed. A blackboard above the lunch line reminded employees what their monthly share of the profit would be: depending on how long they'd been at

the farm, and how well they produced, they might get as much as 291 pesos this month, almost doubling their base salary. The people worked hard, and if they didn't, their colleagues wouldn't tolerate them.

What is happening at the Vivero Organopónico Alamar certainly isn't unfettered capitalism, but it's not exactly collective farming, either. Mostly, it's productive: sixty-four people earn a reasonable living from this small site, and the surrounding neighbors get an awful lot of their food from its carefully tended rows. You see the same kind of production all over the city; every formerly vacant lot in Havana seems to be a small farm. The city grew three hundred thousand tons of food last year—*nearly its entire vegetable supply,* and more than a token amount of its rice and meat, said Egidio Páez Medina, who oversees the *organopónicos* from a small office on a highway at the edge of town. "Tens of thousands of people are employed," he noted. "And they get good money, as much as a thousand pesos a month. When I'm done with this job I'm going to start farming myself—my pay will double." On average, Páez said, each square meter of urban farm produces five kilograms of food a year. That's a lot. (And they're not just growing cabbage and spinach; each farm also seems to have at least one row of spearmint, an essential ingredient for the *mojito.*)

The elephant in the room, of course, is Cuba's political system. Human Rights Watch notes in its most recent report that the government "restricts nearly all avenues of political dissent" and "severely curtails basic rights to free expression," among other unsavory habits. It's as if you went to Whole Foods and noticed a guy over by the soy milk holding a truncheon. Cuba has been headed by the same guy for more than forty-five years (and he seems intent on replacing himself with his brother). The nature of that system, and that guy, had something to do with the way the country responded to its crisis in the 1990s.

For one thing, Castro's Cuba was so rigidly (and unproductively) socialist that just slightly loosening the screws on free

enterprise liberated all kinds of pent-up energy. Philip Peters, a Cuba analyst at the conservative Lexington Institute, has documented how the country redistributed as much as two-thirds of state lands to cooperatives and individual farmers and, as with the *organopónico* in Alamar, let them sell their surplus above a certain quota. There's no obvious name for this system, though it's a little like sharecropping. "It's not reform like you've seen in China, where they're devolving a lot of economic decision making out to the private sector," Peters said. "Cuba's made a decision to graft some market mechanisms onto what remains a fairly statist model. It could work better. But it has worked."

Castro, as even his fiercest opponents would admit, has almost from the day he took power spent lavishly on the country's educational system. Cuba's ratio of teachers to students is akin to Sweden's; people who want to go to college go to college. Which turns out to be important, because farming, especially organic farming, is no simple task. You don't just tear down the fence around the vacant lot and hand someone a hoe, quoting him some Maoist couplet about the inevitable victory of the worker. The soil's no good at first; the bugs can't wait to attack. You need information to make a go of it. Cuba's semi-organic agriculture is at least as much an invention of science and technology as the high-input tractor farming it replaced.

One afternoon, near an *organopónico* in central Havana, I knocked on the door of a small two-room office, the local Center for Reproduction of Entomophages and Entomopathogens. There are 280 such offices spread around the country, each manned by one or two agronomists. Here, Jorge Padrón, a heavyset and earnest fellow, was working with an ancient Soviet refrigerator and autoclave (the writing on the gauges was in Cyrillic) and perhaps three hundred glass beakers with cotton gauze stoppers. Farmers and backyard gardeners from around the district would bring him sick plants, and he'd look at them under the microscope and tell the grower what to do. Perhaps he'd hand over a test tube full of a *Trichoderma* fungus, which he'd grown on a medium of residue from sugarcane processing, and tell his questioner to germinate the seed in a dilute solution; maybe he'd pull a vial of some bacterium—*Verticillium lecanii* or *Beauveria bassiana*—from a rusty coffee can. "It is easier to use chemicals. You see some trouble in your tomatoes, and chemicals take care of it right away," he said. Over the long run, though, thinking about the whole system yields real benefits. "Our work is really about preparing the fields so plants will be stronger. But it works." It's the green revolution in reverse.

THE POINT IS NOT THAT WE NEED TO BE CUBA. UNLESS THE VERY worst fantasies of the peak-oil researchers come true, we won't see our lives change overnight as lives in Cuba did. But could we head in that direction gradually, if we wanted to? This is the crucial question. Is there really a wealth of possibilities in our communities, or are we irrevocably tied to our global system, come what may?

One place to answer that question is a few hundred acres of floodplain alongside the Winooski River a mile and a half from the center of Burlington, Vermont's largest city. The Intervale, as it's called, is a gritty spot, literally on the other side of the tracks, and next to the city's electric power plant. For many years it served as the town's dump. "When I got here in 1980," recalls Will Rapp, "the garbage was still four or five feet high all around. There were junked cars everywhere, seepage from the sewage plant." Rapp went on to found the successful catalogue company Gardener's Supply, and he located his headquarters and showroom at the entrance to the Intervale. But he also did something even more important: he helped to form a nonprofit foundation that leased about two hundred acres of the surrounding bottomland and in turn began renting it to people who wanted to get started in farming. It was a kind of agricultural laboratory.

Remember, this is small. Two hundred acres, or about 1/1,000th the size of what one U.S. undersecretary of agriculture thinks constitutes a proper farm for a single manager to operate. To walk through the Intervale, however, is to sense a very different possible future for American agriculture. I was with a man named Buzz Ferver and a woman named Kit Perkins, who run the nonprofit trust that administers the land. It was a calendar-perfect late August morning after the first cool night of the fall—the temperature had dropped to 38 degrees, a gentle reminder that the growing season was coming to an end. We walked first through the woods, a boundary of forest along the river, full of big cottonwoods and wild cucumber, with a bike path that connected back to the center of town. But soon we came upon a more industrial scene: the Intervale compost operation, which helps underwrite the project. Trucks rumbled in and out, bringing horse manure bedded with sawdust, dairy waste, chicken manure, all the leaves and light yard waste from the surrounding county, and everything left over from making Ben & Jerry's ice cream. Bulldozers pushed the waste around, and machines sifted the compost through screens. Most of the compost is sold to other farmers by the truckload, or to home gardeners by the plastic bag, but quite a bit stays on site, helping to make the two hundred acres of farmland fantastically fertile.

We wandered through the fields of the biggest operation, the Intervale Community Farm, a CSA to which 450 member families pay a few hundred dollars up front every winter, in return for which they show up once a week to claim their share of the produce. Some pay a little less in exchange for working on the farm; today, a crew of eight was pulling weeds in the rows of onions that would be harvested late in the fall. Because the farm is organic, there's no getting around the weeds that need pulling (in fact, one of the farmers said, they'd lost control of a couple of long rows of no-till squash they'd planted as an experiment—you could barely see the butternuts

ripening amid the green tangle). But everything was coming in on schedule, row after row of lovely carrots and parsnips and beets. A tape loop of predator calls was playing on a boombox to chase away the birds; a tractor chugged by, hauling a wagonload of watermelons and another picking crew sprawled on top of them. A couple of mobile chicken coops from the Lazy Ladies Egg Farm had been parked nearby, and their occupants were out happily pecking insects.

A few fields away, Spencer Blackwell was growing grain. "This valley used to be the breadbasket of America," he said, "but the varieties that do well here have kind of been lost." He's bringing them back—planting, among other things, barley for one of the burgeoning number of area breweries. Across a drainage ditch lies his field of black beans. "I let the frost kill them—they dry on the vine," he said. This year, on two acres, he's raised about a ton and a half, which net him 89 cents a pound and provides the filling for a year's worth of burritos at the town's most popular breakfast spot. He's been farming on the Intervale for five years, taking advantage of the shared equipment, such as tractors and greenhouses. But it's not just the infrastructure. Instead of isolation, the fate of most modern farmers stranded in their giant acreage, there's the accumulated know-how of his neighbors to draw on.

Like David Zuckerman, whose Full Moon Farm is just through a narrow border of trees. Zuckerman looks pretty much what you'd expect a Vermont organic farmer to look like: ponytail, baseball cap, grin. But there's nothing scruffy about the well-maintained field he cultivates with his wife, Rachel Nevitt. His operation is a CSA, too, with 150 members who take about half his produce. Another 30 percent goes to the booming Burlington farmers' market. When he's not in the fields, Zuckerman is a member of the Vermont legislature—in fact, he's the chair of the House Agriculture Committee, which makes him the second most important farm policy guy in the state. The future may be out here in this field.

The Intervale offers two bottom lines that demonstrate the real possibilities for changing the food economy. First, these two hundred acres supply *7 or 8 percent of all the fresh food consumed in Burlington*. They grow five hundred thousand pounds of salable produce, not to mention another fifty thousand pounds gleaned for local food banks. The Intervale is not some tiny pilot project, some demonstration plot. It's large enough to give you an intuitive sense of scale, a visceral idea of how much land it would take to begin feeding ourselves locally—if, of course, we changed our models. The Intervale employs about fifty people at a time; whether that's a good thing or a bad one depends entirely on how you think about the economy. But at least it indicates that Jules Pretty is right: you can grow tons of food with low-input techniques as long as you're hardworking, careful, and clever. "If Vermont were cut off from the rest of the world tomorrow, I think we could be feeding ourselves by the end of a single growing season," says Zuckerman.

Second, there are plenty of people who want to farm, if we can figure out how to make it happen. The Intervale lets novices overcome the biggest obstacles—high land prices around urban areas, lack of expertise in both growing and marketing, initial access to costly equipment. "There's an incredible resurgence of people in a directionless society suddenly wanting to find their roots," says Zuckerman. "There's real satisfaction in producing your own food." In fact, says Kit Perkins, the Intervale is not only overwhelmed with people who'd like to lease its plots, it's also had to set up a small consulting service to handle inquiries from communities around the world that are looking to start their own incubator farms. "Two hundred years ago in America, farming was glorified," adds Ferver. "That eroded to the place where farmers were forced into a marginal mindset. But here we've been able to build some respect for farmers. There's a whole lot of pizzazz."

■ ■ ■

THE INTERVALE MAY BE AN EXPERIMENT, BUT IT'S NOT A BIZARRE exception. Over the last decade, just as most of American agriculture has entered the final throes of consolidation—as Idaho has seen the number of potato farms shrink to eight hundred, as a million hogs have moved onto a single Utah farm, as subsidies and political favors have made the massive agribusiness giants ever more powerful—a reaction has begun, still fairly small but growing fast.

Take farmers' markets as an example. In September 1972, eleven sellers set up shop in Madison, Wisconsin, one Saturday morning. Three decades later, consider the spectacle that unfolds each weekend on the blocks around the state capital. According to the *New York Times* reporter R. W. Apple, twenty thousand shoppers in a slow counterclockwise drift "from stall to colorful stall, from tomatoes to bison to apples to cheese, in an almost uninterrupted river of humanity, towing wagons, pushing baby carriages, and lugging bulging canvas or paper bags." Swaths of Wisconsin countryside have been reshaped by the economic opportunity the market presents.[66] The United States had 340 farmers' markets in 1970, 1,700 in 1994, and almost doubled to 3,100 by 2002. Two years later, the number was *3,700*. Tens of thousands of farmers sell their produce at these markets, and when they do, they get to keep all the money, not the 8 or 10 percent they'd take in by selling through the industrialized food system.[67] Upscale chefs throng the Greenmarket in New York City's Union Square, but there are thirty-three other farmers' markets spread around the city, many of them in housing projects.

Community-supported agriculture farms, like the ones I visited at the Intervale, have grown with similar speed: the first American CSA was founded in Massachusetts in 1985; now there are more than fifteen hundred. And once you start looking, new farms are everywhere. In rural areas, the number of old-style farms continues to dwindle, but the total number of farms has stabilized, thanks to new small growers. Vermont's

most urban county, for instance, saw 19 percent more farms in 2005, even as traditional dairies continued to fail. For every dairy, there are now two farms producing something else.[68]

A few of these operations are really over the top—in Woodstock, which is quaint Vermont squared, a farmer raises fifty Asian water buffalo, each with its own heated waterbed, the better to produce high-quality mozzarella. But most of the new farmers are as gritty as you could want. On every continent, as Brian Halweil points out, "people are farming the cities." Urban areas worldwide already produce about a third of the food they consume, though the growers get little attention from politicians and planners, who tend to view urban farms as anachronisms. In Shanghai—the city with the world's fastest train, the tallest hotel, the biggest TV screen—60 percent of the vegetables and 90 percent of the milk and eggs come from urban farms. A recent study estimated that even London could grow a fifth of the fruit and vegetables its ten million residents consume on just the 10 percent of farmland left among its sprawl.[69] Seventy-five years ago, New York City covered just as many acres as it does now, but it got most of its food from the surrounding region. That's why New Jersey was called the Garden State. You may think all that land has turned into refineries and suburbs, but you'd be wrong. A satellite map of upstate New York, say, shows vast tracts of abandoned farmland growing back into patchy forest.

Say you're a dreamer. Imagine the most ruined city in America. That would be Detroit, which has lost half its population in the last few decades. A million people have moved away; as much as a third of the city's 139 square miles consists of empty lots and dilapidated buildings, "an urban core giving way to an urban prairie," in the words of the *New York Times*. But slowly, some of that land is coming under cultivation: forty community gardens and microfarms, some covering entire city blocks, have sprung up in recent years. A farmer named Paul Weertz farms ten acres spread over seven lots, producing hay,

alfalfa, honey, eggs, goats' milk, even beef cattle. His tractor barn is an old garage. In 2000, a group of architects, urban planners, and local activists convened by the University of Detroit spent six months coming up with an ambitious plan for expanding such farms, connecting four and a half square miles of the city's east side into a self-sustaining village "complete with farms, greenhouses, grazing land, a dairy, and a cannery."[70] "When you first look at this, people say it's wild and crazy," says the dean of the local architecture school. "But when you look at it closer, it's not so wild and crazy after all. What we are talking about doing are all very pragmatic things."[71]

Local food economies seem to pick up momentum almost automatically as, instead of being competitors, other farmers become allies who help spread the word. In Oregon, when older farmers found themselves "beaten down on the price" in global commodity markets, they started turning to metro Portland instead. "We were going broke, and that's about the nicest thing you can say about it," a rancher told the *Willamette Week* reporter Zach Dundas. The farmers started a cattle co-op that now sells nine hundred head of beef a week, some of it to Whole Foods and some of it in the local farmers' markets. Each family in the co-op has to go into the big city at least once a year to work the market—an eye-opening trip for ranchers who "in some cases have never seen a working parking meter before, let alone a practicing homosexual. . . . 'I was talking to these four women about the meat, and pretty soon I noticed they all had beards,' said one farmer. 'It's different than what we're usually exposed to.'" Meanwhile, new farmers are being born on one small farm after another. At Sauvie Island Organics, for instance, just north of the city, sixty young people apply each spring for three internship positions. "The CSA operations are really the new American farmer," said one former apprentice, now managing a six-acre farm blocks from a strip club in the southeast corner of the city. What does it all add up to? In 1974, Oregon had 13,384 full-time farmers. In

2002, the last time the USDA counted, that number had grown to 21,580.[72] And it could easily grow larger still. At the moment, four-fifths of America's fruit, two-thirds of its vegetables, and half its milk are raised in "metropolitan counties or fast-growing adjacent counties."[73] Under present arrangements, of course, almost all of that food enters the commodity stream, being trucked or flown off to some distant corner of the country or the world. But the numbers demonstrate that there are both fields and farmers close to where almost all of us live. It's not bizarre to imagine those farmers and those fields starting to produce what their neighbors need.

Colleges and universities are an obvious market, since they offer a captive population, and one likely to be receptive to the environmental and community impulses behind local food. At least two hundred universities have made serious commitments to local food. Some are where you might expect it: the University of Portland, for instance, spends 40 percent of its food dollars in Oregon, and Middlebury College buys a third of its food from the surrounding Champlain Valley (including a small but growing supply from the student farm-garden located outside the front door of the college's science center). The change isn't easy. A dining hall operator is used to picking up the phone and ordering trailerloads of food from some giant like Sysco; it takes a lot of patience to deal with pickups pulling up at the loading dock, and it takes more work to deal with onions that arrive round, not pre-cut. But the pressure is mounting. Sodexho, another food-service monster, lost its contract at the University of California at Santa Cruz after a student campaign in favor of local foods, a campaign that has since spread to all the UC campuses.[74]

And when it works, it really works. A few years ago, Fanny Singer matriculated at Yale. Her mother, Alice Waters, arrived for parents weekend that first fall and decided that she didn't want her daughter eating what the cafeteria served. And since Alice Waters is the chef who helped launch the local foods

movement through her Chez Panisse restaurant in the Bay Area, she knew what needed to be done. Yale gave her the Berkeley College dining hall, one of thirteen on campus, to experiment with; she raised the money to convert it to an entirely seasonal and local menu. Such a change wasn't easy: the cooks were used to thawing, not cooking; the dining hall administration worried that students really wouldn't give up their hot dogs and fries. "I told them not to worry, that I'd served a lot of dinners," said Waters—and it turned out she was right. The year the program launched, lines started forming around the building as students from other Yale colleges tried to get in. They wanted the squash gratin and the beet slaw, and they didn't seem to mind that lettuce and tomato disappeared from the salad bar in October, which is when they also disappear from the fields of Connecticut. Soon students were counterfeiting Berkeley ID cards in an attempt to get some butter-braised root vegetables of their own—and when Yale hosted a conference about the project, two hundred campus food service personnel from around the country showed up to learn.[75] What impressed me most was the pride that the cooks took in their work. Most were from New Haven, which has one of the country's poorest inner cities, but they were now firmly connected to the seasons of life in the countryside around them. Their work was harder, but it clearly meant more.

It's harder to pull off the same trick in elementary and high schools. Even in rural areas, where the farm may be just down the road, public school cafeterias have long been the dumping ground for "surplus" commodity food—meaning the beef and cheese the industrial farming system couldn't unload somewhere else. (This explains the unvarying Sloppy Joe monotony of lunch lines across the country.) Many financially strapped schools have turned over their cafeterias to fast-food outlets in recent years, but that may be starting to change. New York City, which has the biggest school district in the country and a population one-eighth of whom suffer from diabetes, has

banned soda machines in the hallways and asked Ann Cooper, a stalwart of the local food movement, to "reprocess" fourteen of its top recipes to include more food from the region.[76]

Other forces are starting to help, too. For years, local land trusts and nature conservancies have been among the country's most effective environmentalists, raising piles of money to protect open spaces from development. For years they picked sites based on aesthetics (a lovely view) or biology (a rare orchid). Recently, though, more and more land trusts have begun to concentrate on keeping cropland in production, connecting young farmers without the money to buy expensive land with farms whose development rights have already been paid for and thus enabling those farmers to make a living growing food. In Montana, the Clark Fork Coalition, which had spent years helping restore a river polluted by abandoned mines, changed focus recently to start an open-air meat market in downtown Missoula. They want to help ranchers move away from low-margin commodity beef and keep more of the food dollar; if that happens, the environmentalists reason, there's less chance they'll sell their ranches to vacation-home developers.[77] Projects like these can start to add up.

BUT THEY COULD ADD UP A LOT FASTER, IF THEY DIDN'T HAVE to depend on the students in the environmental studies class pestering the dining hall manager. Imagine, instead, that the federal government shifts some small percentage of America's vast farm subsidy budget away from corporate farming. At the moment, subsidies essentially underwrite consolidation: almost a third of all federal farm payments go to the largest 2 percent of farms, and almost three-quarters of the payments go to farms that are among the top 10 percent in size.[78] It's all politics—the farm program subsidizes those crops that are geographically concentrated in a few states, and hence, in essence, have their own senators: wheat, corn, cotton, soybean, and rice

growers get virtually all the federal subsidy payments.[79] There is no butternut squash subsidy, no apple subsidy.

And since big farmers quickly figured out that there was more money to be made "farming the program," the nation's croplands soon reflected the politics of subsidies just as much as the reverse: Elizabeth Becker, for instance, describes in the *New York Times* the town of Denison, Iowa, where "crops that do not qualify for a subsidy are as rare as buffalo herds. . . . Orchards have been plowed under for corn. Truck gardens are a thing of the past." Where once there grew potatoes and cherries, peaches and pears, "commercial crops are down to four: feed corn, soybeans, hay, and oats. Denison has a hard time filling a farmers' market one afternoon a week."[80] The real beneficiaries, of course, are less the giant farmers than the gargantuan food processors that they deliver the ingredients to. Ever wonder why soybean products can be found in two-thirds of all processed food? It may have something to do with the fact that "about seventy percent of the value of the American soy bean comes straight from the U.S. government."[81] Ditto for high-fructose corn syrup. Essentially, we are subsidizing Cheetos.

Imagine eliminating those subsidies altogether, so you weren't tilting the playing field. Or imagine tilting it toward small, local producers, rewarding those whose farms didn't use much energy, that grew food for their neighbors. (That's one reason why people take vacations in France and Italy that consist essentially of looking at small farming villages and eating the bounty they produce.) In a few districts of England, town planners have subsidized local schools and hotels so that they'll purchase more local food; after several years, the average age of a farmer in those townships had dropped to thirty-two—the average British farmer is almost fifty-five—"and the farms are among the most profitable in the nation."[82]

Imagine, too, what might happen if the agriculture departments of the land-grant colleges, which function now as extensions of the big agrochemical companies that provide much of

their funding, instead worked on local marketing schemes and low-input farming. Our scientists are as bright as the Cubans'; were their energies similarly directed, this transition would become much easier.

Easier, not easy. It will take tremendous work, and many setbacks, to remake American agriculture. One of my favorite local food projects was a café in the gritty Vermont town of Barre that bought all its ingredients locally. The Farmers Diner served ham and eggs, French fries, milkshakes, and hamburgers—and it closed its doors after a few years of trying to serve them at pretty much the same price as the guy down the road who just called up Sysco when he needed more food. Now the owner, Tod Murphy, is trying again, with a new location thirty miles to the south, in a town with more tourists. Making a go of the diner would have been a lot easier if the state still had an agricultural infrastructure, but the governor slashed $200,000 from the budget that would have helped start a new in-state slaughterhouse. He was too busy subsidizing what's left of the state's commodity dairy trade.

Sometimes the enemy is too much success. Small farmers spent twenty years spreading the idea of "organic" food. They were persuasive: by the turn of the century, sales were growing 20 percent a year. Which was enough to attract the attention of the big growers, who quickly took over the business: as of 2006, the biggest organic growers are companies like General Mills and Heinz and ConAgra.[83] It's true, one assumes, that they don't spray their "organic" lettuce with pesticides, though it's also true that they keep lobbying the government to "relax" organic standards to allow more "flexibility." But in every other respect they resemble every other agribusiness grower. Stonyfield Farm buys organic milk powder for its yogurt in New Zealand. "Once you're in organic you have to source globally," says Gary Hirshberg, the company's founder.[84] Burkhard Bilger of the *New Yorker* recently traveled to California's Central Valley to watch the organic tycoon Todd Koons grow mâche lettuce. Having leveled his vast fields with GPS and laser equipment, Koons has modified special harvesters to cut his crop. "It's a brave new world over here," he says. "The machines are bigger, we drive 'em faster, and we drive 'em larger." The mâche is packed in individual bags, designed with ten layers of plastic. "As the lettuce sits on the shelf, the gases in the bag are constantly consumed, released, and replaced. Oxygen, nitrogen, and carbon dioxide molecules bond with the polymers on one side of the plastic and are released on the other. Every type of salad requires a different type of bag, tailored to its respiration by gas chromatography and computer analysis."[85] But hey, it's organic.

Local bakers were making a comeback, too, until supermarkets figured out how to make vast quantities of dough in some central plant, freeze it for months, and then "bake" it fresh at their branches. They created, in the words of one food writer, "artisanal bread without the artisan," driving bakeries out of business in many towns.[86]

"Local" will be harder to co-opt, because Del Monte and its ilk simply can't grow different food in every market; if they tried, their economies of scale would disappear. "Local" steps far enough outside current conventional economics to represent a real challenge.

The deepest problem that local-food efforts face, however, is that we've gotten used to paying so little for food. It may be expensive in terms of how much oil it requires, and how much greenhouse gas it pours into the atmosphere, and how much tax subsidy it receives, and how much damage it does to local communities, and how many migrant workers it maims, and how much sewage it piles up, and how many miles of highway it requires—but boy, when you pull your cart up to the register, it's pretty cheap. In the 1930s a family might have spent a third of its income on food; middle-class Americans now spend more like a tenth. Even in Italy, one recent study found residents spending more on cell-phone service than on food shopping.[87] And food is cheap not just in terms of money, but

time. Mostly we eat processed food; cooking is something that happens on the Food Network. In fact, fresh-food sales fall every year; per capita consumption of eggs, milk, fresh vegetables, and wheat flour was far higher in 1950 than a generation later.[88] Our food is cheap, and fast, and easy.

The problem is what that cheap, fast, easy food doesn't deliver. We get all the calories we need (and more that we don't), but our money doesn't bring us much in the way of satisfaction, precisely the commodity high-powered ever-growing modern economies have done so little to provide. Where food is concerned, one way to think about satisfaction is in terms of taste. Consider how you feel after a cross-country trip—a little tired and limp and wan. Well, that's how the lettuce feels. Eighty percent of our tomatoes are harvested and shipped green, and then artificially ripened upon arrival at their retail outpost. Yum![89] A chicken that has never stood up in its entire short life won't taste like much, nor will a salmon reared in a cramped pen and fed food coloring to turn it pink. The supermarket crammed with its thousands of brightly packaged offerings is a mirage: if you could wave a wand and break everything down into its constituent ingredients, a pool of high-fructose corn syrup would fill half the store. Real food really does taste better; that's why, say, the Slow Food movement, which started in Italy and spread around the world, has grown so rapidly.

The idea that better-tasting food is a yuppie indulgence, however, is simply wrong. A recent survey of organic food buyers found Asians, Native Americans, Hispanics, and African Americans to be more likely than Caucasians to seek out organic food.[90] When the *Los Angeles Times* set out to survey farmers' markets across the city, they found that some of the busiest served ethnic communities and that at some markets payment was accepted in food stamps as well as in cash. If strong local food networks developed further, then prices would keep coming down as middlemen were eliminated. When I buy my neighbor Ben Gleason's grain to make a loaf of bread, I pay

barely more than I do for the regular flour in the next bin, but he gets almost all of the money. If you buy a loaf of supermarket bread instead, the farmer gets 6 cents of each $1 you spend.[91] If you pay $1.57 for a head of red-leaf lettuce in the store, chances are the farmer got about 19 cents of that—a 726 percent markup.[92] CSAs deliver vegetables at something like half the price supermarkets charge. There's lots of margin that should make it possible for local food to work for everyone.

But there will always be a cost in terms of time, of effort. No food system will ever require less participation than our present one, not unless Jetsons-style food pills actually hit the shelves. If you belong to a CSA, you have to go to the farm and pick up the box of vegetables—and then you have to do something with twenty pounds of produce, some of it unfamiliar. When I spent the winter buying locally, dinner took more time. I had to get to the farmers' market, or sometimes to the farm; I had to cook soup and make bread—neither of which is very hard, but both of which are now skills that many people either don't possess or don't use. And sometimes we got a little tired of eating the same things. By February, our eleven-year-old daughter was using the words "icky" and "disgusting" fairly regularly, always in connection with root vegetables. Not potatoes, not carrots, but turnips, parsnips, rutabaga. It is a little hard to imagine how people got through winter on the contents of their root cellars alone.

Which is why I was glad for the Ziplocs full of raspberries and blueberries my wife had frozen in the summer, and even gladder for the high-tech apple warehouse just down the road in Shoreham. Here's the thing about apples: the best ones rot pretty fast. The great apples of the Northeast, your Cortlands, your Empires, your Northern Spy, above all, your Macintosh, are soft, ephemeral. That crisp bite that sprays your tonsils with juice soon turns to mealy mush. For generations, people solved that problem by converting them into cider—hard cider, for freezerless storage. (That's what most of the myriad

apple orchards around New England were planted for.) But there's another solution if, like my neighbor Barney Hodges, you have a storage shed where you can pump in nitrogen. "We push the oxygen level down from its normal 20 percent to just under 3 percent. The apple's respiration is slowed down to the point where the ripening process is nearly halted," he explains. Every few weeks he cracks open another room in the warehouse, and it's as if you're back in September—the apples in his Sunrise Orchard bags head out to local supermarkets, where he frets that they won't be kept cool. Here's the take-home message: local farming can be as technologically inventive as industrial agriculture. Maybe more so, since it relies less on the brute force of petroleum. And also this: if you get your hands on nice apples, don't leave them in a pretty ceramic bowl on the counter. Put them in the refrigerator!

February. By now, pleasant routine is setting in: eggs in the morning, soup and a cheese sandwich for lunch. And for dinner, some neighbor that until quite recently was clucking, mooing, baaing, or otherwise signaling its pleasure at the local grass and hay that it was turning into protein. Also potatoes. And something from the freezer—it's a chest-type, and in a dark corner, so you basically just stick a hand in and see what vegetable comes out.

And oh, did I mention beer? Otter Creek Brewing, a quarter mile down the road from my daughter's school, makes a stellar witbier, a Belgian style, naturally cloudy, with raw organic wheat from Ben Gleason's farm. It's normally sold in the summer, but I've hoarded some for my winter drinking. "We'd love to use local barley for the rest of our beers," says Morgan Wolaver, the brewery's owner. But someone would have to build a malting plant to serve not just Otter Creek but the state's seven other microbreweries. Perhaps right next to the oat mill . . .

March. I can see spring in the distance. There's still feet of snow in the woods, but the sun is September strong, and it

won't be long till down in the valley someone is planting lettuce. There's so much that I've eaten and not described: the venison burgers at the local bar, the Cryovac'ed Lake Champlain perch sold at Ned's Bait and Tackle (though you should eat it only once a month if you're of childbearing age).

But there's one place I must describe, both because it's provided many of my calories and because it embodies the idea of a small-scale farmer making a decent living growing great food. Jack and Anne Lazor bought Butterworks Farm in Vermont's Northeast Kingdom in the midseventies, after a stint of working at Old Sturbridge Farm in Massachusetts. There they dressed in colonial costumes and milked cows by hand and talked to the tourists. But, as they eventually figured out, they weren't actors; they were real farmers. Slowly they've developed one of the state's premier dairies: their organic yogurt is nearly a million-dollar business, expanding steadily year after year after year; I've been living off their dried beans, too, and their cornmeal. It's great fun to sit in their kitchen eating bacon and eggs while Anne mixes up some salve for the teats of her cows and the Lazors describe their life. The talk's a mix of technical detail (they milk Jerseys, not the more common Holsteins, which means less milk but higher protein, so their yogurt needs no pectin to stay firm) and rural philosophy. "We have such a 'take' mentality," Jack says. "It's part of our psyche, because we came to this verdant land as Europeans and were able to exploit it for so long."

But here the exploitation feels more like collaboration. We stroll over to his solar barn, where the forty cows in the herd loiter patiently, mulling over the events of the day. "That's Morel, that's Phooey, that's Vetch, that's Clover, that's Jewel . . ." The vet wanders in, to report that he's figured out what's wrong with Emily: milk fever, easily treated. ("Since this place is organic, everything in my truck is pretty useless," he says. "All my antibiotics, I just leave them behind. The weird thing is, though, with the bigger industrial dairies,

where I can use all my medicines, I'm visiting them three times a week. Here it's once a month.") It's very calm in here, no sound but cud being chewed, and it's warm out of the late-winter wind. Jack, who's a talker, is explaining how Vermont could market itself as "the natural state," and how he's hoping to market *masa harina* for making tortillas next year, and so forth. I'm sort of listening, and mostly just absorbing the sheer pleasure of the scene—that this place works, that I've been connected to it all winter long, that it will be here, with any luck, for the rest of my life.

Eating this way has come at a cost. Not in health or in money (if anything, I've spent less than usual, since I haven't bought a speck of processed food) but in time. I've had to think about every meal, instead of wandering through the world on autopilot, ingesting random calories. I've had to pay attention. But the payoff for that cost has been immense, a web of connections I'd never known about. I've gotten to eat with my brain as well as my tongue: every meal comes with a story. The geography of the valley now means something much more real to me; I've met dozens of people I wouldn't otherwise have known. Yes, in the wake of my experiment I'm back to oranges and Alaska salmon and the odd pint of Guinness Stout. But the winter permanently altered the way I eat. In more ways than one, it left a good taste in my mouth.

That good taste was *satisfaction*. The time I spent getting the food and preparing it was not, in the end, a cost at all. In the end it was a benefit, *the* benefit. In my role as eater, I was part of something larger than myself that made sense to me—a community. I felt grounded, connected.

It is to such questions of identity that we must now turn.