

Naturally

The Organic Farming Industry

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By Michael Pollan

I. Supermarket Pastoral

Almost overnight, the amount and variety of organic food on offer in my local supermarket has mushroomed. Fresh produce, milk, eggs, cereal, frozen food, even junk food -- all of it now has its own organic doppelgänger, and more often than not these products wind up in my shopping cart. I like buying organic, for the usual salad of rational and sentimental reasons. At a time when the whole food system feels somewhat precarious, I assume that a product labeled organic is more healthful and safer, more "wholesome," though if I stop to think about it, I'm not exactly sure what that means. I also like the fact that by buying organic, I'm casting a vote for a more environmentally friendly kind of agriculture: "Better Food for a Better Planet," in the slogan of Cascadian Farm, one of the older organic brands. Compared with all the other food in the supermarket, which is happy to tell you everything about itself except how it was grown, organic food seems a lot more legible. "Organic" on the label conjures a whole story, even if it is the consumer who fills in most of the details, supplying the hero (American Family Farmer), the villain (Agribusinessman) and the literary genre, which I think of as "supermarket pastoral." Just look at the happy Vermont cow on that carton of milk, wreathed in wildflowers like a hippie at her wedding around 1973.

Look a little closer, though, and you begin to see cracks in the pastoral narrative. It took me more than a year to notice, but the label on that carton of Organic Cow has been rewritten recently. It doesn't talk about happy cows and Vermont family farmers quite so much anymore, probably because the Organic Cow has been bought out by Horizon, a Colorado company (referred to here, in proper pastoral style, as "the Horizon family of companies"). Horizon is a \$127 million public corporation that has become the Microsoft of organic milk, controlling 70 percent of the retail market. Notice, too, that the milk is now "ultrapasteurized," a process the carton presents as a boon to the consumer (it pushes the freshness date into the next millennium), but which of course also allows the company to ferry its milk all over the country.

When I asked a local dairyman about this (we still have one or two in town) he said that the chief reason to ultrapasteurize -- a high-heat process that "kills the milk," destroying its enzymes and many of its vitamins -- is so you can sell milk over long distances. Arguably, ultrapasteurized organic milk is less nutritious than conventionally pasteurized conventional milk. This dairyman also bent my ear about Horizon's "factory farms" out West, where thousands of cows that never encounter a blade of grass spend their days confined to a fenced dry lot, eating (certified organic) grain and tethered to milking machines three times a day. So maybe Organic Cow milk isn't quite as legible a product as I thought.

I wasn't sure if the farmer had his facts straight (it would turn out he did), but he made me wonder whether I really knew what organic meant anymore. I understood organic to mean -- in addition to being produced without synthetic chemicals -- less processed, more local, easier on the animals. So I started looking more closely at some of the other organic items in the store. One of them in the frozen-food case caught my eye: an organic TV dinner (now there are three words I never expected to string together) from Cascadian Farm called Country Herb: "rice, vegetables and grilled chicken breast strips with a savory herb sauce."

The text-heavy box it came in told the predictable organic stories -- about the chicken (raised without chemicals and allowed "to roam freely in an outdoor yard"); about the rice and vegetables (grown without synthetic chemicals); even about the carton (recycled) -- but when I got to the ingredients list, I felt a small jolt of cognitive dissonance. For one thing, the list of ingredients went on forever (31 ingredients in all) and included such enigmas of modern food technology as natural chicken flavor, high-oleic safflower oil, guar and xanthan gum, soy lecithin, carrageenan and natural grill flavor, this last culinary breakthrough achieved with something called "tapioca maltodextrin." The label assured me that most of these additives are organic, which they no doubt are, and yet they seem about as jarring to my conception of organic food as, say, a cigarette boat on Walden Pond. But then, so too is the fact (mentioned nowhere on the label) that Cascadian Farm has recently become a subsidiary of General Mills, the third biggest food conglomerate in North America.

Clearly, my notion of supermarket pastoralism has fallen hopelessly out of date. The organic movement has become a \$7.7 billion business: call it Industrial Organic. Although that represents but a fraction of the \$400 billion business of selling Americans food, organic is now the fastest-growing category in the supermarket. Perhaps inevitably, this sort of growth --

sustained at a steady 20 percent a year for more than a decade -- has attracted the attention of the very agribusiness corporations to which the organic movement once presented a radical alternative and an often scalding critique. Even today, the rapid growth of organic closely tracks consumers' rising worries about the conventional food supply -- about chemicals, about additives and, most recently, about genetically modified ingredients and mad cow disease; every food scare is followed by a spike in organic sales. And now that organic food has established itself as a viable alternative food chain, agribusiness has decided that the best way to deal with that alternative is simply to own it. The question now is, What will they do with it? Is the word "organic" being emptied of its meaning?

II. The Road to Cascadian Farm

I don't know about you, but I never expect the bucolic scenes and slogans on my packaged food to correspond to reality (where exactly is Nature's Valley, anyway?), but it turns out the Cascadian Farm pictured on my TV dinner is a real farm that grows real food -- though not quite the same food contained in my TV dinner.

Cascadian Farm occupies a narrow, breathtaking shelf of land wedged between the Skagit River and the North Cascades in the town of Rockport, Wash., 75 miles northeast of Seattle. Originally called the New Cascadian Survival and Reclamation Project, the farm was started in 1971 by Gene Kahn with the idea of growing food for the collective of environmentally minded hippies he had hooked up with in nearby Bellingham. At the time, Kahn was a 24-year-old grad-school dropout from the South Side of Chicago who, after reading "Silent Spring" and "Diet for a Small Planet," determined to go back to the land, there to change "the food system." That particular dream was not so outrageous in 1971 -- this was the moment, after all, when the whole counterculture was taking a rural turn -- but Kahn's success in actually achieving it surely is: he went on to become a pioneer of the organic movement and did much to move organic food into the mainstream. Today, Cascadian Farm's farm is a General Mills showcase -- a P.R. farm," as its founder freely acknowledges -- and Kahn, erstwhile hippie farmer, is a General Mills vice president and a millionaire. He has become one of the most successful figures in the organic community and also perhaps one of the most polarizing; for to many organic farmers and activists, he has come to symbolize the takeover of the movement by agribusiness.

"Organic is becoming what we hoped it would be an alternative to," says Roger Blobaum, who played a key role as a consumer advocate in pushing Congress to establish the U.S.D.A.'s fledgling organic program.

"Gene Kahn's approach is slowly but surely taking us in that direction. He's one of the real pioneers, but there are people now who are suspicious of him." Kahn is apt to call such people "purists," "Luddites," "romantics" and "ideologues" who have failed to outgrow the "antibusiness prejudices" of the 60's. He'll tell you he's still committed to changing the food system -- but now from "inside." Few in the movement doubt his sincerity or commitment, but many will tell you the food system will much sooner change Kahn, along with the whole meaning of organic.

On an overcast morning not long ago, Kahn drove me out to Rockport from his company's offices in Sedro-Woolley, following the twists of the Skagit River east in a new forest green Lexus with vanity plates that say "ORGANIC." Kahn is a strikingly boyish-looking 54, and after you factor in a shave and 20 pounds, it's not hard to pick his face out from the beards-beads-and-tractor photos on display in his office. Back in the farm's early days, when Kahn supervised and mentored the rotating band of itinerant hippies who would show up to work a day or a week or a year on the farm, he drove a red VW Beetle and an ancient, temperamental John Deere. Kahn lived in a modest clapboard farmhouse on Cascadian Farm until 1993. Now he lives in a McMansion high in the hills overlooking Puget Sound.

Like a lot of the early organic farmers, Kahn had no idea what he was doing at first and suffered his share of crop failures. In 1971, organic agriculture was in its infancy -- a few hundred scattered amateurs learning by trial and error how to grow food without chemicals, an ad hoc grass-roots R. & D. effort for which there was precisely no institutional support. Though it did draw on various peasant-farming models, modern-day organic agriculture is a relatively novel and remarkably sophisticated system with deep roots in the counterculture. The theoretical roots of organic agriculture go back a bit further, principally to the work of a British scientist by the name of Sir Albert Howard. Based on his experiments in India and observations of peasant farms in Asia, Howard's 1940 treatise "An Agricultural Testament" demonstrated the connection between the health of the soil and the ability of plants to withstand diseases and pests. Howard's agricultural heresies were praised in the pages of "The Whole Earth Catalog" (by Wendell Berry) and popularized by J.I. Rodale in Organic Gardening and Farming magazine -- which claimed 700,000 readers in 1971, one of whom was Gene Kahn.

But the word "organic" around 1970 connoted a great deal more than a technique for growing vegetables. The movement's pioneers set out to create not just an

alternative mode of production (the farms) but of distribution (the co-ops and health-food stores) and even consumption. A "countercuisine" based on whole grains and unprocessed ingredients rose up to challenge conventional industrial "white bread" food. ("Plastic food" was an epithet you heard a lot.) For a host of reasons that seem risible in retrospect, brown food of all kinds (rice, bread, wheat, sugar) was deemed morally superior to white. Much more than just lunch, organic food was "an edible dynamic" that promised to raise consciousness about the economic order, draw critical lines of connection between the personal and the political. It was also, not incidentally, precisely what your parents didn't eat.

Such was dinner and the dinner-table conversation at Cascadian Farm and countless other counterculture tables in the early 1970's. As for an alternative mode of distributing food, Kahn recruited a hippie capitalist named Roger Weschler to help him figure out how to sell his strawberries before they rotted in the field. Weschler had helped found something called the Cooperating Community, a network of Seattle businesses committed to ecological principles and worker self-management. A new offshoot, Community Produce, began distributing the food grown at Cascadian Farm, and Weschler and Kahn set out, in the unembarrassed words of Cascadian Farm's official corporate history, "to change the world's food system." Twenty-nine years later, Weschler is still at it, operating a produce brokerage devoted to supporting family farmers. And Kahn? Weschler, who has lost neither his scraggly black beard nor his jittery intensity, told me that by going corporate, his old friend "has made a very different choice."

If Kahn were the least bit embarrassed by the compromises he has made in his organic principles since those long-ago days, he would surely have rewritten his company's official history by now -- and never sent me to interview Weschler. But as we walked around the farm talking about "how everything eventually morphs into the way the world is," it seemed clear that Kahn has made his peace with that fact of life, decided that the gains outweighed the losses.

In time, Kahn became quite a good farmer and, to his surprise, an even better businessman. By the late 70's, he had discovered the virtues of adding value to his produce by processing it (freezing blueberries and strawberries, making jams), and once Cascadian Farm had begun processing, Kahn discovered he could make more money buying produce from other farmers than by growing it himself. During the 80's, Cascadian Farm became an increasingly virtual sort of farm, processing and marketing a range of packaged foods well beyond the Seattle area.

"The whole notion of a 'cooperative community' we started with gradually began to mimic the system," Kahn recalled. "We were shipping food across the country, using diesel fuel -- we were industrial organic farmers. I was bit by bit becoming more of this world, and there was a lot of pressure on the business to become more privatized."

That pressure became irresistible in 1990, when in the aftermath of the Alar scare, Kahn nearly lost everything -- and control of Cascadian Farm wound up in corporate hands. In the history of the organic movement, the Alar episode is a watershed, marking the birth pangs of the modern organic industry. After a somewhat overheated "60 Minutes" exposé on apple growers' use of Alar, a growth-regulator that the Environmental Protection Agency declared a carcinogen, middle America suddenly discovered organic. "Panic for Organic" was the cover line of one newsweekly, and, overnight, demand from the supermarket chains soared. The ragtag industry wasn't quite ready for prime time, however. Kahn borrowed heavily to finance an ambitious expansion, contracted with farmers to grow an awful lot of organic produce -- and then watched in horror as the bubble of demand subsided along with the headlines about Alar. Kahn was forced to sell a majority stake in the company -- to Welch's -- and set out on what he calls his "corporate adventure."

"We were part of the food industry now," he told me. "But I wanted to leverage that position to redefine the way we grow food -- not what people want to eat or how we distribute it. That sure as hell isn't going to change." Kahn sees himself as very much the grown-up, a sober realist in a community of unreconstructed idealists. He speaks of selling out to Welch's as "the time when I lost the company" but doesn't trouble himself with second thoughts or regrets; in fact, it was all for the best. "Welch's was my business school," he said. Kahn seems to have no doubt that his path is the right path, not only for him but for the organic movement as a whole: "You have a choice of getting sad about all that or moving on. We tried hard to build a cooperative community and a local food system, but at the end of the day it wasn't successful. This is just lunch for most people. Just lunch. We can call it sacred, we can talk about communion, but it's just lunch."

In the years after the Alar bubble burst in 1990, the organic industry recovered, embarking on a period of double-digit annual growth and rapid consolidation, as mainstream food companies began to take organic -- or at least, the organic market -- seriously. Gerber's, Heinz, Dole, ConAgra and A.D.M. all created or acquired organic brands. Cascadian Farm itself became

a miniconglomerate, acquiring Muir Glen, the California organic tomato processors, and the combined company changed its name to Small Planet Foods. Nineteen-ninety also marked the beginning of federal recognition for organic agriculture: that year, Congress passed the Organic Food Production Act. The legislation instructed the Department of Agriculture -- which historically had treated organic farming with undisguised contempt -- to establish uniform national standards for organic food and farming, fixing the definition of a word that had always meant different things to different people.

Settling on that definition turned out to be a grueling decadelong process, as various forces both within and outside the movement battled for control of a word that had developed a certain magic in the marketplace. Agribusiness fought to define the word as broadly as possible, in part to make it easier for mainstream companies to get into organic but also out of fear that anything deemed not organic would henceforth carry an official stigma. At first, the U.S.D.A., acting out of longstanding habit, obliged its agribusiness clients, issuing a watery set of standards in 1997 that, incredibly, allowed for the use of genetic modification, irradiation and sewage sludge in organic food production. But an unprecedented flood of public comment from outraged organic farmers and consumers forced the U.S.D.A. back to the drawing board, in what was widely viewed as a victory for the movement's principles.

Yet while the struggle with agribusiness over the meaning of the word "organic" was making headlines, another, equally important struggle was under way at the U.S.D.A. between Big and Little Organic, and this time the outcome was decidedly more ambiguous. Could a factory farm be organic? Was an organic cow entitled to dine on pasture? Did food additives and synthetic chemicals have a place in organic processed food? If the answers to these seem like no-brainers, then you, too, are stuck in an outdated pastoral view of organic. Big Organic won all three arguments. The final standards, which will take effect next year, are widely seen as favoring the industry's big players. The standards do an admirable job of setting the bar for a more environmentally responsible kind of farming, but as perhaps was inevitable, many of the philosophical values embedded in the word "organic" did not survive the federal rule-making process.

Gene Kahn served on the U.S.D.A.'s National Organic Standards Board from 1992 to 1997, playing a key role in making the standards safe for the organic TV dinner and a great many other processed organic foods. This was no small feat, for Kahn and his allies had to work around the 1990 legislation establishing organic

standards, which prohibited synthetic food additives. Kahn argued that you couldn't have organic processed foods without synthetics. Several of the consumer representatives on the standards board contended that this was precisely the point, and if no synthetics meant no organic TV dinners, then TV dinners were something organic simply shouldn't do.

Joan Dye Gussow, a nutritionist and an outspoken standards-board member, made the case against synthetics in a 1996 article that was much debated, "Can an Organic Twinkie Be Certified?" She questioned whether organic should simply mirror the existing food supply, with its highly processed, salted and sugary junk food, or whether it should aspire to something better -- a countercuisine. Kahn responded with market populism: if the consumer wants an organic Twinkie, then we should give it to him. As he put it to me on the drive back from Cascadian Farm, "Organic is not your mother." In the end, it came down to an argument between the old movement and the new industry, and the new industry won: the final standards simply ignored the 1990 law, drawing up a "national list" of permissible additives and synthetics, from ascorbic acid to xanthan gum.

"If we had lost on synthetics," Kahn told me, "we'd be out of business."

Kahn's victory cleared the way for the development of a parallel organic food supply: organic Heinz ketchup (already on the shelves in England), organic Hamburger Helper, organic Miracle Whip and, sooner or later, organic Twinkies. This is not a prospect everyone relishes. Even Kahn says: "I'm not looking forward to the organic Twinkie. But I will defend to the death anyone's right to create one!" Eliot Coleman, a Maine farmer and writer whose organic techniques have influenced two generations of farmers, is repulsed by the whole idea: "I don't care if the Wheaties are organic -- I wouldn't use them for compost. Processed organic food is as bad as any other processed food."

III. The Soul of a New TV Dinner

Small Planet Foods's headquarters in Sedro-Woolley occupies a downtown block of 19th-century brick storefronts in this faded and decidedly funky logging town. The storefronts have been converted into loftlike offices designed in the alternative-capitalist style: brick walls, air ducts and I-beams all in plain sight -- no facades here. Since every day is dress-down day at Small Planet Foods, Friday is the day everybody takes his or her dog to work. I spent a Friday in Woolley, learning the ins and outs of formulating, manufacturing and selling an organic TV dinner.

Steve Harper, Small Planet's chief food scientist, described the challenge of keeping a frozen herb sauce from separating unappetizingly (instead of modified food starch, organic food scientists rely on things like carrageenan, a seaweed derivative, to enhance "freeze-thaw stability") and explained the algorithm governing the relative size and population of chicken chunks (fewer bigger chunks give a better "quality perception" than a larger number of dice-size cubes). He also explained how they get that salty processed-food taste right inside a chicken chunk: marinade-injecting hypodermic needles.

If Harper is responsible for the "recipe" of a Cascadian Farm TV dinner, it falls to Marv Shelby, the company's vice president for operations, to get the meal "cooked." Shelby, who came to Small Planet after a career in operations at Birds Eye, handles the considerable logistics involved in moving three dozen ingredients on time to the co-packing plant in Alberta, Canada, where they are combined in a microwavable bowl. He described an elaborate (and energy-intensive) choreography of ingredients, packaging and processes that takes place over a half-dozen states and two countries. Fresh broccoli, for instance, travels from a farm in the Central Valley to a plant in Sanger, Calif., where it is cut into florets, blanched and frozen. From California, the broccoli is trucked to Edmonton, Alberta, there to meet up with pieces of organic chicken that have traveled from a farm in Petaluma, Calif., with a stop at a processing plant in Salem, Ore., where they were defrosted, injected with marinade, cubed, cooked and refrozen. They don't call it processed food for nothing.

Most everyone I met at Small Planet Foods expressed a fervently held belief in the value of organic farming. There was a politics to their work, and if they had had to compromise certain ideals in order to adapt their products to the mainstream food system, all this was in service to a greater good they seemed never to lose sight of: converting the greatest number of acres of American farmland to organic agriculture. The solitary exception to this outlook was a vice president for marketing, the man most responsible for developing Cascadian's new slogan, "Taste You Can Believe In." R. Brooks Gekler is a marketing star at General Mills who was installed at Small Planet Foods immediately after the acquisition. A year later, Gekler, a handsome, well-spoken New York University M.B.A., was still something of an outsider at Small Planet Foods. "There are people here who regard me as the Antichrist," he joked. I think it was around the time he explained to me, apropos of his colleagues, that "some principles can be an obstacle to success" that I understood why this might be so.

"I came here to help the company identify its consumer target," Gekler explained crisply, "which is different from what they believed." In marketing parlance, Small Planet (like the rest of the organic industry) had traditionally directed its products toward someone called "the true natural" -- a committed, activist consumer. True naturals are the people on whom the organic food industry has been built, the outwardly directed, socially conscious consumers devoted to the proposition of "better food for a better planet." But while their numbers are growing -- true naturals now represent about 10 percent of the U.S. food market, as a large proportion of Gen X'ers join their ranks -- the future of organic, General Mills says, lies with a considerably larger group of even more affluent consumers called the "health seekers." It is to this group that Cascadian Farm is targeting its new TV dinners.

Health seekers, who today represent about a quarter of the market, are less "extrinsic" -- that is, more interested in their own health than that of the planet. They buy supplements, work out, drink wine, drive imported cars. They aren't interested in a countercuisine, which is why Cascadian's new line of frozen entrees eschews whole grains and embraces a decidedly middle-of-the road "flavor profile."

The chief reason the health seeker will buy organic is for the perceived health benefits. This poses a certain marketing challenge, however, since it has always been easier to make the environmental case for organic food than the health case. Although General Mills has put its new organic division under the umbrella of its "health initiatives" group, "organic" is not, at least officially, a health, nutrition or food-safety claim, a point that Dan Glickman, then secretary of agriculture, took pains to emphasize when he unveiled the U.S.D.A.'s new label in December: organic, he stressed, is simply "a production standard."

"At first, I thought the inability to make hard-hitting health claims" -- for organic -- was a hurdle," Gekler said when I asked him about this glitch. "But the reality is, all you have to say is 'organic' -- you don't need to provide any more information." These particular consumers -- who pay attention to the media, to food scares and to articles like this one -- take their own health claims to the word.

Suddenly the genius of Cascadian Farm's new slogan dawned on me. "Taste You Can Believe In": meaningless in and of itself, the slogan "allows the consumer to bring his or her personal beliefs to it," Gekler explained. While the true natural hears social values in the phrase "Believe In," the health seeker hears a promise of health and flavor. The slogan is an

empty signifier, as the literary theorists would say, and what a good thing that is for a company like General Mills. How much better to let the consumers fill in the marketing message -- healthier, more nutritious, no pesticides, more wholesome, sustainable, safer, purer -- because these are controversial comparative claims that, as Gekler acknowledged, "make the conventional food industry very uncomfortable."

Before I left his office, I asked Gekler about his own beliefs -- whether or not he believed that organic food was better food. He paused for a long time, no doubt assessing the cost of either answer, and deftly punted.

"I don't know yet."

IV. Down on the Industrial Organic Farm

No farm I have ever visited before prepared me for the industrial organic farms I saw in California. When I think about organic farming, I think family farm, I think small scale, I think hedgerows and compost piles and battered pickup trucks. I don't think migrant laborers, combines, thousands of acres of broccoli reaching clear to the horizon. To the eye, these farms look exactly like any other industrial farm in California -- and in fact the biggest organic operations in the state today are owned and operated by conventional mega-farms. The same farmer who is applying toxic fumigants to sterilize the soil in one field is in the next field applying compost to nurture the soil's natural fertility.

Is there something wrong with this picture? It all depends on where you stand. Gene Kahn makes the case that the scale of a farm has no bearing on its fidelity to organic principles and that unless organic "scales up" it will "never be anything more than yuppie food." To prove his point, Kahn sent me to visit large-scale farms whose organic practices were in many ways quite impressive, including the Central Valley operation that grows vegetables for his frozen dinners and tomatoes for Muir Glen.

Greenways Organic is a successful 2,000-acre organic-produce operation tucked into a 24,000-acre conventional farm outside Fresno; the crops, the machines, the crews, the rotations and the fields were indistinguishable, and yet two very different kinds of industrial agriculture are being practiced here side by side.

In place of petrochemical fertilizers, Greenways's organic fields are nourished by compost made by the ton at a horse farm nearby. Insects are controlled with biological agents and beneficial insects like lacewings. Frequent and carefully timed tilling, as well as propane

torches, keeps down the weeds, perhaps the industrial organic farmer's single stiffest challenge. This approach is at best a compromise: running tillers through the soil so frequently is destructive to its tilth, yet weeding a 160-acre block of broccoli by hand is unrealistic.

Since Greenways grows the same crops conventionally and organically, I was interested to hear John Diener, one of the farm's three partners, say he knew for a fact that his organic crops were "better," and not only because they hadn't been doused with pesticide. When Diener takes his tomatoes to the cannery, the organic crop reliably receives higher Brix scores -- a measure of the sugars in fruits and vegetables. It seems that crops grown on nitrogen fertilizer take up considerably more water, thereby diluting their nutrients, sugars and flavors. The same biochemical process could explain why many people -- including the many chefs who swear by organic ingredients -- believe organic produce simply tastes better. With less water in it, the flavor and the nutrients of a floret of organic broccoli will be more concentrated than one grown with chemical fertilizers.

It's too simple to say that smaller organic farms are automatically truer to the organic ideal than big ones. In fact, the organic ideal is so exacting -- a sustainable system that requires not only no synthetic chemicals but also few purchased inputs of any kind and that returns as much to the soil as it removes -- that it is most often honored in the breach. Yet the farmers who come closest to achieving this ideal do tend to be smaller in scale. These are the farmers who plant dozens of different crops in fields that resemble quilts and practice long and elaborate rotations, thereby achieving the rich biodiversity in space and time that is the key to making a farm sustainable.

For better or worse, these are not the kinds of farms Small Planet Foods does business with today. It's simply more efficient to buy from one 1,000-acre farm than 10 100-acre farms. Indeed, Cascadian Farm the corporation can't even afford to use produce from Cascadian Farm the farm: it's too small. So the berries grown there are sold at a roadside stand, while the company buys berries for freezing from as far away as Chile.

The big question is whether the logic of an industrial food chain can be reconciled to the logic of the natural systems on which organic agriculture has tried to model itself. Put another way, Is "industrial organic" a contradiction in terms?

Kahn is convinced it is not, but others both inside and outside his company see a tension. Sarah Huntington is

one of Cascadian's oldest employees. She worked alongside Kahn on the farm and at one time or another has held just about every job in the company. "The maw of that processing plant beast eats 10 acres of cornfield an hour," she told me. "And you're locked into planting a particular variety like Jubilee that ripens all at once and holds up in processing. So you see how the system is constantly pushing you back toward monoculture, which is anathema in organic. But that's the challenge -- to change the system more than it changes you."

One of the most striking ways Small Planet Foods is changing the system is by helping conventional farms convert a portion of their acreage to organic. Several thousand acres of American farmland are now organic as a result of the company's efforts, which go well beyond offering contracts to providing instruction and even management. Kahn has helped to prove to the skeptical that organic -- dismissed as "hippie farming" not very long ago -- can work on a large scale. The environmental benefits of this educational process shouldn't be underestimated. And yet the industrialization of organic comes at a price. The most obvious is consolidation: today five giant farms control fully one-half of the \$400 million organic produce market in California. Partly as a result, the price premium for organic crops is shrinking. This is all to the good for expanding organic's market beyond yuppies, but it is crushing many of the small farmers for whom organic has represented a profitable niche, a way out of the cheap-food economics that has ravaged American farming over the last few decades. Indeed, many of the small farmers present at the creation of organic agriculture today find themselves struggling to compete against the larger players, as the familiar, dismal history of American agriculture begins to repeat itself in the organic sector.

This has opened up a gulf in the movement between Big and Little Organic and convinced many of the movement's founders that the time has come to move "beyond organic" -- to raise the bar on American agriculture yet again. Some of these innovating farmers want to stress fair labor standards, others quality or growing exclusively for local markets. In Maine, Eliot Coleman has pioneered a sophisticated market garden entirely under plastic, to supply his "food shed" with local produce all winter long; even in January his solar-heated farm beats California on freshness and quality, if not price. In Virginia, Joel Salatin has developed an ingenious self-sufficient rotation of grass-fed livestock: cattle, chickens and rabbits that take turns eating, and feeding, the same small pasture. There are hundreds of these "beyond organic" farmers springing up now around the country. The fact is, however, that the word "organic" -- having entered the vocabulary of both

agribusiness and government -- is no longer these farmers' to redefine. Coleman and Salatin, both of whom reject the U.S.D.A. organic label, are searching for new words to describe what it is they're doing. Michael Ableman, a "beyond organic" farmer near Santa Barbara, Calif., says: "We may have to give up on the word 'organic,' leave it to the Gene Kahns of the world. To be honest, I'm not sure I want the association, because what I'm doing on my farm is not just substituting materials."

Not long ago at a conference on organic agriculture, a corporate organic farmer suggested to a family farmer struggling to survive in the competitive world of industrial organic agriculture that he "should really try to develop a niche to distinguish yourself in the market." The small farmer replied: "I believe I developed that niche 20 years ago. It's called 'organic.' And now you're sitting on it."

V. Gene Kahn Visits the Mothership

In March, I accompanied Gene Kahn on one of his monthly visits to the General Mills headquarters, a grassy corporate campus strewn with modern sculptures in the suburbs outside Minneapolis. In deference to Fortune 500 etiquette, I put on a suit and tie but quickly realized I was overdressed: Kahn had on his usual khakis and a denim work shirt embroidered with a bright red Muir Glen tomato. When I said something, Kahn told me he makes a point of not changing his clothes when he goes to Minneapolis. I get it: an organic farmer in an embroidered work shirt is part of what General Mills was acquiring when it acquired Small Planet Foods. Yet this particular organic farmer is presumably a far sight wealthier than most of his new corporate colleagues: when General Mills bought Small Planet Foods for an estimated \$70 million, Kahn still owned 10 percent of the company.

Together, Kahn and I toured General Mills's Bell Technical Center, a sprawling research-and-development facility where some 900 food scientists, chemists, industrial designers and nutritionists dream up and design both the near- and long-term future of American food. This was Kahn's first visit to the facility, and as we moved from lab to lab, I could see his boyish enthusiasm mounting as he collected new ideas and business cards.

In the packaging-design lab, even before Arne Brauner could finish explaining how he engineered the boxes, bowls and cups in which General Mills sells its products, Kahn asked him, "Has there ever been a completely edible packaging for food?" Brauner rubbed his chin for a moment.

"The sausage. That was probably the first."

Kahn now told him about the bowl in which Cascadian Farm sold its frozen entrees. Plastic would have turned off the organic consumer, he explained, so they were using coated paperboard, which isn't readily recyclable. Would it be possible, Kahn wondered, to make a microwaveable bowl out of biodegradable food starch? Brauner said he had heard about a cornstarch clamshell for fast-food burgers and offered to look into it. Kahn took his card.

Kahn had another, more off-the-wall request for Perry May, the man in charge of General Mills's machine shop. This is where engineers and machinists make the machines that make the food. Kahn asked Perry if his shop could help develop a prototype for a new weeding machine he had dreamed up for organic farmers. "It would be an optical weeder with a steam generator on board," Kahn explained. "The scanner would distinguish between a weed and a corn plant, say, and then zap the weed with a jet of hot steam." May thought it might be doable; they exchanged cards.

"I feel like a kid in a candy store," Kahn told me afterward. "Organic has never had these kinds of resources at its disposal."

On the drive back from Bell, Kahn grew positively effervescent about the "organic synergies" that could come from General Mills's acquisition of Pillsbury, a \$10.5 billion deal now awaiting F.T.C. approval. Pillsbury owns Green Giant, and the prospect of being able to draw on that company's scientists (and patents) has planted agronomic fantasies in the fevered brain of the former farmer: broccoli specifically bred for organic production ("We've never had anything like that!"); an organic version of Niblets, Green Giant's popular proprietary corn; carrots bred for extra vitamin content. In fact, Kahn got so worked up spinning his vision of the industrial organic future that he got us lost.

So this was how Kahn proposed to change the American food system from within: by leveraging its capital and know-how on behalf of his dream. Which prompts the question, Just how does the American food system feel about all this? As Kahn and I made the rounds of General Mills's senior management, he in his work shirt, I in my suit, I tried to find out how these tribunes of agribusiness regarded their new vice president's organic dream, exactly how it fit into their vision of the future of food.

The future of food, I learned, is toward ever more health and convenience -- the two most important food trends today -- at no sacrifice of taste. "Our corporate

philosophy," as one senior vice president, Danny Strickland, put it, "is to give consumers what they want with no trade-offs." Organic fits into this philosophy in so far as the company's market research shows that consumers increasingly want it and believe it's healthier.

The acquisition of a leading organic food company is part of a company-wide "health initiative" -- along with adding calcium to various product lines and developing "functional foods" like Harmony, a soy-and-calcium-fortified cereal aimed at menopausal women. When I asked Ian Friendly, the sharp, young executive in charge of the company's health-initiative group, if this meant that General Mills believed organic was more healthful than conventional food, he deftly shifted vocabulary, suggesting that "wellness" is perhaps a better word. "Wellness is more of a whole gestalt or lifestyle, which includes things like yoga, massage and working out. It quickly became clear that in the eyes of General Mills, organic is not a revolution so much as a market niche, like menopausal women or "ethnics," and that health is really a matter of consumer perception. You did not have to buy into the organic "belief system" to sell it. When I asked Strickland if he believed that organic food was in any way better, he said: "Better? It depends. Food is subjective. Perceptions depend on circumstances."

I got much the same response from other General Mills executives. The words "better food," uttered so unself-consciously in Sedro-Woolley, rang in their offices like a phrase from a dead language. Steve Sanger, the company's chairman, said: "I'm certain it's better for some people. It depends on their particular beliefs." Sheri Schellhaas, vice president for research and development, said, "The question is, Do consumers believe organic is healthier?" Marc Belton, a senior vice president for cereals and the executive most responsible for the Small Planet acquisition, put it this way: "Is it better food? . . . You know, so much of life is what you make of it. If it's right for you, it's better -- if you feel it's better, it is."

At General Mills, it would seem, the whole notion of objective truth has been replaced by a kind of value-neutral consumer constructivism, in which each sovereign shopper constructs his own reality: "Taste You Can Believe In." Kahn understands that there is no percentage in signing onto the organic belief system, not when you also have Trix and Go-Gurt and Cinnamon Toast Milk and Cereal Bars to sell, yet, as he acknowledged later, contemporary corporate relativism drives him a little nuts.

Old-fashioned objective truth did make a brief reappearance when Kahn and I visited the quality-

assurance lab deep in the bowels of the Bell center. This is where technicians grind up Trix and Cheerios and run them through a mass spectrometer to make sure pesticide residues don't exceed F.D.A. "tolerances." Pesticide residues are omnipresent in the American food supply: the F.D.A. finds them in 30 to 40 percent of the food it samples. Many of them are known carcinogens, neurotoxins and endocrine disrupters -- dangerous at some level of exposure. The government has established acceptable levels for these residues in crops, though whether that means they're safe to consume is debatable: in setting these tolerances the government has historically weighed the risk to our health against the benefit -- to agriculture, that is. The tolerances also haven't taken into account that children's narrow diets make them especially susceptible or that the complex mixtures of chemicals to which we're exposed heighten the dangers.

Harry Leichtweis, a senior research analytical chemist at General Mills, tests for hundreds of different chemical compounds, not only the 400 pesticides currently approved by the E.P.A. but also the dozens of others that have been banned over the years as their dangers became known. Decades later, many of these toxins remain in the soil and continue to show up in our food. "We still find background levels of DDT and chlordane," he explained. Now the lab tests Small Planet Foods's products too. So I asked Leichtweis, who is a pale, rail-thin scientist with Coke-bottle specs and no discernible affect, if organic foods, as seen from the perspective of a mass spectrometer, are any different.

"Well, they don't contain pesticide."

Leichtweis had struck a blow for old-fashioned empiricism. Whatever else you might say about an organic TV dinner, it almost certainly contains less pesticide than a conventional one. Gene Kahn was beaming.

VI. Local Farm

My journey through the changing world of organic food has cured me of my naïve supermarket pastoralism, but it hasn't put me off my organic feed. I still fill my cart with the stuff. The science might still be sketchy, but common sense tells me organic is better food -- better, anyway, than the kind grown with organophosphates, with antibiotics and growth hormones, with cadmium and lead and arsenic (the E.P.A. permits the use of toxic waste in fertilizers), with sewage sludge and animal feed made from ground-up bits of other animals as well as their own manure. Very likely it's better for me and my family, and unquestionably it is better for the environment. For

even if only 1 percent of the chemical pesticides sprayed by American farmers end up as residue in our food, the other 99 percent are going into the environment -- which is to say, into our drinking water, into our rivers, into the air that farmers and their neighbors breathe. By now it makes little sense to distinguish the health of the individual from that of the environment.

Still, while it surely represents real progress for agribusiness to be selling organic food rather than fighting it, I'm not sure I want to see industrialized organic become the only kind in the market. Organic is nothing if not a set of values (this is better than that), and to the extent that the future of those values is in the hands of companies that are finally indifferent to them, that future will be precarious.

Also, there are values that the new corporate -- and government -- construction of "organic" leaves out, values that once were part and parcel of the word but that have since been abandoned as impractical or unprofitable. I'm thinking of things like locally grown, like the humane treatment of animals, like the value of a shorter and more legible food chain, the preservation of family farms, even the promise of a countercuisine. To believe that the U.S.D.A. label on a product ensures any of these things is, as I discovered, naïve.

Yet if the word "organic" means anything, it means that all these things are ultimately connected: that the way we grow food is inseparable from the way we distribute food, which is inseparable from the way we eat food. The original premise, remember, the idea that got Kahn started in 1971, was that the whole industrial food system -- and not just chemical agriculture -- was in some fundamental way unsustainable. It's impossible to read the papers these days without beginning to wonder if this insight wasn't prophetic. I'm thinking, of course, of mad cow disease, of the 76 million cases of food poisoning every year (a rate higher than in 1948), of StarLink corn contamination, of the 20-year-old farm crisis, of hoof-and-mouth disease and groundwater pollution, not to mention industrial food's dubious "solutions" to these problems: genetic engineering and antibiotics and irradiation. Buying food labeled organic protects me from some of these things, but not all; industrial organic may well be necessary to fix this system, but it won't be sufficient.

Many of the values that industrial organic has jettisoned in recent years I find compelling, so I've started to shop with them in mind. I happen to believe, for example, that farms produce more than food; they also produce a kind of landscape, and if I buy my organic milk from halfway across the country, the farms I like to drive by every day will eventually grow

nothing but raised ranch houses. So instead of long-haul ultrapasteurized milk from Horizon, I've started buying my milk, unpasteurized, from a dairy right here in town, Local Farm. Debra Tyler is organic, but she doesn't bother mentioning the fact on her label. Why? "My customers can see for themselves what I'm doing here," she says. What she's doing is milking nine pastured Jersey cows whose milk changes taste and hue with the seasons.

"Eat Your View!" is a save-the-farms bumper sticker you see in Europe now. I guess that's part of what I'm trying to do. But I'm also trying to get away from the transcontinental strawberry (5 calories of food energy, I've read, that it takes 435 calories of fossil-fuel energy to deliver to my door) and the organic "home meal replacement" sold in a package that will take 500 years to decompose. (Does that make me a True Natural?) So I've tracked down a local source for grass-fed beef (Chris Hopkins), eggs (Debra Tyler again) and maple syrup (Phil Hart), and on Saturday mornings I buy produce at a farmer's market in a neighboring town. I also have a line on a C.S.A. ("community supported agriculture"), or "subscription farm," a new marketing scheme from Europe that seems to be catching on here. You put up a couple of hundred dollars every spring and then receive a weekly box of produce through the summer. Not all of the farmers I'm buying from are certified organic. But I talk to them, see what they're up to, learn how they define the term. Sure, it's more trouble than buying organic food at the supermarket, but I'm resolved to do it anyway. Because organic is not the last word, and it's not just lunch.