

# UC Santa Cruz

## Cultivating A Movement

### Title

Richard Merrill: Writer and Educator

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# Richard Merrill



## Writer and Educator

*Richard Merrill is perhaps best known for editing the 1976 anthology Radical Agriculture, a formative text in the sustainable agriculture movement, along with the 1978 Energy Primer: Solar, Water, Wind, and Biofuels.*

*Merrill was born in San Mateo, California, in 1941, and earned his MS in population biology at UCLA, studying with ecologist Monte Lloyd just as the modern ecology movement gathered power. He went on to study ecology at the Ph.D. level with another eminent ecologist, Joe Connell, at UC Santa Barbara, but left the academy to dedicate his life to the community-based teaching and activism that he considered more relevant during that time of tumultuous social change. He was profoundly inspired by the writings of the anarchist social ecologist Murray Bookchin.*

*Merrill helped start the El Mirasol urban organic farm in Santa Barbara,*

California. In 1975, he founded the Environmental Horticulture Department at Cabrillo College, which he directed until retiring in 2005. While at Cabrillo, Merrill mentored and inspired several generations of students, who went on to become organic farmers, gardeners, and activists in the Central Coast region and beyond.

Currently Merrill runs his own environmental consulting service, Merrill Associates. He recently co-authored (with Joe Ortiz) *The Gardener's Table: A Guide to Natural Vegetable Growing and Cooking*. He is now editing an anthology called *The Greening of Agriculture: Creating a More Sustainable Future for our Food and Farms*. Merrill spoke at *The Organic Summit* conference's plenary session in Washington state in 2009.

Ellen Farmer conducted this oral history with Richard Merrill at her house in Santa Cruz, California, on April 18 and June 20, 2007.

#### Additional Resources

Richard Merrill, editor. *Radical Agriculture* (Harper & Row, 1976).

Richard Merrill and Thomas Gage, eds. *Energy Primer: Solar, Water, Wind, and Biofuels*, (Menlo Park, CA: Portola Institute, 1978).

Richard Merrill and Joe Ortiz, *The Gardener's Table: A Guide to Natural Vegetable Growing and Cooking* (Ten Speed Press, 2000).

Cabrillo College's Environmental Horticulture Program:  
<http://www.cabrillo.edu/academics/horticulture/>

## Beginnings

**Farmer:** Today is Wednesday, April 18, 2007, and I'm with Richard Merrill. I want to start with, where were you born and where did you grow up?

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**Merrill:** I was born in San Mateo, California three months before Pearl Harbor in August 1941. I'm a third-generation Californian, and the philosophy of our family is, why leave this place? Here in California, we have seasons in space instead of time; you can always find a season in California.

**Farmer:** So where did your family [originally] come from?

**Merrill:** The family came from New England on my father's side. My mother's relatives were potato farmers in Idaho. My great uncle had the largest potato farm in southern Idaho.

**Farmer:** Wow! So did your parents have any involvement in farming?

**Merrill:** My dad gardened. He was a biologist by training. He grew vegetables and composted. I remember that vividly. I always liked plants and growing plants. I was into it. But I went on to zoology and animals. I was more interested in insects, actually.

**Farmer:** So what is your educational background?

**Merrill:** Well, I went to UC Berkeley on a football and track scholarship in 1959. I blew out my knee and was getting bored with the fraternity life. This was one year before the Free Speech Movement hit the fan there. Anyway, I transferred to UC Los Angeles [UCLA] for eight years and got immersed in academia, studying philosophy, mathematics, and biology.

I finally settled in biology, mainly because it's one of the few things I got all A's in (laughter)—you know how it is. I was in the biology department there, and I

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needed a job because I was kind of on my own, and I ran across a man named Monte Lloyd, who was a professor of ecology. Now, you have to understand, this is before ecology became popular. This was in the late sixties, before the environmental-cultural revolution of the early seventies. Monte Lloyd was a true genius in the intellectual sense. He was the smartest person I ever met. He was interested in spatial arrangements of animals, and mathematics, and how you can look at the spatial arrangement of living things and determine a lot about how they operate. He invented a series of indexes. So I got involved in statistical biology. At the time it was interesting, but later on it became boring.

He went on to Chicago, and his good friend, Joe Connell, who was probably one of the three or four most famous ecologists on the planet, was up at UC Santa Barbara studying diversity and stability in ecosystems. I went off there with my first wife and we settled in married student housing, where I met my second wife, Yedida. We celebrated our fortieth anniversary this year.

Anyway, Joe was an absolutely amazing human being, one of my very favorite people. To give you an idea of his integrity, we were at a conference in San Diego once and they were just beginning to do DNA analysis. Someone had actually sacrificed and taken the DNA from thousands of some small mammal to show that they were different. And here're all these eminent ecologists, and here's Joe and his little cadre of hippie graduate students from Santa Barbara. Joe raises his hand. "Excuse me," he says. "I've been studying ecology for thirty-five years. I can tell you absolutely without any doubt that all living things are different. And

I didn't kill anything." And he sat down. That was Joe Connell. He didn't take any crap. He just cut to the chase. He was that kind of scientist.

He would go out into the field with me. He taught me how to go out into nature and see things that other people don't see. "Not *things*," he said, "but patterns. Don't look for things, look for patterns. Watch how animals interact, not how they are. Take the time to watch how they behave." He would have me look at a flower for an hour. Just stare at it. He said, "Don't get Zen-y on me. Just look at a flower for an hour." And he was right. You become *in* to nature. There's no non-trivial way to say it. You just become part of nature, and then nature starts doing its dance around you. Then you become the observer that all these great scientists are, that know how to look at nature and see the patterns. He taught me that. He was really good at that. Professionally, he was the first person to demonstrate biological competition: that is, species interactions involving common resources in short supply. One of the great lessons of ecology is, unlike the human condition, in nature it's extremely easy to demonstrate symbiosis, but it's extremely difficult to demonstrate competition.

**Farmer:** Why?

**Merrill:** Because it doesn't exist very much. This is where Darwin got off on the wrong track. Darwin did make some mistakes. One mistake he made, the main mistake he made, really, was the fact that he failed to recognize "reciprocity." That is, he thought at the time that the environment impinges on the individual life form and changes it. He didn't see that the living things also change the environment, which changes the individual, which changes the environment,

etc., etc. So what that means, this reciprocal relationship—and it's happened in physics, it's happened in every science—it means that nothing is totally predictable, ever. And this is when they talk about the slow death of science—Science is amazing because it is basically identifying itself out of existence. Science is saying things are reciprocal therefore they're not predictable, and science is supposed to be predictable. See what I'm saying?

**Farmer:** Yes.

**Merrill:** And that's why science is just increasingly going into practical technology. I believe science is becoming metaphysical in many ways.<sup>1</sup> Because of quantum theory, physicists are the first to go. I'll tell you, I'm not even in science anymore. I am somewhere else.

**Farmer:** And there are mysteries there.

**Merrill:** Mysteries. And biologists finally say, "Okay, now evolution is reciprocal, therefore it's not predictable." Darwin also didn't know anything about rapid changes, that sometimes you get these big changes in evolution "equilibrium." He didn't see the big picture. He got us going. But he didn't see all of it.

So, anyway: Connell. I learned a lot from him. He was a special man.

**Farmer:** So what were you doing with your research in those years?

**Merrill:** Well, I was looking at the life that lived under kelp wrack on the beach, which sounds kind of funny but, you have to understand, graduate students

usually reinforce the research of their major professor in some way. That's how you get on board. And that's okay. That's the way it is. So I asked this question, "What does diversity and stability look like in an ecosystem that changes all the time?"

**Farmer:** A complicated question.

**Merrill:** Very complicated. Because the kelp wrack that washes on the beach is an ecosystem. You've got predators and stuff. The interesting thing is, if you look at it, you've got more predators than prey, which is the exact opposite of every other ecosystem. I said, this is really weird, and I just started getting into it. Then, unfortunately, the riots in Isla Vista started. The Vietnam War was consuming me. I couldn't do research any more.

**Farmer:** Because you were protesting?

**Merrill:** I was protesting all the time, constantly, because the morality of the war was just unfathomable. It was unbelievable. I said, I've got to do something more relevant than this.

**Farmer:** You quit the program.

**Merrill:** Yes, I quit. I look back on it and I quit an absolutely amazing opportunity. But where I was going was research, and I didn't want to do research. I wanted to teach. People say, well, you could have done both. I say, no, not really. That's not the way it works in higher education. So I quit and went



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and helped start the El Mirasol garden in Santa Barbara and then just went from there. Never looked back. Didn't regret it ever.

**Farmer:** There were anti-war riots in Isla Vista.

**Merrill:** Oh, yes. Big time. It was funny because there was the Left and the Right. They were both going at it. I remember going to a John Birch Society meeting and looking at it. Because basically I'm so far Right I'm Left, so I thought, maybe I'll go to that part. Got kicked out of the John Birch Society and then I got kicked out of the Radical Students Union, all within a week. They booted me out. It was then that I realized my politic wasn't Left and Right, it was up and down. It was centralist-decentralist. It wasn't left and right. I hooked up with Murray [Bookchin], who lit me up with his very famous essay called "Ecology and Revolutionary Thought," which changed everything. Lots of people were changed forever by that essay.<sup>2</sup>

**Farmer:** Was he in Santa Barbara?

**Merrill:** No, he was back East. I read it. I said, I got to talk to this guy. Then he came out to Santa Barbara, and the rest is history. That essay changed everything, because I knew that I wasn't crazy. He convinced me that I was not crazy because I did not think like everybody. Because to me, the problem was centralism. He was one of those people in your life that throws you a lifesaver, and opens the gate and you're forever changed.

When I left Santa Barbara, I took that whole theoretical ecology, diversity, stability thing I had been working with and I did turn it into what I wanted to,

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which was its application to agriculture. That's what I really wanted to do. I couldn't do it in graduate school so I just did it.

**Farmer:** So *Radical Agriculture* is your Ph.D.<sup>3</sup>

**Merrill:** No, I wouldn't say that. If I had done a Ph.D. it would have been on diversity and stability in cultivated ecosystems, something like that.

**Farmer:** Where would you have done that? Was anybody ready for that?

**Merrill:** No. But ten years later, bango, there it is everywhere. Miguel Altieri of UC Berkeley took it on. Miguel basically got the right idea at the right time and his whole career has been based on that: agroecosystems. That's what I wanted to do, but it was just too early.

**Farmer:** So you all were trying to find that. Do you think that came out of the [UC] Santa Barbara ecology department?

**Merrill:** Well. You know, I have no idea where it came from. All I know is I used it, and I never saw it before I used it.

**Farmer:** It's putting two ideas together.

**Merrill:** Yes, the ecological aspects of agriculture—which includes its energetics, by the way. The two parts of it were the energetics of agriculture and the ecological efficiency of agriculture. But the ecological efficiency, in the long run, is the same as the energetic efficiency. How you tie all that together was what I was consumed with most of my adult career. But I got sidelined by teaching and

stuff like that. So I never really dove into it. But I followed people, and a lot of people— You put that on the web now, and God, there's thousands of articles on it. Thousands. I wish I had pursued it. I just couldn't. I didn't have the time.

**Farmer:** I think you did plenty.

### Meeting Buckminster Fuller

Tell me about meeting Buckminster Fuller.

**Merrill:** Oh. This was in the summer of '64. I had just left Berkeley, blew out my knee, couldn't play football, went to UCLA. I was working with Dr. Monte Lloyd and he was studying the periodical cicadas. These are insects that come out in prime number years. Prime numbers: 11, 13, 17, 21—numbers that can only be divided by one or themselves. He was fascinated. Why is this happening? This is an interesting question. It turns out, the subtext of this is the question: how do you escape your enemies? Well, you're in the ground. Now, if I'm in the ground for one year my enemy comes out every year, bango, I'm getting eaten, right? Every two years, same thing. How about every three years? A lot of things have a cycle of every three years. What if I come out every five years? The predator has got to come out either every year or every five years to keep up with me. But if I go one year with very little food because I'm still in the ground, so by the end of four years your population is still low because you're still in the ground. At five years, bango, you come up and the predators are low in number. How about every seven years, or every eleven years? How about thirteen and seventeen? There's a thirteen-year cicada and a seventeen-year cicada. That's even better.

Same reason. To eat cicadas you have to either come out every year or every thirteen years. This is nature. The genius of evolution is just mind-boggling.

So we were back there studying this critter, and we had been working for like three straight weeks, day and night, twelve hours a day, doing censuses of cicadas in the forest of southern Illinois. Amazing experience. The cicadas make noises so loud you can't hear yourself think.

**Farmer:** What forest was this in?

**Merrill:** Well, this was with the research station of Southern Illinois University that was in Grand Tower, Illinois, a levee town in southern Illinois. Most [residents] are on welfare there, a very poor town. So after many weeks of hard work, Monte sends send me off to a fraternity party at Southern Illinois. Now I'm (claps hands and rubs them together), I don't have to go into detail. I've been there for like three weeks; give me a break. I go to this fraternity party, and of course I'm looking and hustling and going around, and we're in this fraternity, and I'm sitting on this couch, and I'm kind of waiting to see if I can find a girl, or what is happening. And this man walks in, and he's like five foot two, bald head, this little tiny guy. I'm on this end of the couch and there's this other end of the couch and he just sits down. I'm looking around, "How do you do. My name is Richard Merrill." He says, "Hi." (slowly) Then he looks up at the wall and he starts looking at the wallpaper and making these kind of off comments. And then after ten minutes you realize this guy is really smart. I mean, way smart. So we start talking about geodesic domes. We're talking about all this stuff. It's hard to explain. Have you ever talked to someone that right off the bat they're out there,

they're just *out there*? Right off the bat. No small talk. Just this expansive architectural frameworks of cities, and he's going on and on. I'm talking to him about biology. He's fascinated about biology and ecology and so we're talking back and forth. It's not just me listening. He wants to know about diversity and stability, and how it applies to cultures, and should we diversify culture to make it more stable? We're going on and on for about an hour and then he just says, "I have to go. By the way, my name is Buckminster Fuller and it was very nice meeting you." And I said, *Buckminster Fuller*. (sotto whisper) I've been talking to Bucky Fuller for an hour. Whoa!

**Farmer:** Wow! How did that happen? What was he doing at a fraternity party?

**Merrill:** To this day I have no idea. All I know is that he was a professor at the university. He just left. I never saw him again. But it was one of those experiences in your life where this kind of flame comes in and goes (makes whooshing sounds) and you go, thank you.

**Farmer:** That's great.

### Coming to Cabrillo College

Okay, so what year did you start at Cabrillo?

**Merrill:** 1975.

**Farmer:** And they didn't have any horticulture program?

**Merrill:** No horticulture program, which I thought was odd. I walked into the vice president of instruction's office, an incredible gentleman named Floyd Younger. Like other people in my life, Floyd was someone who opened a gate of opportunity for me. A guru, if you will. He looked at my resume and he said, "Well, fine. But you have no classes in horticulture here." I said, "Yes, I've never had a horticulture class in my life, but so what? You learn as you go." I thought, well, that's the end of that, and started picking up my resume. He said, "Wait a minute. Answer me something. Isn't horticulture basically just applied biology?" "Yes." "Well, you have degrees in biology. Why don't you just teach applied biology?" I said, okay. In those days there was no affirmative action. You went in and bingo, you were hired. I'm not against affirmative action. I think it is great. But in those days it was kind of, if you had it, you had it. And if you didn't, you didn't. I was lucky. So I started the horticulture program.

**Farmer:** Was it under Biology?

**Merrill:** Well, initially it was, and the biologists weren't very happy with it, because it was a vocational program in an academic department: "You can't do that." This vocational-academic rift at community colleges is a whole other story. So I went to the powers that be and I said, "You need to start a whole new department. This is crazy. You need a horticulture department at a community college in an agricultural community." So they said okay. I was hired, not because of horticulture, but because I was an organizer. I'd had a lot of experience in organizing things and conferences and stuff like that. So that's why

I was hired, to organize and lead, as much as to teach. But I wound up really loving to teach.

**Farmer:** Were the conferences agricultural?

### Alternative Energy

**Merrill:** Well, alternative energy. This was 1975-1978; we organized a bunch of alternative energy conferences in Santa Clara and San Jose. It was sort of a big thing. We would show people how to make solar collectors. It was very similar to what's happening now. History is a spiral. It comes back on itself at a new level. And the new level is that we're seeing now the same dialectic that we saw in the early 1970s. Then it was overpopulation. Now it's global warming. The important thing, though, is to understand that the perspective is getting larger. It's getting global.

That's the crisis. But the scariest part that most people don't realize is that global warming is exponential, because as you melt ice the reflectivity disappears and more heat is absorbed. So a little bit of melting ice—it just happens faster and faster. People say, "Well, it's happening too fast. It can't be real." But the point is that the fact that it is happening faster than expected *tells* you that it's real. And the lag time between problem and solution is so great now that the chances for us fixing this, in my opinion, are really slim.

**Farmer:** So what do you think happened [after] the seventies that slowed everything down?

**Merrill:** Well, it was the oil embargo, right? One of the most important concepts that came out of the seventies environmental movement was the “bottom line,” the nature of net energy. We did our analysis with agriculture, but you can do it with anything. For example, you want to bring in soft phosphate from Florida. Okay, you mine it, package it, and ship that from Florida to California. Calculate the BTUs. Now make chemical fertilizer locally and I can show you that energetically it’s cheaper to use local chemical fertilizer than distant natural ones. So if you are an organic agriculturalist and you are doing all this stuff, you are faced with a dilemma. Because the bottom line is not fossil fuels. The bottom line is energy efficiency. The monetary thing for tomorrow is energy credits, carbon credits—call them what you like. It’s all the same thing. I’ve been discussing this with people in sustainability for decades. You can’t just focus on natural this and natural that. You gotta focus on what’s energetically efficient.

### **Decentralization**

If you really think about sustainable agriculture, you must ask an important question: what is the purpose of agriculture? The purpose of agriculture is not just to produce food, but to also sustain land for future generations. So agriculture should be sustainable. But it’s got to be sustainable in two ways: It’s got to be sustainable of the land. But it’s also got to be sustained by the people. If you really, really want to have an incredibly efficient culture energetically, you have to decentralize it in a number of important ways.

Consider, for example, in Nicaragua, where the people were trying to implement Integrated Pest Management (IPM) as part of their growing methods. And they



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couldn't get the IPM programs to go. Why? Because IPM depends entirely on local conditions and control over those conditions; it is inherently a decentralist practice, and the government would lose power. At the heart of this whole thing is a really skewed way of thinking about politics that we have in this country. We think it's Left and Right, and it's not. It's up and down. I mean, the Left and the Right are both different views of a centrist government, how you centralize power. Many things obviously need to be centralized—for example: health care, defense, and foreign trade. But the up-and-down represents a political view which holds that much of our centralist power structure needs to be decentralized. And not just political power, but energy power as well. Think about it. Renewable energy is decentralist. Why do you think oil companies don't want it? Because [they] lose control.

Once you get to a renewable energy infrastructure, then every region is unique by definition. The wastes are unique; the solar energy is unique. It's all endemic. Agriculture is the same way. It's all unique. I don't see any difference between agriculture and solar energy, because they are both generating solar energy. You're creating it. So therefore the philosophy is the same. I want a future that's balanced, that's decentralized. That's why I don't vote. Because every politician will send you a different song on the centralist fossil-fuel philosophy. And I don't think that's where our culture ought to go.

**Farmer:** So I'm going to ask your opinion about the national organic standards. That's the centralist idea of organic. It's through the federal government. And it didn't start out that way. So what do you think?

**Merrill:** Of course it didn't. What do I think? Well, I think what really gets me angry more than anything else is when the government insults my intelligence. We won't even talk about [President] Bush and his lies. But what really insulted me was when they came back with, okay, we can include in the new organic laws cows eating their own crap. We can include genetic engineering, irradiation. All these things. Now, no one knows why they put those in. To see if they could get away with it? To feel out and temper the public's opinion? Who knows why they did it. But it's so typical of the federal government to do that sort of thing and not see the essence of what we're trying to do here. They seize the power. This is why I tell my students on the last day of class: "One of the most powerful things you can do politically is to stimulate your local food economy. Because in that single act you generate decentralism. You generate local jobs. Just buy your food from local growers. Because believe me, if you're in Denver, Colorado, you can't do that. So you got to take advantage of it here. You want to keep this place going and growing. Go to farmers' markets. There's a farmers' market every day of the week around here."

### **The Challenges of Being an Organic Farmer**

**Farmer:** There have to be some really good reasons why this is such a hotbed of organic and sustainable agriculture, this region. I know it's partly the climate but also people having those ideas. You've had so many students over the years. Some of that must have come through your classes.

**Merrill:** I remember one day a guy came to me and he really wanted to grow organic. He had these ideals. You can really get idealistic in this. And the truth is

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that out of every ten people who are going to grow organic vegetables for a living, two are going to make it. Maybe. If they're lucky. I mean, over the years, out of all my students, I have maybe five that have been very successful local growers, and maybe fifty that have gone someplace else. That's just the reality of it. They have to know that it's really, really difficult. Knowing how to grow is not enough. Growing is easy. Selling is the hard part. You got a perishable item there. Where are you going to go? You want to get up Saturday morning at five o'clock and go to the farmers' market. You want to do that? Okay. People do it. Do you *want* to do it? I didn't want to do it. I wanted to teach. I'm not a grower. I want to teach how to grow.

Before I came to Cabrillo College, I grew garlic up in Pescadero for a couple of years, but it wasn't what I wanted to do. It was five acres of garlic.

**Farmer:** Conventional?

**Merrill:** Well, no. It was organic. But (laughter) we took all the garlic and we stuck it in our bathtub in this house we were living in up in Half Moon Bay. And the whole neighborhood just reeked. People would come out (sniff sniff), "What the hell is going on here?" The whole house just reeked of garlic. We had nowhere else to keep it. Then we took it down and planted it. It was just amazing. I'm sure you've had this experience—did I do that when I was younger? God, what was I thinking?! (laughter)

**Farmer:** (laughter) Yes, you just kind of get into things.

**Merrill:** I planted five acres of garlic from a bathtub? Okay... Well, anyway. We had a little money and came down here, and I decided I didn't want to do that anymore.

One of the things that we tried to get people to do in the vocational program at Cabrillo was to realize something very simple. The hardest thing for anybody to do is to get started. So when a student would come to us and say, "How do I get started?" I would say, "You've just started by asking, how do I get started." "Well, now what do I do?" I'd say, "You get a bank account, you go get some business cards, and you go get a job and you lose money and you lose money again." You just tell them what's going to happen. You're going to lose money. Every bid you are going to lose money in the beginning. So what you want to do is stake out some money, get yourself going for four or five or six months. And lose money. That's what you pay to learn. You have to give them some positive way of looking at the reality of the world, which is that you are going to lose money in the beginning. No one makes money the first few jobs they do. And where I am going? Where you are going is that someday you're going to be in a position where you are going to interview people you want to work for. Because ultimately, taking care of landscapes is about teaching people what you want to do, not what they want to do.

The only way to get there is to just keep plugging. And someday— I have people who are getting fifty or sixty bucks an hour and they interview people that *they* want to work for, and what they want to put in. That takes years, but once you get there— The whole point is you can get there with growers, too. But you just

have to be real about the business. It's a ruthless business, because it's based on the environment and the changes in the environment.

## **The Cabrillo College Horticulture Department**

**Farmer:** So what were the challenges of founding the horticulture department?

**Merrill:** The challenge is figuring out the system and what you can get away with. I mean, the way I work in a bureaucratic system is very different than most people. Number one, I work by intimidation instead of diplomacy.

**Farmer:** (laughter)

**Merrill:** And the reason I do that is because I can do it. And secondly, if you really think about it, administrations change about every three or four years. And as an administration changes, different ideas about what you can and can't do change. I didn't have the patience to be diplomatic and wait for policy and protocol. So what I would do, is I would wait for lame-duck administrations, and during the changing of the guard make big changes to the horticulture facility. It pissed a lot of people off, but the results are there to see. You simply can't operate that way anymore. When the new administration would come in, I returned to an extremely low profile. I didn't go to meetings or anything. I just kept low and I lived by the philosophy that it's much easier to say you're sorry than get permission. I lived by that.

**Farmer:** It must have been kind of material-intensive to do a horticulture program. You had to have space and buildings and greenhouses.

**Merrill:** Well, what happened was there was a parking lot about to be built. The only public outcry in the history of Cabrillo College that we know of happened in the spring of 1975, in which they rejected a proposal to put a parking lot at the east end of campus. I came there in the summer of 1975, and Floyd Younger took me out and he said, "Okay, what we're going to do is we're going to go to the board of trustees and we're going to get this to be officially a horticulture/biology center." He hooked the biology in there because then the power was there. We put an irrigation system in rapidly, and set the tone for a horticulture workplace to evolve.

**Farmer:** Did some investing.

**Merrill:** Yes, Floyd was great that way. Without him, I wouldn't have been there. Sometimes people open these gates for you. You just have to go into them. Anyway, so that's how that started. But then he said, "Here's five hundred bucks. I'll see you next year. Let me know what happens." He never delivered ultimatums like: "Here's this, and let's see what you've got." He just turned me loose, because I think he knew I could do it. So I went out and hustled and talked and scammed. I was pretty good at that kind of thing.

### Settling in Soquel, California

**Farmer:** So were you able to buy property here in the seventies?

**Merrill:** Yes. My dad was a real estate broker. And he told me, "First of all, buy within five miles of the ocean. Do that." And he was right. Secondly, he said, "When you go into a new community, drive around, and if you see a lot or a

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piece of land you like, find out who owns it, go to the city hall and find the lot number, find the owner, and make him a offer. Because everything is for sale.” So we drove up on Fairway [Drive, in Soquel] and it was amazing, three-acre plots up there. It turned out to be owned by a twenty-two-year-old guy. He was trying to raise a half million dollars for some land in Oregon. So we got a three-acre lot on a marine terrace in Soquel for twenty grand. That really dates me.

**Farmer:** With no house, right.

**Merrill:** No house. We built the house ourselves. You could do it in those days. You can't do it without a licensed contractor anymore. We actually got a loan, built it with help from friends and how-to books. And built it, and lived there for thirty years with another family in a cooperative living situation. Two nuclear families sharing the management of a home and raising our kids together. I'm quite proud of that experience. After I retired, we sold our interest to them and moved to Scotts Valley.

**Farmer:** That sounds like a good place to live.

**Merrill:** It was. Three acres in Soquel. It was kind of paradise.

### Farmers' Market at Cabrillo College

**Farmer:** That's great. Did you play any role in the starting of the farmers' market at Cabrillo?<sup>4</sup>

**Merrill:** Someone called me and said, “How do we get a farmers' market on the Cabrillo campus?” I made a few calls to the administration at the time. My angle

was, "It's sitting there. Why don't you rent it out?" Over the years it got moved around campus a lot, and even morphed into a used car and antique show once. Today it has a permanent home at the west end of campus on Saturdays. I think it's the best one in the area, but then I'm biased.

**Farmer:** Isn't it about thirty years old?

**Merrill:** Yes, and it's still there. It's a great farmers' market. It's a perfect blend.

### **Editing *Radical Agriculture***

**Farmer:** Okay. Well, why don't you tell the story of what led you to edit the book *Radical Agriculture*.

**Merrill:** A lot of it stems from my relationship with Michael Perelman who was a professor of agricultural economics up at Chico. His main field of interest was agricultural energetics and the economics of a non-renewable resource base. He and I did a series for *Mother Jones*. We wrote an article called "Texas Male Sterile," which is the story of the gene that prevents tassels from forming on corn, which in itself is okay because it saves labor, except that it makes the corn extremely susceptible to a corn blight disease. We lost thirty percent of our corn production in the early seventies, which really affected our economy.

But then I got really interested in agriculture. I had just come out of my Ph.D. studies with Joe Connell. As I mentioned earlier, my primary research interest is cultivated ecosystems and the elements of their diversity and stability. I came into horticulture through the back gate, through research. And I was fascinated



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by the fact that at the time some Russians were doing interesting research by planting certain plants in orchards to attract beneficial insects. There was a whole biology to it. I've written several articles about it, how you plant certain plants in the garden to attract beneficial insects and wildlife. During my career, I've tried to point out that landscapes aren't just aesthetic. They are also wildlife refuges, especially for birds, amphibians, insects and spiders. We should be thinking about this very strongly, not only in horticulture, but also in agriculture in general. But it's sticky because when you start mixing crops, you mix harvesting techniques, all these things get weird. We were trying to put rows of certain cut flowers in strawberry beds years ago, that attract beneficials, and we couldn't do it because we couldn't get people to harvest the cut flowers and the strawberries simultaneously. So, these little deficiencies in the infrastructure, they crop up, no pun intended, and cause you all kinds of problems. You have this idea of what's ideal and wish it would work, but then it doesn't work because the infrastructure is wrong.

I don't know where agriculture is going. What I'm worried about right now is that agriculture is going to get bound up in this search for biofuels, and get bogged down even more in the chemical/monoculture centralized malaise it finds itself in now. For example, the infrastructure for growing corn is already in place so it has become the crop of choice for biofuels. But corn is very inefficient to grow, and that only compounds our energy problems.<sup>5</sup>

**Farmer:** So, going back to *Radical Agriculture*, would you consider that a radical concept?

**Merrill:** When I was gathering essays for the book, my good friend Murray Bookchin had written some political books for Harper and Row. He wrote to his editor and said, "You should take a look at these essays. I think this guy has got something." At the time it was called some ridiculous title. And he looked at me right in the eye, and I'll never forget this, he said, "No." He says, "You're just denying this whole thing. You've got to call it *Radical Agriculture*. Go to the root cause of the problem, radical. (laughter) This is not a liberal solution. This is a fundamental problem here." I said, "Okay, Murray. Okay."

I did edit the book. And the whole purpose of it was to collect the mindsets of people who were looking at agriculture in an entirely different way at the time.

There's an article in the *San Francisco Chronicle* this morning about people who have challenged themselves to buy food that comes from within a hundred-mile radius of the San Francisco Bay Area. Including everything. They disavow coffee, what stuff they can't get here.<sup>6</sup>

**Farmer:** Ohh!

**Merrill:** I know, I know.

**Farmer:** I can't do that. (laughter)

**Merrill:** Well, there's a whole list here. It's wonderful because all this energy that's spent in getting this exotic food to you is part of the problem. You have to eat seasonally and locally and just get used to it. And challenge yourself in the cooking. I told both my children: "You aren't leaving this house until you know

how to cook. There's no way." Because cooking is crucial to nutrition and health. It's crucial. It's not just something to do. It's part of this connection to health we have. They both became fabulous cooks.

But when I read that I thought, wow, this has come full circle. We were saying this thirty-five years ago. This was our point.

**Farmer:** Yes, there's something about being ahead of your time.

**Merrill:** Well, you know, Ellen, the real challenge is that there is a fine line between arrogance and self-confidence, in seeing that things are going to happen, and they happen and you say, I told you so. That's one of the more unpleasant things you can tell any human being: "I told you so." So you have to shut up about it and internalize it somehow to be happy. Or you go insane. Do you know what I'm talking about?

**Farmer:** Yes. Well, let's go back to your friend at Chico, Michael Perelman, and what got you to write this book. It was the research that you started talking about.

**Merrill:** During the early seventies, fresh out of graduate school and searching for a job, I began looking into the energetics of agriculture. At the time, the concept of net energy was starting to be used in the analysis of environmental impacts. The reasoning went: energy is the basic resource of civilization; in the future, energy will be a unit of currency, like carbon credits now, and the worth of a thing will be determined by how much energy it takes to make it, versus how much energy it provides (net energy). People were applying net energy

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analysis to various kinds of agriculture. The breakthrough analysis came from David Pimentel of Cornell. He showed that if you consider all the primary inputs to corn production (liquid fuels, pesticides, fertilizers, irrigation, etc.), it takes about five units of energy to make one energy [unit] of corn. Which is why making ethanol out of corn is energetic nonsense. Other modern-day crops were examined and all had a negative net energy. The highest energy drains were liquid fuels (biofuels), followed by nitrogen fertilizers (get livestock back on the farm).

The real problem isn't so much the net energy drain, but the fact that the current energy source (fossil fuels) is non-renewable. Imagine a sensible civilization creating an infrastructure for making a renewable resource (plants) using a non-renewable one (fossil fuels). It's quite insane, even from a clinical point of view.

I was also still interested in the theoretical ecology I had pursued in graduate school, specifically the relationship between diversity and stability in ecosystems. Why are diverse ecosystems more stable than less diverse ones? Why does a simple meadow change back into a complex forest, that stays a forest until it's destroyed by fire, only to start over again as a meadow? We spent years arguing over how to define "diversity" and "stability." Our models began making sense when diversity was defined as the number of interrelationships between different feeding levels—carnivores and herbivores, not numbers of species—and we defined stability as resistance to external changes, not persistence through time.

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Anyway, it was a logical jump for me to wonder if agricultural systems could be made more diverse and thus more ecologically efficient (resistant to external changes). For example, the ecologically simplest agricultural system is a monoculture, which is also the easiest to disturb. In fact, the monoculture is part of the problem.

Today you see numerous books and articles touting the use of certain flowers and mini-habitats to attract and nurture beneficial wildlife in the garden. The seeds for that idea were sown by a few of us in the early seventies. My first of several articles on the concept of habitat gardening was published in the first edition of my book *Energy Primer* in 1972.<sup>7</sup> While doing research for it, I began networking with people throughout the country who were writer/activists in the area of alternative agriculture. It was a small community of like-minded people who were approaching change from a wide variety of directions: economically, ecologically, culturally, etc. It was obvious that no one person could accurately describe the alternative agriculture movement. So I decided to do *Radical Agriculture* as a series of essays written by experts in the various areas of activism.

**Farmer:** How did the different authors come to the book?

**Merrill:** Well, after I was networking in the early seventies to get information about net energy and agriculture, I found out that the whole alternative agriculture subculture, if you will, actually consisted of an incredibly disparate group of people who were coming at change in agriculture from all sorts of different ways. So the book wound up as an amazing, eclectic group of people.

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Murray Bookchin, who kind of got things going, is an anarchist writer. He was my dear friend and I loved him dearly. He sort of kicked it off with trying to explain what radical meant in that sense. Wendell Berry, of course, is the poet laureate of alternative agriculture. And you have to remember that in 1973 and 1974, when I was researching this, these people weren't so famous. They've become famous. This is an important point. Because when you look at them now you go, wow. Wendell was the most famous one. He was pretty well known.

**Farmer:** He already had his own books out.

**Merrill:** Yes, he did. Peter Barnes, I have no idea what happened to him. Or Nick Kotz, Sheldon Greene. As I said earlier, Mike Perelman was a professor of agricultural economics up at Chico [California State University at Chico]. I haven't seen him for a while. He got me going on the whole energetics thing, and was one of the more important people in my life. Jim Hightower, at the time, had written *Hard Tomatoes, Hard Times*, which was a very interesting book, an indictment of the USDA. But he was certainly no secretary of agriculture for Texas, which he became later. Then he became very famous. If I were president, he'd be my choice for secretary of agriculture without even batting an eye. He's, of course, extremely well known now, and has his radio show. He's a real character. I like him a lot. These other people, Robin Myers and George Baker, were both involved with the rural struggles of farm workers. I never even met them.

Paul Relis. Paul was director of Ecology Action down in Santa Barbara, and then at the state level became involved with the organic composting of resources, up

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there in Sacramento. Darryl McLeod has passed away. Jerome Goldstein, of course, has passed away, but he was one of the main editors of *Organic Gardening and Farming* for years. Warren Pierce, I really don't know. I haven't seen him. He was a botanist, a close friend of mine, but again, when I moved from Santa Barbara we lost touch. John Todd was very well known as head of the New Alchemy Institute, which I was involved with. That's how I got to know him. Interested primarily in what are called polyculture systems, modeled after Asian carp farms that utilized waste in an extremely efficient and very sophisticated—

**Farmer:** He's still doing that. He's doing the living machines now.

**Merrill:** Absolutely. John is a very dynamic fellow. I have a lot of respect for what he's done. He and I had a lot of interesting discussions together, really interesting. In fact, John Todd, and I, and Murray Bookchin would stay up for hours just talking. Hours and hours. It was amazing. Bill McLarney was, with John, probably one of the most knowledgeable people in the country about aquacultural systems. We just threw that in. Of course that's come true, actually. At the time aquaculture was unheard of, and now it's everywhere. Especially marine aquaculture, which he wasn't particularly interested in. Helga and William Olkowski, what can you say about them? They were legends in California alternative agriculture, especially in entomology. He was an entomologist, had his Ph.D.

**Farmer:** Were they legends at the time, or did they become legends later?

**Merrill:** They were pretty famous when I knew them. They had written some books. And Bill, Bill introduced me to insects in the garden. He sat me down in my garden one day in my house that we were renting in Santa Barbara and he pointed these insects out to me. I just took off after that. I'm very grateful to him for that. He really turned me on to insects in the garden.

John Elter was one of the leaders in the solar energy movement at the time, in the early seventies. I have no idea what happened to him. He worked for Xerox. He had this idea of coating solar energy panels like the Xerox machine coats with ink. It was kind of ingenious. Murray (Bookchin) and (Ronald) Weintraub again, were just kind of celebrities at the time, who I had contacted. I only met about half these people. I did most of this stuff by mail.

But when you look at it, what ties all this together is searching for a way to rethink agriculture. Most of it's fanciful and ideological; I know that. But I think it was one of the very first to describe many of the alternatives today.

**Farmer:** I've read the entire book. So much of it is still relevant. So much just went right by a huge population of urban people who just kept eating—

**Merrill:** Yes. (laughter) I like that.

**Farmer:** —and didn't really think. They thought less and less about where their food came from.

**Merrill:** Exactly. That's even true now.



## Sewage Sludge, Compost, and Topsoil

**Farmer:** There's one topic I want to ask you about that I feel like has changed dramatically. Probably others have, too. But I noticed it. And that was when the organic rule came in, in 1998, when everybody wrote all the letters to the USDA protesting. They were going to have GMO crops. Sewage sludge.

**Merrill:** And irradiation, yes.

**Farmer:** And irradiation. From some of the articles in here, I got the idea that sewage sludge was going to be used. It was going to be a good product to return to the soil and so forth. There were some articles about solid waste management.

**Merrill:** Right.

**Farmer:** It seems like that got shifted, and I don't know how.

**Merrill:** Well, one way it got shifted was— It's very interesting you should say that. (sigh) Again, it's fuzzy. The early seventies are real fuzzy. But during that time there was a conference on composting sponsored by the Rodale people and people came from all over the country. I went to it. It was well done. All about industrial composting, municipal composting. Which then again was a totally foreign— It was like from Mars. A few of us got together and were asking the question: well, this is all nice, but if the stuff you're composting is toxic, what are we doing? That's the question we asked.

A lot of people were asking this question, not just this small group. It sort of stonewalled the whole conference. Because until you deal with that— That's

what changed, is that the toxicity element in waste, where it comes from, has to be dealt with. In terms of municipal sludge, the worst municipal waste is from the homes. Now, you can make an argument that some of the industrial stuff is pretty concentrated, and it's true. But if you look at what people flush down toilets, it's pretty grim. And still do, to a certain extent. Because a lot of pesticides, for example, aren't regulated at the residential level. I can go from nursery to nursery and get a whole bunch of pretty toxic stuff and throw it down the toilet. People don't know that pesticides are regulated primarily only at the agricultural level, and that half of all pesticides, more than half, are used residentially.

**Farmer:** Like on lawns.

**Merrill:** Lawns, yes.

**Farmer:** Golf courses.

**Merrill:** Golf courses. Well, golf courses are pretty regulated, in the sense that they are commercial. It's the homes, individual residential homes, that are the real problem. That's what's changed.

**Farmer:** Okay. So you guys stonewalled the conference.

**Merrill:** Well, no. I won't say we stonewalled. Because it was way too big for that. A lot of people were asking this question. But yes, after that people would make statements about certain composting techniques, and then the question

was, “Well, where does the waste come from?” It made people ask that question. That was beautiful. I loved that.

**Farmer:** Sewage sludge was out in the organic rule. And it’s very specific about how long you have to cook the compost to be able to be use it, and at what stage.

**Merrill:** I agree with that a hundred percent. Because if I were to make regulations for organic gardening it would be that you either have to use green manures or compost.

**Farmer:** Cooked compost.

**Merrill:** Well, if you want to spend about an hour talking about compost we could do that. (laughter) But it’s a good point, because the terms are all used wrong. They really are. When you get compost together, when you get organic material together and you compost it, all you’re doing is stabilizing organic material—that is, you are neutralizing the PH; you are leaching salts; you are volatilizing toxins. You are stabilizing it so that then that can decay in the soil. You are just preparing the organic matter so the soil-life can do what it has to do. That’s all composting is. Composting is not making organic matter. It’s not making humus. It’s preparing organic matter for future decay.

**Farmer:** So making the right environment for it to —

**Merrill:** Exactly. That’s why it’s really crucial to put the compost together correctly and treat it like any other microbial culture, like cheese or wine or bread. That’s what it is. It’s a microbial culture. You can take old compost and

inoculate another pile with it. It's great. It works great. Anyway, that's a whole other subject.

My point was that compost is compost. It's stabilized organic matter. Humus is a whole other thing. Humus is the end product of that decay. And organic matter is organic matter. So they're all different things. And people use those terms interchangeably.

**Farmer:** So could you talk then about how topsoil fits in? Does topsoil occur naturally in a place before people have farmed it?

**Merrill:** Well, I want you to visualize something for me. Take a huge boulder, all right? Now the boulder cracks along straight lines, because it's made of crystals which are isomorphic, so it cracks and water gets in there and freezes and expands. This thing keeps breaking and breaking and crumbling and crumbling and crumbling, right? So pretty soon what you have on the top of the ground is crushed crumbled rock. We call it sand, silt, and clay, right? These animals out here, they're not fools. They know that there is dead air space, which is an insulation. Right?

**Farmer:** Okay.

**Merrill:** So if I'm living on the surface, where do I go? It's too hot, too cold. Where do I go?

**Farmer:** Burrow.

**Merrill:** Burrow. So now a whole generation of life starts to evolve in this nice, insulated spot called soil. As that develops, the soil becomes alive. Literally, it becomes alive. And all the enzymes produced by the microbes and all the feces of all the animals all conspire to create topsoil, which is living soil. The soil beneath it, the subsoil, isn't so alive because it's too far down and oxygen can't get there. The topsoil is the living skin, it's the life. That's it.

**Farmer:** With microbes and all that.

**Merrill:** So when you rip that away, it's got to start all over again on the subsoil.

**Farmer:** But you can build topsoil.

**Merrill:** Yes. We did it at Cabrillo [College]. We double dug, and rototilled, and added organic matter, and in twenty-five years we increased the topsoil layer by at least an inch and a half to two inches, which is supposed to take about anywhere from ten thousand to fifty thousand years. It depends on where you are. It takes hundreds of years to do that naturally, but with loads of labor and organic matter the process can be speeded up.

**Farmer:** So what did you do with it when you had to move the Horticulture Department?

**Merrill:** Well, that's a good question. My first reaction was, "Well, excuse me, but we're taking the topsoil with us." But then some of my staff approached me and said, "Well. Let's think about this. We've got soil-borne diseases, and we have an incredible array of weeds that have built up over the years, especially

bindweeds and invasive weeds that are in the soil.” We had a garlic disease that was really bad. We had a virus. Of course, that’s spread by insects, but there were some vascular diseases that live in the soil. So we decided to leave it behind. Start over.

**Farmer:** So you have to maintain the health of your topsoil. You can lose it, I guess, to that garlic disease, right?

**Merrill:** Well, you just don’t grow garlic.

**Farmer:** Can you grow other things there?

**Merrill:** Oh, sure. It’s just that some diseases are in the soil, especially certain fungus, and they get in the vascular system of the plant, which is analogous to our circulatory system.

**Farmer:** Like the root.

**Merrill:** Yes. That’s a systemic disease. And they are the worst kinds of diseases, because they are in the soil and they are throughout the plant. Those are like *Verticillium* and *Fusarium* and all those terrible things. *Phytophthora*. That’s the worst one. It sent half the Irish to the United States. Basically, *Phytophthora*, you can’t really ever get rid of it. You have to not grow what’s susceptible to it. Even resistance is hard. Some plants can develop a resistance to diseases. Others can’t. *Phytophthora* is one of them. That’s why it’s the worst plant disease there is. It’s the perfect plant disease.

**Farmer:** And you didn’t have that one at Cabrillo. You had the garlic disease.

**Merrill:** Well, we were starting to get *Phytophthora* at the very end. By the time we moved out, we were starting to get some serious soil-borne diseases. I think the main reason for that was that we had extremely high amounts of organic matter, and you can overdo it, because then you start feeding things. And we had a really wide diversity of plants. We were bringing stuff in from nurseries, and people brought in plants from their home all the time, and we'd plant them in the ground. I think we just inoculated ourselves to death. I think public gardens are— If I were to run a common garden in which a lot of people were involved, I'd really put a cap on what people brought in and be careful about that.

**Farmer:** Interesting. I haven't heard that brought up before. Topsoil is so sacred, but like you're saying, it can get old.

**Merrill:** Yes, I like to think of it as it gets *inoculated*. It gets inoculated with weeds and diseases by the mistakes that you make.

**Farmer:** So somebody who is farming the same land in the same family for a hundred years, that isn't necessarily the greatest thing unless they are doing incredible rotations.

## Crop Rotations

**Merrill:** Well, they are doing rotations. The whole point of a rotation is to rotate yourself out of two things: One, disease. And two, excess nutrient use. So if you look at the old vegetable rotations that you see in England— There's a book by Shewell-Cooper—it's an incredible book, my favorite gardening book: *Vegetable*

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*Growing* (Faber and Faber)—[that] explains these rotations. Heavy feeders, light feeders; heavy feeders, light feeders. And then they rotate out of diseases. Some families of plants like the tomato family: tomatoes, peppers, eggplant, potatoes—they get the same diseases. So you put them as a set in the rotation. All tomato family are rotated. All leaf crops are kind of the same. They're rotated. And then you have to separate out the alliums (onions, etc.), because they have unique diseases, that kind of thing. That's how you do it.

**Farmer:** So before official science, when all this was written down, farmers did this by observing, I suppose.

**Merrill:** Well, I don't know. I honestly don't know— No. I would say no, because what they did was they just went someplace else. The rotation came in when land became limited. In fact, the first research on rotations was done in England, where they ran out of land—and the Monkshood Research Station, about 1850, 1870, they started to do rotation experiments with wheat, corn, and a legume. It's in England, very famous. It was the first agricultural research station in the world.

**Farmer:** I know there were a couple of chapters on social justice issues in *Radical Agriculture*, the sharecroppers union and farm workers—you were trying to make sure that the people who have to work in agriculture and try to make a living at it were a part of the puzzle.



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## César Chávez

**Merrill:** Right. I tried to get César Chávez to write a chapter in this. I actually had a conversation with him once, very brief. I asked him to give me some sense of the overall picture. Chávez said, “Well, I’ll tell you something. Most of the strikes that we do have less to do with wages than with pesticides and re-entry. They get couched and reinvented in an economic sense. But a lot of it, we’re out there battling for the lives of our people who are forced to go in before the re-entry levels of the pesticides are up.” He told me that.

**Farmer:** It’s important to know that things have changed since the seventies.

**Merrill:** Now, again, this was a long time ago, but he told me that. But at that time, maybe that was the original struggle. The original struggle started as a pesticide issue and not a money issue. I’m pretty sure. Check with people in the movement. They may disagree with me, but that was my sense of it at the time.

**Farmer:** Would that have been the early seventies?

**Merrill:** Yes, it would be 1973.

**Farmer:** You were trying to get him to write a piece for the book.

**Merrill:** I didn’t ask him directly. I was trying to find people who would ask him. Based on that one-sentence conversation I had with him. I said, oh, that’s an idea. I tried to find people that knew him to ask him, and it just didn’t ever happen. He probably wouldn’t have done it at the time anyway. But it was worth a try.

**Farmer:** Well, I thought it was good that you had that section in the book. I was really interested in the National Sharecroppers Association. I went and looked them up on the Internet, and they lasted for a while, until the early eighties or something like that. There is still a big association of Black farmers now, and credit unions, which were mentioned in that article, things like that. They're kind of making a comeback. In Michael Ableman's book *Fields of Plenty*<sup>8</sup> he goes and visits some farms in Illinois that go to the farmers' markets in Chicago and that's how they make their way.

### Lobbying for Organic Agriculture

**Merrill:** That's it. But if you believe that this is the way the future should be, you have to understand that initially you're going to have to finance it. You have to jumpstart people into the future. You have to give them "incentives" for doing this. If you don't, it's not going to happen. People will not change strictly because it's the moral thing to do. They won't do that on a mass scale. They can't afford to. They've got to have incentives to do this somehow.

**Farmer:** So right now in the [proposed] farm bill they're talking about millions of dollars for new farmer programs and farmer training programs, to do local organic. This is the organic farming [activists] that want this as part of the farm bill and are lobbying for it.

**Merrill:** (snort) It should be billions. Okay, I'm being greedy. But fine, this is what they should be doing. But there it is again. Who is lobbying for organic agriculture?

**Farmer:** It's the organic marketing people right now.

**Merrill:** And they are getting bigger and bigger and bigger. So how do you change things? You've got to change them economically. You've got to get people demanding organic produce at every level. I used to challenge my students to go into their supermarket and ask for the produce manager, and say to the produce manager, "Do you have any organic produce?" And if they say no, say, "Okay, well, I'll come back when you do."

**Farmer:** Did your students do that?

**Merrill:** Yes, they did it. They had to do it.

**Farmer:** (laughter)

**Merrill:** Well, I never knew if they did it, but most of them claimed that they did it. And I got feedback on it too, by the way.

**Farmer:** Oh. It wasn't comfortable, huh?

**Merrill:** Well, I got a call from the vice president [of Cabrillo College] saying, "We got a call from the Safeway manager." Okay, the student was a little high-minded about it, but the only way to effect change is to force it economically. That's the irony of it all. That's the only way people are really going to change. The great weakness of decentralized situations is that they're so vulnerable to centralization. And centralization is not particularly vulnerable to decentralization. Because centralization has power, and power is power. What more could Trump want besides a zillion dollars? Power. It's not about money

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any more. It's about power. So the decentralization I talk about ultimately is power decentralization. That's why it's so difficult to achieve it. Why should states have to sue the Feds to get stricter limits on air pollutants? Because the centralist regime is beholden to the corporations. States' rights take on a whole new rationale in the era of global warming.

In the seventies, the computer was an icon of evil centralization that was going to ruin our lives, the mantra of 1984, there on the wall—you've got to stay away from it. Now, that's still possible. In fact, in many ways it's happening, actually. But its decentralizing effects were totally and completely unrealized. How do you define democracy? Democracy is defined, I think, not by: can I vote, or even, can I consume. It's defined by the fact that all people have equal access to available information so they can make decisions. That's democracy. That's how you measure a democracy. Now, how do you get people with the same level of information? Well, computers in an idealized world could do that, to a very scary stage, where you begin to vote by computer and those kinds of things. There's no end to how scary computers can get, and there's no end to how incredible they can get. This is one of our major dilemmas at present.

**Farmer:** Well, *Radical Agriculture* was used as a textbook. I've talked to people who said, "Oh, yes. I remember that book," It was influential.

**Merrill:** The only major feedback I ever got on this book was when Tom Hayden came into Santa Cruz one day. (At the time Jane Fonda [who was married to Hayden from 1973 to 1990] had her thing up on Painted Cave in Santa Barbara, which is an alternative school with wind generators and everything.) I went up

to him and I said, “Tom, my name is Rich Merrill.” And he said, “Oh. *Radical Agriculture*, huh?” I went, “Whoa! How did you know about that?” And he said, “This is an important book.” I just went, whooo! (laughter) Man! I mean, you don’t know. You throw it out and you just don’t know what’s going to happen, where it’s going. It’s this ripple on the water of reality; it just goes someplace. I never, ever got much feedback on that book.

**Farmer:** You know, if it was published right now you could Google it and see how many hits. But you couldn’t do that in the seventies.

**Merrill:** No.

## The History of Sustainable Agriculture

**Farmer:** So how do you define sustainable agriculture?

**Merrill:** Sustainable agriculture to me is almost an oxymoron. How’s that? It’s almost an oxymoron for two reasons. One is that the political reality won’t let it really happen in an ideal sense. And number two, you cannot really sustain land unless you have rotations and a livestock that is more integrated with farm production—for manure or energy production.

And the other key to a sustainable agriculture is you have to begin powering agriculture with renewable energy systems. These are really big steps you have to take to make agriculture work ecologically and energetically, not economically. Just look at the words themselves: “ecology” and “economics.” They come from the same Greek word, *oikos*, meaning “home.” Ecology is the

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environmental home; economics the cultural one. Back then, they only needed one word. Hopefully, someday, ecology will be seen for what it should be—long-term economics.

**Farmer:** Do you think organic agriculture or sustainable agriculture, the movement, got its start in reaction to big agribusiness?

**Merrill:** It depends on where you start. You can start in 1924 with [Rudolf] Steiner.<sup>9</sup> Steiner gets confronted by a bunch of farmers from Europe. They came to him because they had a problem: they couldn't get their seeds to sprout. In those days you didn't buy seeds, you saved seeds, and they weren't sprouting anymore. The farmers believed it had something to do with the soil. So he laid down the basics of biodynamic agriculture in 1924, which has some rather esoteric stuff like putting aged manure in a ram's horn, but there's also a lot to it. It's very interesting. I like the biodynamics sense of the ecosystem, because they see the garden as an ecosystem, unlike the organic movement, which has its roots in compost and kitchen gardens.

**Farmer:** But he was discredited because of planting by the moon and things like that. By science, right?

**Merrill:** Well, it turns out that there is something to the moon planting. It has to do with gravitational pulls. But it could be as simple as moonlight. And there is something to the benefits of silicon in the soil. Plants don't use silicon, but it reflects light and it increases the photosynthesis of algae in the soil, which increases the microbial productivity of the soil. And although "companion

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planting” has long been replaced by a far more sophisticated palette of plant combinations and micro-habitats, the idea was an early dead-on. There’s something to all this. But for me, the various natural methods were never connected as a whole biodynamics. To me the dynamics and challenges of a garden or landscape were crystal clear only when I viewed them as an ecosystem. It’s just the ram’s horn is not something I have figured out yet.

So then after that, then the other wing was organic, and that came about from Rodale, of course, in 1941. And he linked up with Albert Howard. Howard had been sent to India as an agricultural adviser. While there he developed a technique of rapid organic decay (composting) designed to relieve dwindling soil in the Indore Province of India. It came to be known as the “Indore” method.

The whole organic movement started with flower and vegetable growing. Vegetables are interesting because you take any vegetable: it started out as a weed, became an herb, and slowly they bred out the toxic chemicals that were unpalatable. And it became a vegetable. Virtually every vegetable went through that sequence.

**Farmer:** This was cross-breeding.

**Merrill:** Yes. Lettuce used to be a weed. Then it was an herb, and in Turkey it’s still an herb. It’s not a vegetable. It’s used as an herb in Turkey. And then it becomes a vegetable. So you go through this whole succession. The point of that is that vegetables are very unique plants. They need an enormous amount of attention. In fact, if you want to know if you have a rich soil, note if the

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predominant perennial weeds are edible. If they come from edible stock, like dandelions, then it's a fertile soil.

**Farmer:** That means it's got the nitrogen.

**Merrill:** Exactly. Because all vegetables were once weeds that were predisposed to rich soils. So you have to keep feeding them. I say, "You want a vegetable garden? You've now got a pet."

**Farmer:** (laughter)

**Merrill:** They give you a lot. But you can't leave them alone. They're not cactus. So the point of this is that Rodale started this whole idea of organic, compost-rich soil, so that people see organic as a rich soil thing. The truth is that outside of vegetables, annuals, a few herbs and a few other subtropical plants, the vast majority of landscape plants thrive in normal, even poorer soil, as long as it's well drained. And so you have to unlearn that the organic movement really was talking about food production and not landscape plants. For example, you can't give phosphate to any plant from Australia. A lot of plants don't like organic matter. They want lean, sandy soils. Mediterranean plants, for example. If you gave them organic matter over a long period of time you'd just be wasting your time.

### **Plants Talk to You: Teaching Horticulture**

I found myself having to unlearn people a lot about the scope of horticulture. Right now my wife and I are having to figure out how to get an exotic,



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subtropical garden into the colder coastal climate of Scotts Valley, and we are just slowly beginning to figure it out. We've got palms, cycads, succulents, *Alstroemerias*, etc., that can go down to twenty degrees. That's the creative part. We searched all over California and found them. The whole thing to landscaping is how do you make do with what you've got, where you are, not, how do I create Eden?

**Farmer:** You get a picture in your head and then, wherever your yard is, you're going to do that.

**Merrill:** A lady came to me once in my class and she was in tears. "I can't get anything to grow." I said, "Well, where do you live?" "I live on the beach. My front yard is a sand dune." I said, "Here's what I want you to do. I want you to go to the sand dunes north of Monterey and I want you to take some pictures and bring them back to me." She came back and said, "Well, what are these?" I said, "These are plants that grow in sand dunes. Here's a whole list. These are incredible plants. Succulents and brassicas and the spinach families." She said, "God, this is great." I said, "That's horticulture. That's it. What do you got; what do you do?" But agriculture is like that. That's why it's got to be decentralized.

**Farmer:** Do you have to use any kind of petrochemicals if you do that?

**Merrill:** Not as much, because you're planting plants that are adapted to where you are.

**Farmer:** They are telling you that they want to be there.

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**Merrill:** Absolutely. I like to tell my students, “Plants talk to you. Now, listen carefully. They don’t talk to you like, ‘Ah!’ They talk to you through chemicals, through color changes, through wilting. So you’ve got to look at your plants constantly because they are telling you whether they’re healthy are not. They’re telling you. The whole secret to great farming and horticulture is reading your plants. That’s what it’s about.”

**Farmer:** Observation.

**Merrill:** Observations. You’ve got to be an observer. I would say to my students what Joe Connell told me, “I want you to sit in front of that flower for ten minutes and I don’t want you to move a muscle. Just stare at the flower.” At first nothing happens, but after about five minutes these insects start coming to the flower. They’re drinking water and copulating and eating and looking for pollen and nectar. And the students come away feeling like they’re part of it, not on top of it. I say, “Now, that’s the feeling you have to have to grow. You have to have that feeling that you’re part of that. If you can’t do that, and if you see problems as problems instead of challenges, then you don’t belong in horticulture. This is not for you.”

**Farmer:** So how do you think it happened with agriculture departments that they got so involved with the chemicals?

**Merrill:** Well, historically a lot of it had to do with the second largest internal migration in the history of this planet outside of China, which was the United States moving from rural areas into cities following World War II, where all the

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tank factories became tractor factories, all the ammunitions factories became fertilizer factories. There's a whole book written about this. You moved all these people off the farms and what you moved off the farms was energy. So how do you replace human energy? What do you replace it with? Fossil-fuel energy in the form of chemicals and pesticides. And machinery. And the pesticides themselves were— Actually, one of the great tragedies of the twentieth century, in my opinion, is that biologists didn't see the consequences of pesticides. Well, Rachel Carson did, but unfortunately she was female so she wasn't about to be listened to.

**Farmer:** Yes. That discrediting thing again.

**Merrill:** There you go. Absolutely. So it didn't really work. But it became pretty evident after a while. But if you talk to entomologists today, they'll tell you that one of the great discrediting historical features of science was that the biologists didn't see the consequences of wiping out ecosystems, the fact that predators and parasites would be affected more than herbivores. It's obvious. They knew this theoretically. I knew it. I was an ecologist. One of the great stimuli of my life was the fact that when I was in graduate school studying population biology (which was a euphemism for ecology), the ecology movement hit. So as a graduate student I was an expert in the ecology movement. Historically, I was swept by this giant tidal wave. I wasn't alone. There were ten or fifteen of us at Santa Barbara, and all over the country we suddenly became experts.

**Farmer:** Were you there with Steve Gliessman?

**Merrill:** Absolutely.

**Farmer:** Are you friends with him?

**Merrill:** I went to his wedding, but I haven't seen him for a number of years.

**Farmer:** But you were part of that same time at Santa Barbara.

**Merrill:** Yes. In fact, I taught at UCSC in the agroecology program. I taught soils and entomology up there for a while.

**Farmer:** When was that?

**Merrill:** It was the eighties, nineties when I taught up there. I enjoy teaching. The challenge of teaching in community colleges is that you have people there who have other things besides going to school. They're married; they've got kids; they're getting divorced; the kids are sick; "my mother-in-law is living with me," oy, oy, oy— Whereas at UCSC, it's all like twenty-somethings. I didn't like it. Cabrillo was more of a challenge because you had to find a way of teaching people in a classroom in which you had engineers over here, and people who could barely read and write over here. You've got to find a common denominator. I thought it was a wonderful challenge. It took me years to figure it out. I was an idiot the first few years. But you figure it out after a while, and you find those little life experiences and then they go, ah! You can't pay me enough for that. The look on their faces. It's just amazing to see that light bulb go on.

**Farmer:** Do you think a lot of that was because you were doing physical projects with plants?

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**Merrill:** Yes, a lot of hands-on. The hands-on thing—without that, you're dead in the water. First, the organic gardening class I taught— This was back in the seventies, when it had to be organic "gardening" because I was trying to get people there.

**Farmer:** Oh, that's the same reason why Rodale named the magazine *Organic Gardening* rather than agriculture.

**Merrill:** Yes, so I got it, and there were some very nice people. But one of my students was this lady and she was very ornery. She kept asking me all these questions and she had this pout on her face all the time. It turned out her husband was a chemist for Dow Chemical, as a matter of fact. She was kind of sent there to see what was going on. We had this compost pile towards the beginning of class, and people brought garbage, and I showed them how to stack it: carbon, nitrogen, air, water, and microbes. Then we'd get cheese and wine to show them microbial cultures. This is a microbial culture that's just like that. It's just soil cheese and soil wine. At the end of the class (I mean, she saw the stuff that went into that, right?) we would turn the compost pile and reveal it, and there was this black, moldy stuff in there. She had been on my case the whole time. I have a long fuse, but when it's lit, it's lit. So I kind of got in her face. I said, "Listen to me. Come here. I want you to smell this." She says, "God, this smells just like dirt." And then, her face. She got this red glow to her face and her eyes just lit up like this. And she said, "Oh!" At that moment, it was like, gotcha. That's teaching. That's what it's all about. As a teacher, if you get ten people in your life that just go, *oop!* That's all you need. That's why I love teaching,

because there's no substitute for that. Doctors probably have the same thing, and lawyers, in their own way, helping people. But changing someone's mind— Can I tell one more quick one?

**Farmer:** Yes, that's what this is about.

**Merrill:** Well, I was walking along the Pacific Garden Mall in Santa Cruz years ago. This guy comes up to me and he puts his finger like this and he says, "Are you Richard Merrill?" I said, "Yes—" He said, "I want to talk to you about my wife." I go, wait a minute— I'm cool. (laughter) I really am. I didn't mess around. I said, "All right." He said, "You know—" and he said her name. "Yes." He says, "Every time we go up into Big Basin [State] Park she leaves me, and when I find her she's on her hands and knees looking at mold and trees. And it's your fault." He was pretty angry. I looked at him and I said, "Get used to it. It's not going to change." These little stories where people go, *wow, you've changed the way I see the world.* (whisper) Then it all makes sense, what you are doing.

**Farmer:** If you look around this region, I'm sure that you see a lot of the influences that you've had.

**Merrill:** Students, of course, come up to me all the time and that's to be expected. But the biggest influence is the annual plant sale at Cabrillo. This will be the 28<sup>th</sup> one, this year. It's the largest seasonal plant sale in California, as far as I know. We bring in over a hundred grand in one weekend, so it's a big deal. So about ten years ago, this lady comes up to me. I didn't know her. And she said, "You know, I really have to thank you very much." I said, "Yes, what?" She says,

“Have you looked at the landscape in Santa Cruz County in the last few years?” I said, “No. Not particularly.” And she said, “Well, what I want you to do is—” and she gave me these roads. One of them was the Clubhouse Drive in Aptos. “I want you to go down and look at these landscapes.” And they *were*. They were our plants. Everywhere. We have the largest collection of salvias in the world. You could just look at them and see these are our plants. They’re all together. You can’t make this landscape except from our sale. Here’s this salvia and here’s this lavender. They are very unique. And it’s everywhere. The landscape in this county has been transformed in very subtle ways. It’s not everywhere. Obviously people still buy landscape plants from other places. But you can see it. It’s great.

**Farmer:** Do you think landscape businesses have had students who have been in your program?

**Merrill:** Oh, yes.

**Farmer:** So people hire them. And then also individual homeowners are doing what they’ve learned in the classes.

**Merrill:** Well, you look at the avocational, which is teaching people how to be growers and landscapers on their own. There’s the vocational, which teaches people how to get jobs. And then there’s the in-between, people who want to find out about soils or greenhouses or whatever, and just hang out. You have to appeal to all three.

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## The Horticulture Center at Cabrillo College

**Farmer:** And hadn't you built a brand-new center up there before you left?

**Merrill:** Oh, yes. We designed that, and built it up there on top of the marine terrace overlooking the college.

**Farmer:** Was the funding all through Cabrillo, or did you need to get grants for it too?

**Merrill:** Well, a lot of it was funding from the bond issue, the first bond issue. Other money came from naming-opportunity donations. We were located at the east end of campus at that time (and this changed); they were going to move the Health Services to that spot, and then move us elsewhere. We were at the beginning of this whole domino construction thing. They came to us and said, "Well, you have to move." Now, I've learned over the years that sometimes you're in a position where you've got what somebody really wants and you just have to play it. I play a lot of poker, and I knew that we had to move. So they gave us these choices. And one day we walked up to the top of this marine terrace that's above the campus. I don't know if you've been up there?

**Farmer:** I haven't yet.

**Merrill:** Oh. Shame on you.

**Farmer:** (laughter) Before we meet next time.



**Merrill:** So I walked up there and I had this gut feeling which I get all the time. I took some of my eclectic friends. There was an energy healer; a nuclear physicist, Michael Riordan. About ten people. Gayle and Joe Ortiz [proprietors of Gayle's Bakery and Rosticceria, in Capitola]. All these kind of very heavy people. We went up there, and all of us looked at this panoramic view and said, "You know, nothing else matters except this view. Because it's an all-encompassing view. This is the consciousness-raising reality. Now what we have to do is make this work." Because it all comes from that. It was a pain in the ass—civil engineers, and fire departments. Four years of a lot of work, very intensive work. Architects. Bids. But we did it.

**Farmer:** So there're classrooms and greenhouses?

**Merrill:** Oh, yes. Greenhouses, classrooms. A unique classroom with all stainless-steel benches for propagation. Shade houses. It's probably, I would say, right now the number one or two horticulture facility in the entire community college system. I was really happy with it. And then, of course I left.

**Farmer:** Your crowning achievement, I suppose.

**Merrill:** There was that. And then there was the fact that there really was no more wiggle room at Cabrillo for me the way I operated. They needed someone who could operate diplomatically within the system to take it to the next step. I can't do that.

It was a wonderful experience. People keep coming up to me saying, "Oh, you did a wonderful thing." You know, it's really funny to try and explain some

things to people. And that is, when you're obsessed about something you can't be complimented for what you do. People say, "Well, how did you do it?" I say, "I had no choice. You don't understand. I'm a real opportunist. If I see an opportunity I'll just go for it." And the opportunity was that we were the first out of the chute. There was no real protocol yet.

**Farmer:** Yes. So it can be creative.

**Merrill:** And of course most of the protocols were created, because I didn't do protocols. But the whole point was that if you are the first out of the chute then you can get away with a lot of things.

### Alan Chadwick

**Farmer:** Did you ever know Alan Chadwick?

**Merrill:** (laughs) Alan— In 1971, a botanist friend of mine, Warren Pierce, and I went up from Santa Barbara to see a guy who apparently was revolutionizing horticulture. And we walked into UCSC and I have to tell you, I saw him teaching in the Garden and I had a real catharsis at the time. I thought, hey, this is what I want to do. So I give him credit for that. I knew it would be easy to teach in a garden because everything is there. There it is. The whole ecosystem is there. It's easy to teach. But the trouble was we were both triple Leos. So I'm sitting there straddling this bed with Steve Kaffka,<sup>10</sup> who was up there at the time. We were sowing seeds. And he came. "You can't straddle this bed. I've seen you here," he says, "Get out of my garden!" So he kicked me out of his garden. That was it. That's the extent of my contact with Alan Chadwick. I love

him and I hate him. But he was a wizard. You don't mess with wizards. You just let them do their megalomaniac thing. It's cool. He was fine. I have a lot of admiration for him. He just wasn't a really nice guy. (laughter)

**Farmer:** I never met him. But did you ever see the Saratoga Community Gardens?

**Merrill:** Oh, sure. I was over there too.

**Farmer:** That's what I saw in the early seventies. I couldn't believe it. It was so beautiful. And that was easier land to deal with than the hillside up at UCSC.

**Merrill:** Yes, it was. They gave him a rough assignment up there.

**Farmer:** Well, he picked it, apparently. He found the spot. That's the story.

**Merrill:** He did. Really? I can see that. Yes. He was an interesting guy. He was British. I did have a small conversation with him. In fact, we had a big debate on what was better, cow manure or chicken manure. It turns out they're both important for different reasons, but that's another story. I said, "Well, why don't you grow any corn here?" Again, this was kind of the beginning of it. He just looked at me and he said, "Corn? That's a peasant crop. I don't grow corn." Okay. I mean, he had that sort of air that was annoying, but he sure did get people going. Everybody from John Jeavons on down just did it.

The other thing I asked him once was, "How long do you think people can double dig? Is there another way to do this?" That got him really riled too. That's why he and I didn't get along. He had a method. And my attitude was there is

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no method, there's only what works locally. That's the method. And that's why we had this— We were both ornery, arrogant— Anyway. It was bound to happen. (laughter)

**Farmer:** Well, I haven't heard of anybody who says they just totally got along with him.

**Merrill:** Oh, no. No way. But he had enough of the guru in him for people to step back and say, okay.

**Farmer:** Give him his space.

**Merrill:** Give him his space.

**Farmer:** So what was your involvement with the [UCSC] Farm, then? Because the Farm became separate.

**Merrill:** Really nothing at all.

**Farmer:** But you taught up there.

**Merrill:** Well, I taught up there, but I had nothing to do with the Farm at all. No. Nothing. In fact, for me, Cabrillo College was just an easier place to teach, because I knew what I had to do and I knew at Cabrillo I could get more done. At UC there're a lot of people telling you what to do, and there were also people up there who were starting the Farm project. I couldn't really see getting involved with it. Too much politics up there. The main reason that the Agroecology Program has survived, in my opinion, is that they have an

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endowed chair. Steve [Gliessman] has done a marvelous job up there with those people. I don't mean to take away from that. But that really helped a lot, that endowed chair.<sup>11</sup> It was a big deal. What it really says is, now you've got to be here. You can't not be here. I was trying to get an endowed chair for the Horticulture Department. I said, "It's not about saving money. It's about declaring that there's no way you can get rid of me because now you have a heritage item saying that I've got to be here."

**Farmer:** They didn't do that?

**Merrill:** I tried and tried. I came pretty close but it was either that or donate the money to the new center. So I don't know— It might have been a mistake, but I don't know.

**Farmer:** So we were talking about Chadwick and how he sort of intimidated people into doing what he wanted them to do, or learning about gardening.

**Merrill:** Yes.

**Farmer:** He worked with [Rudolf] Steiner when he was a young teenager. The way he was trained was in the garden, hands-on. He got his knuckles rapped if he did it wrong. So that was his teaching method.

**Merrill:** Yes, that was his teaching method. But, you know, if someone asks you how you define genius, which is a word that's thrown around all the time, I always say, at what? But part of that is being able to see two things, or more than two things that somehow go together. You put them together, and no one has

ever put them together before. He put biodynamics—which I think is a much more encompassing philosophy of gardening than organics—with a technique of double digging that the French had. So he was purely European: French and English. I mean, you can't beat that. He brought them together. Now, in bringing them together he had to create the togetherness, to create what it was. Therefore I can see why he didn't accept criticism very well, because it was his baby, not someone else's. So I understand that part. But he just wasn't open to suggestions at all. He didn't even go, "Yes, that's a nice idea but I think we'll do it this way for a while." It was just, "You don't know what you're talking about."

**Farmer:** So he didn't want to do experimentation.

**Merrill:** No.

**Farmer:** He wasn't being a scientist.

**Merrill:** No, no. That's what bugged me about it. Because to me it's always, always experimenting and finding something— See, if you don't experiment then you miss the point, and that's that nature is always changing. It's always evolving, always moving along, and you've just got to keep up with it. So by definition, if you don't change you won't keep up with it. You've got to keep changing.

**Farmer:** And he had a tried-and-true method that he felt worked, and he wanted to try it on that land, with those—

**Merrill:** Ellen, it was called "The Method."

**Farmer:** Really? (laughs) *The Method*?

**Merrill:** It was called *The Method*. Now, other people have taken it. Jeavons has taken it as a tool for improving Third World production and that's great, that's fine.

**Farmer:** And he's [Jeavons] changed it some, according to his writings.

**Merrill:** Yes, he's changed it. And it should change. It should change. Again, it's not anything I would do, because double digging— I mean, you're limited. My next-door neighbor was sifting soil through a screen and I said, "Al, you better double dig that." And then I thought, he can't double dig that. He's seventy-eight years old. That's crazy.

**Farmer:** It's a lot of hard work.

**Merrill:** So I gave him another method that I think is just as good, and that's that you just cover the top of it with a bunch of mulch—really, really deep mulch—and let the worms do it for you. That works. That's the old no-dig method.

**Farmer:** But I saw in a film that they made about Chadwick that they invented this big tool that had—

**Merrill:** The double digger. I know.

**Farmer:** You could stand on it and move it back and forth.

**Merrill:** I worked with that too. It's just twice as hard. (laughter) Trust me, I had students double dig for ten years out in the garden. And they're all adults. From

little women to giant football players, I had the whole range. And I'm telling you, it's really limited. Double digging limits people. That's what I didn't like about it. It was an extremely efficient way of aerating your soil without destroying the structure, which is really hard to do. It's very efficient at that.

**Farmer:** And it's all hand work, right?

**Merrill:** All hand work. Well, there were hints of a mechanical double digger, although I never saw it. Even to the point of aerating the B layer after you create that shelf.

**Farmer:** Well, would you say something about the teaching methods that you developed after watching what Chadwick was doing?

**Merrill:** I didn't get any techniques from him. I just got the idea. I would never watch anyone for techniques. But the idea of the garden as a classroom bowled me over. A teacher is basically a student one step ahead. So I never left college, ever. I had never had a botany class; I'd never had a horticulture class when I started teaching horticulture. But I had a lot of biology, so I figured, well, what the heck. But in the early stages you're just one step ahead. The first three years I was up every night writing lectures, making mistakes, low enrollment. You know, you struggle. Then after about three years you get these really good notes and you start getting little stories and little reference points. And you've still got your notes. Then after that, the notes start to not be important anymore. You can *not* look at your notes for a half an hour. By then the stories start taking on color and experiences that you've had and other people have had. Then you start



involving other people. And then at the end you're performing. The notes are in the trash can and you are *on*, and you've got a bio tape in your mind that's just spitting information, and every story is a jaw-dropper, and people are laughing half the time. And you're there.

**Farmer:** Yes. They're taking it in.

**Merrill:** And they're taking it in, and you're going, yes, I know. What can I tell you? Thirty years of this and you get pretty good at it. (laughs) There is nothing like that. Nothing like that, when people go, "Whoa! I got it." And you go, "Yes, I know. Of course you got it." "Whoa!" Welcome to the club. Because you know, after that nothing will ever be the same for them. That to me is the essential part of being a teacher. You change the way people see things. If you can do that, that's all there is to it.

**Farmer:** There's a paragraph in *The Gardener's Table*<sup>12</sup> that I loved. I had to read it out loud to people. It talks about all the tiny little animals that you can see in the compost pile—not the worms so much, but the other ones—carrying around your soil in their bodies. And the reverence for those little creatures. I loved that part. I had never thought about that before.

**Merrill:** (laughs) Yes. Well, I have this bumper sticker fantasy of a whole bunch of bumper stickers. One is "Save the Bacteria." I mean, why not?

**Farmer:** Just to think of them having little bodies. You can't even really see them, but, it's alive. The soil is alive.

**Merrill:** Oh, yes.

**Farmer:** That's amazing.

**Merrill:** Let me give you an example of hands-on teaching. When I was at the El Mirasol project in Santa Barbara, which was an environmental garden in the middle of the city, just out of graduate school, we were going to put a farm there.<sup>13</sup> Also alternative energy. We had a methane digester and we were working with a guy named John Fry, who had one in South Africa. We built one using an inner tube. So you take a tractor inner tube.

**Farmer:** Giant.

**Merrill:** Yes, big. But it's basically— Think of your gut as a digester. You start at one end and out comes gas and food, which is basically sludge and methane. Okay? But wrap it around itself. Now you got a tube, right? We're raising chickens, right? Bring kids in there. We take the chicken manure. You put it in the digester and it goes around, right, and it digests. It just takes a couple of weeks, but you've got manure in there anyway. They put the chicken manure in one end and they go to the other end, and it's these fancy tubes and gadgets, and all sorts of stuff, and bricks holding it down to make pressure and everything. And out comes the methane at the other end. And that's attached to a stove and on the stove is a cup of water and in the cup of water is an egg. Then they cook the egg. And they take the eggshells and they crumble them all up and they take them back and they feed them to the chicken. So in one brief moment they see the process. See. That's what you've got to do in teaching horticulture. You've

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got to set the stage so that the students see a process. So what Chadwick was doing—I don't know if he saw it this way, but he's got seedlings, and he's got compost, and he's got all the stages of the process, and he's got salads he's eating. So, there it is. Right in front of you at that point in time is the process.

My whole adult life was challenged by trying to figure out ways of teaching process. The garden happened to be a tool. But it just was a tool for me. So I learned how to use the tool. But that wasn't the goal. If they learned plants, fine. But that wasn't what I was about. I was about process.

**Farmer:** And like a closed cycle where people understand that everything affects everything else.

**Merrill:** Oh, yes. Absolutely.

**Farmer:** And you can do things ecologically.

**Merrill:** Yes.

**Farmer:** Now, maybe the fact that it took all these years, thirty-five years or something like that, to get people really serious about this—

### The Spiral of History

**Merrill:** (sigh) Well, I think it's very important to understand this. What's happening now happened in the early seventies. History is not a cycle. It's a spiral. It comes back on itself on a different level. And people my age now are walking around in a daze. *Déjà vu!* What do you mean? Like this couple that just

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came out with a book [on eating locally] and now they're famous. I don't begrudge them this, but they are basically saying, "Well, our family decided that for one year we are not going to eat anything past one hundred miles from our house." They wrote this book on it, and they showed how to garden, and it was a nice little book. But there were scores of books like that written in the seventies.

Of course it's all just sour grapes. I understand that. But when you get to this age, you realize that history really is a spiral and we're just coming up. The difference now is it's global. That is the existential change. That is the—I hate that word—but the paradigm shift is this global consciousness that's beginning to emerge about, well, we've got to do something. And anyone that isn't doing something has to be ignored. Now, the thing that upsets me is that a lot of the power structure is based on Armageddon—whether you're Muslim or Christian; I don't care what you are, but most fundamental religions are based on Armageddon, and the future is tenuous. So how do you run a world with a tenuous future where people believe in Armageddon? This is the battle, as far as I'm concerned, of the future: putting people in power that actually see the politic of the future and not just the present.

They can visualize the future, and the future is energy, energy, energy: population, population, population. It's fundamental things that have to be dealt with in a very, very radical way. I— You know, I have no problem with the concept that human beings are just a dead end evolutionarily. (snorts) You know? I mean, I have no illusions about us being—we got to survive because we're supposed to. Maybe it's very possible that surface life civilizations of

planets in the cosmos are the ones that do go extinct, paving the way for something even better that we can't even think of. I don't know. Who knows? Who cares? We'll never even know. All I'm saying is that people have to start thinking politically of the future and not the present. Or else we're doomed.

**Farmer:** You had a vision of what that garden would be like at Cabrillo and you could see it before it was built, when it was just a vacant lot. If people could have a vision of what the planet can be like—

### Global Environmental Crisis and Exponential Change

**Merrill:** Yes, this is true. But what bothers me, and this is the bane of knowing too much, is that processes are happening exponentially. They all are. An example is the melting of the snowcap. What's got to be understood is that as the white ice melts it does *two* things. It reduces reflectivity, which puts more energy in the planet, *and* it goes into the water, right, which warms the water. So we have a double problem happening here and that means that things are going to melt faster and it's going to absorb more heat. I mean, they're up in Greenland saying, "My God, it's happening much faster than we thought." No, it's happening at an exponential rate. Unfortunately, human response is not exponential. It's very linear. Because you've got four years. Or you've got dictators. You've got people that are entrenched. So how do you get out of that? I don't see any way.

**Farmer:** If people acknowledge that there's a crisis. If enough people globally acknowledge it at the same time, and go back to victory gardens, and only solar and wind energy—

**Merrill:** But it's going to take— You know, Ellen, it's going to take an FDR-like person. I know FDR had problems. I understand that. But someone who says, "Lookit everybody. Temporarily this is a dictatorship. And this is what we're going to do. Now, do you agree with what we're doing? Yes. Now I'm telling you what we're going to do. Do you agree with this? Okay? We're going to take a 1950s highway project in this country and make it look like kids' play. We're going to change the infrastructure of this country energetically. We're going to stop dependency on oil completely, and it's a ten-year plan and here's what we're going to do."

**Farmer:** Do you think it has to happen in the United States, the leadership?

**Merrill:** Well, again, if we had leaders that were of a humanitarian level, they would say we should set the example, because we are consuming per capita more than we really should. If we're the worst, we should be the first to change. That would be a leader, a real true ethical moral leader. Because you'd do two things: you'd acknowledge that we're part of the problem, and you'd be effecting change because you could effect change better than anybody. Reduce the military, for God's sakes. You know the whole story. If someone did that, then we'd have a shot.

**Farmer:** Okay, well, that didn't happen in the seventies and the oil companies did defend themselves.

**Merrill:** The tax incentives for alternative energy were taken away.

**Farmer:** They ran out?

**Merrill:** His name was Bush, among other people. The incentives went on for a long time, especially wind energy incentives. They were something else.

**Farmer:** Oh, you mean those windmills out—

**Merrill:** Yes, they were all based on incentives, all tax incentives. Because no one is going to invest in something that's not sure. The main problem with alternative energy is there is no decentralized infrastructure for it. Wind goes there, tides go here. That's not in place. So how do you put renewable energy into the existing structure? It's difficult. Electricity is fairly easy because we've got lines already. But the rest of it is tough.

**Farmer:** You were talking in *The Energy Primer*<sup>14</sup> about decentralizing and localizing, and that that would be radical; also they can't figure out how to charge people. So right now in Germany I heard they are paying people five times what the value of the electrical energy is that comes off of their solar panels, as an incentive to put solar panels up.

**Merrill:** Do it! Do it!

**Farmer:** The government is buying their energy. The government doesn't have to maintain the infrastructure. It's just amazing.

**Merrill:** I didn't know about that, but do it. Do that! But you see, the effect of that decentralization means that the power companies will say, okay, we're going to buy energy from people. It would be fabulous. But it's the opposite of what we're doing now. So how do you get that to happen? I think I said

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somewhere in *The Energy Primer* that the decentralization of the energy system is as much political as it is technical. That's the problem. It's extremely political. And it's got to be done.

The United States going into Iraq has a positive side. It showed the world that the only way to get oil is to fight for it, so therefore if you don't want to fight and go to war, you're going to have to figure out something besides oil in your economy. "*The United States is crazy,*" they are saying. "*They are nuts; they are obsessed with oil and that's going to kill them.*" Brazil has already said that. But of course they've got this tropical climate and a gazillion square miles and they can grow all the sugar cane they want for their national ethanol distribution. But it can happen. That's the only saving grace I can see for the war.

Again, the perfect future is one in which you build efficient photocells—which may or may not be silicon, by the way (they could be biological), that are made in a factory and the factory itself is made with photocells. Now you're starting to get into the renewable sustainability. There's a good analogy. Imagine that you had an island and in the middle of the island was a lake. All right? And you are surrounded by this huge freshwater sea. Monstrous, okay. Now you can take five buckets at a time out of that lake, but it's going to be used up pretty soon, isn't it? But I can take one bucket at a time, *but only one bucket at a time* out of that sea around me forever. The thing about solar energy is that you only have a limited amount of energy falling on the planet, although it's coming from a limitless source. There's that much energy, no more (the solar constant). So how



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do you create civilizations on a planet that use just that energy? How do you get off this non-renewable thing and get onto the one that's there forever?

In fact, there's been science fiction stuff written, and a lot of people have talked about civilized planets, and their rule of thumb of the next level of civilizations are ones who control their nearest star—which is what this is, what we're really saying—who control the energy of their nearest star completely. Not all the energy in the star, but the energy that the star impinges on them. It's right there. Why do you want to spend all this money on fusion, when there's a fusion process being held together by a gravitational field ninety-three million miles right up there?! It's right there. They're doing it for us. Just make it work. It's a whole new mindset for the future. And until a mindset changes—there are even words for it, a paradigm shift or whatever—but until that changes I don't see change.

**Farmer:** What we're trying to get down here [in this oral history project], is what happened in the seventies, in the sixties in this region. People came together, and like you are saying with your book, you didn't necessarily get to know all these people. You didn't necessarily bring them to conferences here in this region. But this is where you were. So it made you part of a hub of activity around this kind of thinking. I've heard this book *Radical Agriculture* has influenced a lot of people to think about all the different elements, not just agriculture.

**Merrill:** Yes, that was the point. All the elements that make it—

**Farmer:** So now, for example, one of the original apprentices who can't come to the Back 40 reunion<sup>15</sup> sent an email telling how he lives. He was in retail or industry for years, but now he's on a farm in Ohio and they've built a green barn, and so the whole thing is energy efficient in every way. He had pictures of his farm. And then he was attending a conference in Ohio, that he sent a link to, so we went and looked at that, and it showed all the different people living off the grid who were using the most modern research and technology, and influencing each other and the farmers all around them to be able to sustain the local agricultural system, but using really new kinds of greenhouse techniques. And they have a year-round farmers' market in Ohio, where it snows and it's icy.

**Merrill:** Yes. It's going to happen.

**Farmer:** They're doing it.

**Merrill:** But if you take what they're going and put it in New Hampshire it won't work.

**Farmer:** How come?

**Merrill:** Well, the greenhouse, for starters. And that emphasizes my point. The people in New Hampshire have to do the same thing in a different way.

**Farmer:** Their own.

**Merrill:** So again, we are starting to decentralize, aren't we? This is a key point, that the alternative is political. It is a political restructuring of the infrastructure.

**Farmer:** Yes, but the thing that's neat is that I can go on the Internet and find out what they're doing in Ohio, and then adjust it for here. We didn't have that thirty years ago.

**Merrill:** No. It took me a couple of years to get the complete literature on flowers that attract beneficial insects from all over the world. Today I could do it by surfing the net in a couple of hours.

**Farmer:** Some of it was from Russia, right?

**Merrill:** A lot of it was from Russia. It had to be translated. The Internet is just awesome. I don't know where it's going. Google is getting kind of weird now. They are getting into other things that involve a lot of information that you may or may not want to share with Google. I wish they'd kind of stop where they are and just be a good search engine. They're amazing. I had this incredible book collection. It was thousands of books and I gave it away. My rationale was very simple. I couldn't find anything in a book that I couldn't find on Google. And sometimes faster. You had to wade through it, though. They haven't prioritized the information. I don't even know how people go through school anymore with calculators and the Internet. I know it sounds like an old fuddy-duddy talking here, but slide rules and typewriters and no Internet. Is education better or worse because you have these other tools to do the work for you? I don't know.

You know, another interesting point is that global warming *isn't* the most serious global problem. It's just the one people can relate to because they can change it.

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The most serious global problem is overpopulation, and has been for decades. But the problem is that population is so heavily linked with religion.

I actually had a brief conversation with Paul Ehrlich. He was speaking at UCSB. He went to the restroom and I went to the restroom because I wanted him to say something about a local issue. *The Population Bomb* was fresh out and he was famous, and he came there and talked, and it was a really nice speech. But I asked him the question about whether he really saw it changing, and he said, "My worst fear is that it is so linked to religion that it won't change. We have to go at it from another way." So anyway, that was my one conversation with Paul Ehrlich.

**Farmer:** The UN just had a meeting in southern Africa and talked about that all the small communities in the world: if they just focused on organic growing, could feed themselves. They could end world hunger.

**Merrill:** Well. That's like saying if everyone had two kids there'd be no population problem. Okay, that's nice, but where's the infrastructure for that?

**Farmer:** But Jeavons comes in and says *how* they can do it.

**Merrill:** Yes, he does. Jeavons was the first popular interpreter, in his book that has sold a gazillion copies and several editions.<sup>16</sup>

I think one of my favorite things that I'd tell my students at the end of their first year course was "Listen, if everyone had a garden, there would be hardly any problems in the environment." Now that's hyperbolic to do.

**Farmer:** If they had the kind of garden that you taught them to grow.

**Merrill:** Exactly. If you could see the garden not just as an aesthetic attachment to your house, but as a food-producing, habitat-creating thing.

**Farmer:** Attracting birds and turtles.

**Merrill:** Beneficials, and reptiles and amphibians and spiders and all sorts of things.

### *The Gardener's Table*

**Farmer:** I noticed in *The Gardener's Table* that you didn't specifically say that this is a pure organic book.

**Merrill:** The original title was *The California Kitchen Garden*. And they wouldn't buy it because it was too California. And according to Ros Creasy, who is my mentor about publishing, she told me that if you mention California to anyone east of the Mississippi, they won't listen to you. They'll just shut you off.<sup>17</sup> So, yes, the next question was, well, do we declare organic or not? I said, "Listen. You don't have to declare anything. All you have to do is show them." The thing about the book is that it gets to the very basics in a way that people can understand. If you teach people the biological, geological and meteorological basics of horticulture, they have to go organic. Because that's what it's about.

You don't have to say a word. There's no other option. If I show them how to plant their garden so it attracts beneficial insects and amphibians and stuff, they won't have to use pesticides. So don't even say anything about it. Don't even go there. Just reveal what you're doing. And it will happen. That's the main reason.

**Farmer:** It is a great book. I'm really enjoying it.

**Merrill:** Well, thank you.

**Farmer:** Can you say a little bit more about Rosalind Creasy who wrote the forward? Does she live around here?

**Merrill:** Yes, she lives in Los Gatos. I forget where I met her. In 1988 she wrote *The Edible Landscape*,<sup>18</sup> which was a revolutionary book, really revolutionary, in the sense that where I come from habitat trumps aesthetics. Where she comes from, edibility trumps aesthetics. You know what I'm saying? But she's really into a beautiful garden that's edible. It's got to be beautiful because it's suburban. She's trying to sell suburban people on gardening and also into growing their own. So she wrote this book about how you design edible landscapes—trees, shrubs, the whole works. And now she's doing a revised edition of it. Her husband recently died. She's in her sixties now. And she knows, like I do, that this may be the last book you could ever write, for two reasons. One, because you're getting older, and also because books are getting passé. They are passé? I mean, there's no substitute for curling up with a book.

**Farmer:** And your book *Radical Agriculture* was pretty revolutionary for the seventies, having all those photos and illustrations. That was hard to do.

**Merrill:** It was very hard to do. My sister-in-law did most of the illustrations.

**Farmer:** Did she do the ones for *The Gardener's Table*?

**Merrill:** No, she didn't. A local artist did it.

**Farmer:** Because I'm noticing a similar aesthetic between the two books. This was more of a diagram thing, but still it had the—

**Merrill:** No, that's mine. That's me. It's got to be three-dimensional.

**Farmer:** And holistic. I love the wheels, like the vinaigrette wheels.

**Merrill:** We spent a lot of time on that one. That was mostly Joe's idea. Joe Ortiz and I think a lot alike. The book was a joy to do with him because we really think a lot alike: "You do the cooking, I'll do the gardening. Okay, see you later." "Now, the segue points we talked about, how will we make that work?" But we didn't pay any attention to what we were writing, actually. It just fit together. It was a great book. I loved writing it, eight years writing that book.

**Farmer:** A lot of it seems to be your lectures turned into writing.

**Merrill:** It was a book that I didn't write for money. Because I knew it wasn't going to sell. It was too much information, and is it a cookbook or a gardening book? I didn't care too much. I just had to download, or I was going to go crazy. I don't know how to explain it any other way.

**Farmer:** But it's so wonderful to have that piece of work. It's aesthetic. It's about life, about a good life in this region, because it is regional for the kind of things you can grow here.

**Merrill:** Well, Ros and I hit it off because we're both iconoclastic. She joined the Garden Writers Association and she was on their board for a while. And she goes back East a lot, where they don't look at California gardening as anything real. But the point I'm trying to make here is that she was pooh-poohed by people for years. The chemical industry would hassle her because she was touting organics. It wasn't comfortable but some people just don't care. Like I remember my grandfather telling me, "You'll know you're on the right path when you just don't care"—which I never understood at the time, until years later I finally understood what he meant. You don't care. And then of course it comes across as arrogance and then you get that whole problem, but if you got a thin skin you shouldn't be an activist, because you're going to get stuff thrown at you all the time. You just have to know—not that you're right, but that you are righter than they are. There's a big difference between being right and being righter than they are, you know? You may not be right, but I know they're not right. So we got to try something else here. If you have that attitude, then criticism doesn't really mean much. Unless it's really constructive and they're pointing out something that you didn't see, you got to listen to that. But most of the time it's just—

Anyway, Joe and I were looking for someone to write a preface or introduction to the book, and who better than Ros. What happened was that the plant sale at Cabrillo in 1995 was in the amphitheater, and I asked Ros, and Renee Shepherd



(owner of Shepherd's Seeds), and Joe and I to do a book signing because we all had kitchen garden books in print at the time. And we said, "Well, let's have dinner afterwards." And so Joe and Gayle [Ortiz], and Renee, and Ros, and her husband at the time, who was a physicist, who was an amazing guy, you could talk to him about anything. He and I just went on for hours. I really liked Robert. I was very sorry— He died in a motorcycle accident. It was very sad.

Anyway, we went over to dinner at Joe and Gayle's. So every few months for the last twelve years we all get together and we have a gourmet dinner. We call it the California Kitchen Garden Gang and we have a great time. We've become very close because we all have things in common, ways of looking at things. We all write books and try and live the good life, but try and keep it simple. So that's been nice. We were asking ourselves why we keep coming together, and someone said, "Well, I come here because I can be me." Because the truth is that the four of us on a local level are celebrities—local, just local. Gayle a bit more. But wherever we go people look at us. I remember, I walked into Safeway. I had to get some hot dogs for my friend Charlie Thomas at the beach. And they sent me to Safeway. So I'm sitting there in Safeway pulling hot dogs out of the cold storage, and I turned around and there's three students looking at me, going, what in the heck are you doing?

**Farmer:** (laughter)

**Merrill:** I thought to myself, oh God. There I am, a victim of this whole thing. It just blew me away. "Honest. I'm getting it for somebody else. Honest!" I didn't

say that. I just walked away. Why deny it? (laughter) But the look on their face, was: "You?"

**Farmer:** And you have other books, too. Tell me more about *The Energy Primer*.

## The Energy Primer

**Merrill:** *The Energy Primer* was a book on renewable energy systems as of 1975. You remember *The Whole Earth Catalog*?

**Farmer:** Yes.

**Merrill:** *The Whole Earth Catalog* came out and we got permission to copy that layout. *The Energy Primer* is in that layout.

**Farmer:** I'm interested in the scientific conferences that you put on around *The Energy Primer*.

**Merrill:** I had a really broad background in science. In college, I had taken a lot of math, chemistry, and biology. I had a really good math background. I really liked science. So I could talk to a lot of different kinds of people in their own language. I found out that there were a lot of people that had kind of dropped out of the scene with the cultural revolution of the sixties and seventies, and were doing wonderful, great—Steve Bear, for example. Extremely well-educated physicists. A physics friend of mine up at Washington designed a hyperbolic curve for a greenhouse that reflected light in the winter but not the summer. Very complicated stuff. People were doing a lot of very clever stuff, designs of greenhouses, solar collectors.

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So in order to get people turned on, we figured, well, let's put on conferences that show people how they can do some of this themselves. It was really funky. How do you build a solar collector? Copper pipes and corrugated aluminum flat plates. And how do you build attached greenhouses? I came into that because a lot of the attached-greenhouse stuff is based on a high-altitude, dry climate of New Mexico, which didn't work in the low-elevation, wet climate of the coast. We had to put it again in its local framework. You have to put it where it is. So we had a little workshop.

The point I'm trying to make is that we brought together these kind of drop-out scientists, basically, who had enough expertise to talk about wind power, photovoltaics. The irony of this to me was at the time photovoltaics was this kind of never, never land. It was this kind of mushy physics type of stuff. And they were like hundreds of dollars a volt or wattage or whatever.

Today you look around and PV cells are what's happening. At the time we knew they were going to happen. Because what you have to do, is you got to get two things: liquid fuels and electricity. Those are the two fundamental things you need in the alternative world of tomorrow of renewable energy. You've got to find a way of making liquid fuels and of generating electricity. Until you do that, you are sort of missing the point. The alternative to electricity is wind and solar cells. Wind is very site specific. Sunlight as much. But they are inefficient. The future is efficient solar cells. And that's what's happened. You could just figure out where things are going based on efficiency in economics.

**Farmer:** So if they were drop-out scientists, that meant they weren't in research universities, so they weren't getting research grants?

**Merrill:** Some were. Some weren't. Like John Todd, for example. He was at Woods Hole. He got his Ph.D. He was a teacher there but he dropped out after a while to pursue his interest in biological water treatment. He's teaching up in Burlington.

I just pulled these folks together. That's what I did. I could talk to a whole bunch of people and get them excited about a conference. It's not magical. You find one person that people know and you get them on board. You find your keynote speaker who is going to shake things up. And maybe you pay them or maybe you don't. And you write letters and you say, "We have these two people, and here's the format." You lay out the format and you say, "Where do you want to fit in?" That's how you do a conference of people who are like that. If I did it the other way, where everything is tickets, and getting into rooms, and formalize it, it wouldn't have gone. The formation of the conference itself had to be alternative. You had to create the matrix of what you wanted people to talk about, and then let people go where they wanted to go to fit in. Because people had all this information in their heads.

People would always ask me about science in school. And I would say, "Listen. Science is just one way of knowing. It's not *the* way of knowing. It's one way of knowing based on logic and observations." But it's just one way. I really believe you are kind of born a scientist, based on how you think. I don't mean that in a derogatory way, or you can't become a scientist. I'm just saying some people just

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always look at things and make deductions from them so they can look at something else and understand it. That's science. Science is a way of thinking. However, once you develop that scientific outlook on life, a lot of time you get released from it and you go into another area that's based on your observations but isn't really scientifically accurate because it's too general, too hyperbolic; it's too out there. Like, for example, you see South America and Africa as an eight-year-old like I did, and I asked my dad, "Didn't they used to be together?"

**Farmer:** On the map, you mean?

**Merrill:** Yes. Now I've just made a statement that is spiritually derived, has no scientific basis. But yet it does, because I saw these two parts. They must have fit together. That's what I call metascience, or maybe even metaphysics, where you sort of step outside. You are shot off by science into some kind of conclusion, but the conclusion is so broad that it's not scientific, but it's probably true.

**Farmer:** So then you have to go back and prove it. You have to go back and get the evidence.

**Merrill:** And twenty-five years later they did. Or like, when they found life at the thermal vents. I remember thinking to myself well, that's where life started. Because a) you can't be at the surface; b) you're under pressure; c) you have a thermal gradient and d) you have an infinite supply of nutrients. I mean, give me a break. That's where it started, right there. That's what I mean, these leaps into realms that aren't scientific but they're probably true.

**Merrill:** I think in terms of gene pools. Every gene pool of every species has to have in it certain individuals that see the future. And I'm not talking about visionaries at all. I'm talking about the logical consequences of what we're doing are going to lead us to that. Therefore we've got to back off or change. I think those kinds of people are extremely rare in a population.

**Farmer:** And it doesn't mean that they are influential, either, which is the hard part.

**Merrill:** Or that they're better or worse than anybody else. It's just that they live with this curse: which is, "I see the future. I know what's going to happen. I can't tell any people because they'll think I'm an arrogant jerk. I've got to shut up. All I can do is prepare my friends and family for it and shut up."

**Farmer:** Or be a teacher. Prepare a whole bunch of people.

**Merrill:** Or be a teacher. There is that, too. I don't deny that. But that to me is the most frustrating thing in my life, personally, and a lot of other people that I know. You just don't know why people can't see what you see.

## Jerry Brown

**Farmer:** Tell me about meeting Jerry Brown.<sup>19</sup>

**Merrill:** Oh, when Jerry was in office he was sucking up all the alternative people. Sim Van der Ryn, who was a good friend, and who started the Farallones Institute in Occidental, which was analogous to the New Alchemy Institute back East, was appointed state architect. All of a sudden one of our own is in power.

So Jerry Brown calls all alternative agriculturalists in the state together at a meeting in San Francisco. We went into, I think it was the Fairmont Hotel in San Francisco, and he said, "Okay. What do we do? Come on."

I got mixed feelings about it. "I'm here. Come on. What do you got? Tell me what we should do." We sort of looked around at each other. He says, "Give me what you got. Tell me. What do we do about agriculture in California?" So we just took a deep breath and gave him our two bits worth and left.

**Farmer:** When would that have been?

**Merrill:** Oh, this is all the early seventies. This was a last-minute gathering of alternative agriculture types. It wasn't a conference. He had his whole entourage of all his assistants and everything. No one from the California Department of Food and Agriculture was there, if I can remember. He was just really curious. I think he really should have prepared us a bit more, because most of us were just dumbfounded by this approach. "Tell me what you got." Give me a break. Give me a week here to pull together some thoughts at the least. So it didn't come across very well. We weren't ready. I wasn't ready, that's for sure. Other people might have been more ready. Nothing really happened. Although, I remember someone saying to him, "What we need is better information." So Brown created these color (it seems trivial but for me it was epic), had the Department of Food and Agriculture make these color identification plates for agricultural insects so that there were these little keys that the farmer could actually follow by looking at the insect and telling you whether it had feathery antennae or whatever, and identify the pest. It was a fabulous piece of work. I still have some of the

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originals. And of course he started the Department of Alternative Technology, too. All of this was just the spin-off of the seventies, and Brown was there. He was the most important major political person in the country at that time who at least gave consideration to the alternatives. He was something.

The thing that got to me, though, was that Brown, even though he said he was interested in agriculture, the only thing that really happened in the state significantly was energy. It wasn't agriculture. Agriculture didn't change at all. Who changed agriculture significantly for me was Alice Waters. I mean, if you could put your finger on one person, and say that person probably effected regional change in agriculture as much as any one person, you're not going to find a better example of local food economies in this country than the San Francisco Bay area, especially with Alice Waters and all the things she's done. I admire her. She's someone with a lot of guts.

I mean, try speaking at a conference in Ames, Iowa, and then going out and trying to find something that you can eat. (Although I have to say something. My son lives in Rhode Island. Ten years ago we went back there and it was just unbelievable. We went to the supermarket and there were five aisles of white bread and soft drinks. Throughout the region, healthy food was virtually nonexistent. The food was unbelievable. We come back five years later and they've got health food stores, upscale bakeries, organic produce, and everybody is saying "Have a nice day." I've always marveled at how California spreads its culture. Why didn't Rhode Island come here? Why did California go there? I find



that very interesting. Because it's definitely California back there now. It's just starting to creep in, the bakeries and the coffeehouses.)

**Farmer:** Alice Waters helped create the demand.

### The Current Demand for Organics

**Merrill:** And that's what it's all about. To give you an example of that, Bill Allen, who was a good friend of mine and professor of anthropology at UC Santa Barbara, said, "How do you we get people to grow cotton organically? You go to cotton farmers and you haven't got a chance. It's just too tricky. But, what if I create a market for it?" So then he went and, like Alice Waters, created a market, this time for organic textiles for people to buy.<sup>20</sup> That's what you got to do.

**Farmer:** That's the argument for having organic at Wal-Mart. They say, "The people want it. They come into Wal-Mart, and so that's going to change the environment that the stuff is grown in." Except that Wal-Mart wants it at such a cheap price that they're only going to import it from China.

**Merrill:** I don't know how you get certified Chinese organic. That sounds kind of like a difficult thing to do. Maybe you are taking a chance. But it's not who does it, it's that it's being done. I mean, organic, organic, organic. Just fly it out there. I walk into a supermarket for the first time and I always ask for the produce manager and I say, "Where is your organic produce?" I can't see it and it's probably not there. But I want them to know that I want to know where it is. I've been doing that for thirty years and I'll be doing it the rest of my life.

**Farmer:** They label it more clearly now and there're rules saying it can't be right next to the conventional produce. It can't be unclear. The price is higher, but people expect that.

**Merrill:** Yes, you know, (laughter) I was in a supermarket in Aptos and I heard this scream. So I rush over to the produce section and this woman who was rifling through the lettuce saw a caterpillar in it. It was the organic produce and the store had just brought it in. I said to her, "Is everything okay?" "Well, that's a caterpillar." "Yes. That's okay. It's just a caterpillar. It means there're no pesticides on it. This is a good thing." "Oh, no." I said, "Ma'am," and then I launched into my spiel which gets me in trouble. I should have just walked away. No. I said, "Ma'am, would you rather have a tablespoon of DDT or would you rather eat that caterpillar? What would you rather do?" She said, "I don't know. I don't know about that." Things like that happen all the time. You just can't help yourself because it really does come down to that.

### Food Irradiation

**Farmer:** So now we're up to this point with the *E. coli* problem on the spinach, and people being afraid to eat fresh leafy greens unless they're irradiated.<sup>21</sup>

**Merrill:** Sometimes I wonder why these things get out, this kind of stuff. I mean, this happens all the time. It's no big deal. A doctor told me, "Ninety percent of so-called stomach flu is food poisoning, and if you eat out you're going to get food poisoning twice as much as the person who doesn't eat out. I can guarantee you that." He says, "I hardly eat out any more."

**Farmer:** Because people aren't washing their hands in the kitchen?

**Merrill:** That's the least of it. They're sneezing on food; they're breathing on food, all that. You're just getting into all this mess, so just stay away from it. But if our food supply is threatened by dangerous bacterial diseases, and if the public gets wind of this, what are they going to support? Irradiation. Yes. Why is irradiation being supported? Because they have to figure out how to get rid of certain kinds of atomic waste.

**Farmer:** Do you think?

**Merrill:** Well, I'm talking gamma rays. I'm not talking the hard stuff. But the really soft stuff, the alpha stuff, has to be gotten rid of. How do you get rid of it? You utilize it. You make it a tool of something. And how do you do that? You irradiate food. That's what I think is happening.

**Farmer:** But it works, right? And it doesn't contaminate the food. It kills the bacteria.

**Merrill:** It kills everything, it does. But it also kills a lot of the food value, which no one is talking about because there's little evidence for that. I know it's happening. It has to be.

**Farmer:** And isn't there an issue of the workers who work with the irradiation equipment possibly letting it leak, or they get hurt?

**Merrill:** Could be. I don't know. You see, it all comes back to the same thing. You say, is this technology good or bad? That's not the question. The question is, how

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is this technology being used? Is genetic engineering good? Yes, it has some good aspects to it. If you could figure out a way of creating resistances, or higher nutritional value, without secondary effects, check it out. But if you're telling me you want to fix nitrogen on corn, give me a break. I know we have to find an alternative to nitrogen, but that kind of action is just going to cause a nightmare. Because if you get nitrogen-fixing grasses in the agricultural system you've got a whole other kind of weed. Imagine Bermuda grass that could fix nitrogen. Whoa!

**Farmer:** Unless you could use it for fuel.

**Merrill:** Well, there you go. Maybe you could do that. There's an interesting question because if it contained nitrogen-fixing grasses with that application it might start to make sense.

I think the bottom line to all this is that we have to get leaders who can see the future differently than the establishment wants us to believe it's going to be. Because what's going to eat us alive is something called thermodynamics. It's going to catch up with us. It has to. Entropy and thermodynamics are going to catch up with us, and we have to figure out how to deal with it. And the most efficient, energetic models we know of do two things: they take the waste from one process and make it fuel for the next process, and they decentralize their energy sources around renewable systems.

And until you do those things, things are going to continue to be inefficient, because we're operating in this concept of abundance. We're not in abundance. Everything is non-renewable, everything. So there's no abundance, by definition.

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Everything is non-renewable now, even water. We're using it faster than we're making it. So until you decentralize and utilize waste in a much more efficient way, you're just headed down a tube. And agriculture, to me, is the metaphor for it all, because it's the extreme example of centralization and technology.

**Farmer:** And the demand is very steady.

**Merrill:** Right. All you can do is try to do the best you can, and try to decentralize it, and make it as local as possible. You're fighting a losing battle, but—

**Farmer:** But there are people who are fighting it. Like you said, there are those people who wrote that book about eating locally, that couple. It comes around in its time. Barbara Kingsolver has written a book about that with her daughter.<sup>22</sup>

**Merrill:** I don't begrudge them at all. But to me, it's just seeing it come around again a generation later. Well, like I wrote in there, the whole concept of habitat gardening, creating habitats—I have a whole article in *The Energy Primer* that talks about it. But nothing happened. The reason I did it was because the whole idea of companion planting was off the charts. It just wasn't right. It wasn't accurate. How do you make it scientifically accurate? That's what I wanted. So I put together the initial model, which took a plant, and then you have trap crops that trap pests that they can feed on, you put certain kinds of crops that have flowers to attract beneficials, right? And you put other plants that have a smell to them that masks the attracting odor of the crops. And you put those three together into a model, and that's "companion planting." The original companion

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planting was based on herbs of English gardens. It wasn't right. It wasn't accurate. But the concept was accurate. That's the point. So take that concept and then refine it so it makes sense.

**Farmer:** And then it has to make sense in all the different local environments.

**Merrill:** Well, it does, because the whole challenge of a habitat landscape is you are putting plants together that didn't evolve together. So you have to make it match in that sense, that is, you have to have flowers throughout the year, right, to attract beneficials, so you have to synchronize your flowering. This ain't growing cut flowers, folks. This is something different. This is growing habitats. That's different. That, to me, is the most challenging kind of horticulture and landscaping. It's not just aesthetics. You can make it beautiful, but that's not important.

**Farmer:** Well, it's important in a certain way.

**Merrill:** Well, it's got to be pretty. It can't be ugly. But it doesn't have to be, *whoa!* It can be nice all the time, and always have it there. So that's the real challenge. That, to me, is real interesting horticulture. That's the kind of horticulture biologists just *love*. I always tell biologists, too—when they're getting into gardening a few of them have that problem, and I say, "Well, just pretend you're building a habitat to attract and nurture your neighborhood wildlife. And here's how you go about doing it, how you make little ponds and little water elements." So anyway, that's what I'm interested in.

## Envisioning a Sustainable Future

I guess what's driving me slowly insane is I just don't understand how you can rationalize spending so much money on war when you could spend here and come up with a society that really works in terms of a sustainable future. And this sustainable future should be based on the technologies of renewable energy systems. Since these systems come from a variety of power sources like solar, wind, water, plants, organic-wastes, tides, bio-fuels, etc., each most suitable to certain parts of the country, an infrastructure of renewable energy systems would be highly decentralized, i.e., would have political as well as technological implications.

You ask yourself well, what did I do in this lifetime? I like to tell myself that what I did is hopefully I taught people that the most important things they can do is teach their children about the future, teach them to think into the future. Because you've got to pass that on. I always taught my kids everything you do has got a consequence down the road. You've got to see that consequence. Human beings have an incredibly hard time seeing the consequences of their actions. Michael Perelman once said, "Well, how can you argue against population control without arguing against economic growth?" His argument was that the real problem is that we think the economy must grow continuously to mirror the population's growth. And the real problem is, how do you get a sustainable economy that— I mean, how do you do this? How do you do that?

Local ecology, local agriculture seems to be plugging along pretty well. I see two kinds of organic growers. They both have the same sincerity of objective. Don't

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get me wrong. One is someone who leases land. And so what they do is they *don't* do chemical farming. Over here, is an organic grower that owns his own land that's been passed on for three or four generations. They do do organic growing. That is, they renew the soil, they add in organic matter. The plant insectary, hedgerows, etc. Over there, they don't do chemical farming. Over here, they do do organic farming. They are two different kinds of organic growers. One is sustainable, the other isn't. In other words, organic agriculture is not in and of itself necessarily sustainable. Sometimes we just don't see that agricultural sustainability has to do with people sustaining the land as well as feeding the people. And you really have to own the land. Or have control of it somehow. Long-term lease, whatever.

What do you do about Joe and Jane Doe who own fifty acres up the coast that's worth 250,000 dollars, whatever. I mean, what are they going to do? Sell it, take the money, put it in trust for their kids? Or are they going to continue to get blisters on their hands for the next twenty years? I mean, it's a tough, tough trip. I just don't know how to deal with it. Because the future according to neo-cons, and according to what's going on in Washington and what I'm hearing, is that we're going to be importing much of our food from China in the next twenty or thirty years.

Our culture is torn between the image of the necessity of agriculture as being sort of a pedestrian attitude that we ought to get rid of, or that agriculture is so fundamental and so important that it ought to be the top priority of our culture. Some of my friends and I played this game once: what if we were secretary of



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agriculture and had all this power and had the president under our thumb, what would we do? I said that the first thing I would do is I would figure out a way of growing enough food to feed my people here. And then what was left over would be an international commodity. Of course that's totally unrealistic. That would never happen. How do you reduce importing food?

Virtually everything that we want as a culture, everything, can be supplied by plants. Ultimately. Everything. So how do you integrate the existing agriculture system into something that provides food, international trade and liquid fuels? Because until you figure out how to make liquid fuels with renewable energy, everything else is a sideshow. That's the whole crux of the problem. And that comes from agriculture. That doesn't discount algae, which I think is where it's going to go. I think they are going to have huge algae farms in the California deserts and they're going to pull much of what they need out of that. I mean, algae are unbelievable. There're no big carbohydrates to worry about. It's all fresh green stuff. However they do it.

But right now we need to refocus. I mean, what just makes me cry sometimes is all this energy and money we're spending on war. It just boggles my mind. I can't even deal with it anymore. How do we put up with this? Why do we put up with this? It's insane. Do you know what 146 billion dollars would do if you channeled that into researching what we've been talking about here? We're talking about a whole new culture. This is what's really scary. Because it's not that we can't do it. It's all there, except the will.

**Farmer:** We're talking about the will, the political will. And the leadership.

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**Merrill:** Yes. You know, leadership is a funny thing. I've lived through presidents since FDR. But the thing about FDR was that he saw a crisis. And he just said, "Listen folks. This is what we're going to do to solve this crisis." We need someone like that.

**Farmer:** To put a program in action.

**Merrill:** And if you do it right, feminize it. You have to feminize politics.

**Farmer:** Say more about that.

**Merrill:** Well, with few exceptions, I will only vote for women from now on. But I won't vote for women that act like men. Now, someone once asked me what's the difference between a man and a woman, and I thought, I'm not going there. But I'll tell you what it is. Women want to please and men want to win. To me that's one of the essential differences between the two. Essential. It's not good or bad. It's just the way it is. Our one-million-year cultural history has formed us. Now, I don't want a woman who wants to win, and I don't want a man who wants to please. I want a woman who wants to win and please, and I want a man who wants to win and please. And when women stop acting like men in politics, then I'll go to the wall for them because I think they're better at politics than men will ever be. I think it's easier to make women winners than it is to make men pleasers.

**Farmer:** Okay, Richard. Thank you very much.

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<sup>1</sup> See, for example, Fritjof Capra, *The Tao of Physics*. (Boston, Mass.: Shambhala Publications, 1975).

<sup>2</sup> "Ecology and Revolutionary Thought" was first published by Murray Bookchin under the pseudonym Lewis Heber in Bookchin's newsletter, *Comment*, in 1964, and republished in the British journal *Anarchy* in 1965. It synthesized ecology and anarchism and became a founding document for the emerging field of social ecology. Bookchin died on July 30, 2006.

<sup>3</sup> Richard Merrill, Ed. *Radical Agriculture* (Harper & Row, 1976).

<sup>4</sup> See the oral history with Catherine Barr for more on the Cabrillo Farmers' Market.

<sup>5</sup> Richard Merrill added the following footnote to the edited transcript: "Biofuels should not be grown on fertile land using energetically inefficient crops like soybeans, wheat and corn. This will only cost more energy, while increasing prices that will just accelerate land clearance worldwide. Instead, we should be investigating ways of 1) making biofuels from agricultural and urban wastes; 2) using marginal land to grow high-yield non-crops like grasses and selected weeds (Borage, Malva, Hemp, etc.); 3) culturing algae in large-scale desert farms. Also, let's start decentralizing biofuel crops around a diversity of plants that fit with the mosaic of environmental constraints throughout the country."

<sup>6</sup> Alisa Smith and J. B. Mackinnon, *Plenty* (New York: Crown Publishers, 2007).

<sup>7</sup> Richard Merrill and Thomas Gage, eds. *Energy Primer: Solar, Water, Wind, and Biofuels* (Menlo Park, CA: Portola Institute, 1978).

<sup>8</sup> Michael Ableman, *Fields of Plenty: A Farmer's Journey in Search of Real Food and the People Who Grow It* (Chronicle Books, 2005).

<sup>9</sup> The development of biodynamic agriculture began in 1924 with a series of eight lectures on agriculture given by Rudolf Steiner in Germany. The course was held in response to a request by farmers who noticed degraded soil conditions and deterioration in the health and quality of crops and livestock resulting from the use of chemical fertilizers.

<sup>10</sup> See the oral history with Steve Kaffka in this series.

<sup>11</sup> The Alfred E. Heller Chair in Agroecology was founded in December of 1982 with a \$375,000 gift from Alfred E. Heller and was the first endowed chair at UC Santa Cruz. It is held by Professor Steve Gliessman. See the oral history with Gliessman in this series.

<sup>12</sup> Richard Merrill and Joe Ortiz, *The Gardener's Table: A Guide to Natural Vegetable Growing and Cooking* (Ten Speed Press, 2000).

<sup>13</sup> See this account by a resident of El Mirasol: "From 1971 to 1974, the Community Environmental Council (CEC) under the direction of Paul Relis and Hal Conklin sponsored an urban polyculture farm called El Mirasol, on the land then owned by the Santa Barbara Museum of Art. My association with the people and ideas that flourished on this 4.6-acre property helped to shape my life. The long out-of-print but classic booklet *Agriculture in the City*, published by CEC in 1976, proclaimed that 'agricultural systems harmonious with natural cycles should and could exist in an urban center.' This lofty ideal served as the framework for El Mirasol's many activities and experiments. From the beginning, it was an exciting place. Adult Education classes taught how to double-dig raised garden beds; alternative energy pioneers constructed solar panels; volunteers transplanted seedlings in the net-covered geodesic dome; children collected still-warm eggs from the chicken coop; and neighbors purchased fresh vegetables from the farm stand. There were beehives and fruit trees on the farm's periphery and a methane digester that ran on chicken manure." "El Mirasol: Life on a Polyculture Urban Farm," Marjorie Popper, *Santa Barbara Independent*, January 3, 2008 <http://www.independent.com/news/2008/jan/03/el-mirasol/>

<sup>14</sup> Richard and Merrill and Thomas Gage, eds. *Energy Primer: Solar, Water, Wind, and Biofuels* (Delta Special 1978).

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<sup>15</sup> The Center for Agroecology and Sustainable Food Systems held their fortieth reunion as a weekend celebration at UC Santa Cruz the weekend of July 27-29, 2007. See: [http://www.ucsc.edu/news\\_events/text.asp?pid=1470](http://www.ucsc.edu/news_events/text.asp?pid=1470)

<sup>16</sup> See John Jeavons, *How to Grow More Vegetables and Fruits, Nuts, Berries, Grains, and Other Crops Than You Ever Thought Possible On Less Land Than You Can Imagine* (Ten Speed Press, 2002).

<sup>17</sup> See the oral history with Wendy Krupnick for more on Rosalind Creasey.

<sup>18</sup> Rosalind Creasey and Marcia Kier-Hawthorne, *The Complete Book of Edible Landscaping: Home Landscaping with Food-Bearing Plants and Resource-Saving Techniques* (Sierra Club Books, 1982). New edition forthcoming 2010.

<sup>19</sup> Jerry Brown was Secretary of State of California from 1971 to 1975 and Governor of California from 1975 to 1983.

<sup>20</sup> See the oral history with Sean Swezey in this series for his reflections on growing organic cotton.

<sup>21</sup> In August 2006, a load of organic baby spinach from the Paicines Ranch in San Benito County contaminated with *E. coli* 0157:H7 was mixed in with several other batches of spinach being processed and packed into six-ounce bags. Within a few weeks, over two hundred people fell ill, and many ended up in the hospital. Two elderly women and a young child died from acute kidney failure. Six months after the outbreak, a coalition of large farmers released the California Leafy Greens Handler Marketing Agreement, the ecological and economic effects of which are discussed by Jo Ann Baumgartner in her oral history in this series, as well as other narrators.

<sup>22</sup> Barbara Kingsolver, Camille Kingsolver, and Steven Hopp, *Animal, Vegetable, Miracle: A Year of Food Life* (HarperCollins, 2007).