

Hampshire College (1978)

The Agricultural Liberal Arts

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Most people today don't think of Massachusetts as an agricultural state. How quickly we forget that once it was a breadbasket, shipping tons of foodstuffs back to England. The Connecticut River valley flowed with waving wheat until the Hessian fly put an end to it at the beginning of the nineteenth century. The wool business—gone by 1830—was enormous on the hillsides until the government changed the tariff laws and cheap land opened up beyond the end of the newly built Erie Canal. How quickly we forget that the Redcoats in Boston marched to Lexington and Concord because the large farm population there was hiding guns and powder to be fired as the first shots of independence, heard round the world. The leaders of our emerging democracy—Washington, Adams, Jefferson, Madison, Monroe—were all farmers who supported education. In the developing societies in Massachusetts, if there were more than fifty families in a town, then a school was required. The first four-year college in this country (Harvard, founded in 1636) was in Massachusetts; an agricultural land-grant college, now the University of Massachusetts, was established in 1863.

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CREATING A “NEW COLLEGE”

Hampshire College was created in the late 1960s as an experiment in alternative education. The reason for creating a fifth college in a valley rich in colleges (within a ten-mile radius are Amherst, Mount Holyoke, Smith, and the University of Massachusetts) was to help solve a wider crisis in American higher education related to both quality and quan-

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tity. With increasing pressure from postwar high school graduates for places in four-year colleges, opportunities for gaining a high-quality, cost-effective education were scarce. The intent of Hampshire's curriculum was to teach students to teach themselves by providing a framework within which students read, wrote, studied, explored, questioned, and experimented—but were not constrained by the traditional academic pathways of distinct majors or disciplines. The first students arrived in the fall of 1970.

The Farm Center at Hampshire College grew from several perspectives that coalesced in the mid-1970s. First, the college was situated on eight hundred acres of farmland in the fertile Connecticut River valley. Second, the nascent environmental movement inspired students and faculty to tackle real-world problems that were affecting the quality of life. Finally, the designation *experimental*, which the college's founders had prescribed for their new institution, pointed firmly to a new departure in higher education and challenged students and faculty to find the way. Even though, at the start, Hampshire consisted of three reasonably traditional schools—the Schools of Humanities and Arts, Social Science, and Natural Science—these were only supposed to be administrative entities. The real action was slated to take place in programs.

Two formalized programs were in place at the very beginning—Human Development and Language and Communication. Faculty in each of the three schools were expected to participate in at least one of these programs by attending the weekly all-college program seminar, and they were expected to offer a course on some aspect of the program. The course work would provide information for the main seminar, which would, in turn, feed an expansion on some topics back to the courses. It was a good system. It turned out to be an imaginative way to teach and also encouraged a sense of community. Within a program, tremendous intellectual and instructive activity circulated.

The model was ideal for supporting the Environmental Quality Program (EQP), which began a year later. Surprisingly, in retrospect, there had been little attention paid to environmental studies during the creation of the new college. Original planning documents date from the mid-1950s, just when Rachel Carson was beginning to write *Silent Spring*, the book that set the stage for the environmental movement in the United States.

The EQP was about environmental problems but was never intended to fix them. In academics, a course in Shakespeare is about the author's work and not about how to rewrite it. Affectionately known as *De rerum natura* (after the first-century-BC Roman philosopher Lucretius's famous

poem *On the Nature of the Universe*), the EQP consisted of once-a-week seminars, the satellite courses typical of a program, and a new series of once-a-week evening guest lectures. The guest lecturers covered a variety of subjects: sewage problems in New York City, DDT and soft pelican eggs, fish ladders in the Connecticut River, in short, any regional or national environmental topic. The invited speakers might be architects, engineers, political scientists, or researchers from law, medicine, physics, chemistry, or biology. The lecture series complemented and broadened the perspectives of the various satellite courses while at the same time introducing undergraduates to a range of contemporary issues. Researching those issues in multiple disciplines led students to multiple methods of inquiry. This kind of immersion fit perfectly with the college's overall goals of motivating learning and modeling how to learn.

What emerged from the EQP was the realization that many of our largest environmental problems stemmed from agricultural practices. Soils were being eroded because plowing reduced not only fertility but also the water reservoir stored within that soil. Pesticides were leaching from fields into streams, killing fish and wildlife, and endangering human health. Agriculture was a monster that chewed up the soil, polluting adjacent habitats, creating ever-expanding irrigation systems, and using so much water that some rivers no longer even made it to the sea. The air we breathed caused cancers, lung diseases, and allergies. Agricultural products poisoned us directly with residues in the food itself. If that wasn't bad enough, the food we ate had lost much of its taste. It was processed beyond recognition, fattening us without providing adequate nutrition.

It was a confusing time for both students and professors in an experimental college. We suspected that technological advancement was a cause of environmental degradation, that scientists were part of an industrial-military complex that was forsaking the basics of a good quality of life. Students in small liberal arts colleges tended to be antiscience. They didn't believe that atoms were for peaceful purposes or that electricity could be too cheap to meter. Nuclear bomb testing and the mortal threat of those bombs, coupled with the unwinnable war in Vietnam, made it all too clear what scientists had done for us. Besides, chemistry and physics were too hard to learn unless you were really smart, dedicated, and persistent. Advances in agriculture were driven by the economics of growing food for export to foreign nations to supplement military hardware as a means to equalize the balance of payments. But USDA scientists were not thinking about health and nutrition. Rather, they were selecting for crops that

yielded big harvests and that could withstand mechanical harvesting, processing, and long-distance shipping.

TEACHING SCIENCE IN THE LIBERAL ARTS

Indeed, those of us thinking about new ways to teach science in the liberal arts knew that we had to be academically creative. Most students in our science courses were simply trying to satisfy their science requirement. They had come to Hampshire to be screenwriters or historians. Many biology majors were preprofessionals, anticipating medical school. Our love of science was confounded by the high schools, which typically made science courses into a hard and dull memorizing of facts and formulas. One high school teacher interviewed said that he would like to make his advanced-placement biology course interesting but that there “just wasn’t enough time.” Advanced placement was an interesting concept in itself in education. Pass the advanced-placement biology course, and you’ll never have to take biology again. The carrot was that, if you enrolled in a liberal arts college, your advanced-placement course would satisfy your collegiate distribution requirement. When students got to Hampshire, they were dismayed to find that they still had to take science. They didn’t believe us when we said it would be interesting and fun. Few people at that time realized that science was a language in which, in the late twentieth century, an educated person had to be fluent.

Meanwhile, the farmland surrounding Hampshire’s small campus kept attracting the attention of faculty and students. Population studies were done in adjacent frog ponds and vernal pools. The chemistry of pond water was analyzed. Soil samples were taken. Woven in with these activities were several serious attempts by students to launch a farm program. Usually, the ideas clustered around communal living and working together and the wouldn’t-it-be-great-to-grow-our-own-food approach. Many students were intrigued by the perennial grain crop studies at Wes Jackson’s Land Institute, the organic approach at the Rodale Institute, the rethinking of food, water, and shelter at the New Alchemy Institute, and the back-to-the-land, living-the-good-life farm of the Nearings in Vermont and then Maine. Some Hampshire students interned at these centers and brought what they had learned back to Hampshire. By the early 1980s, they had created on campus a “greenhouse mod,” adding a solar greenhouse to one of the communal dormitories, and growing their own vegetables. They experimented with hydroponics for the veggies and built a small pond for

raising tilapia. In time, they acquired major funding from the Pew Memorial Trust to add a three-story bioshelter extension to the science building, where they engaged in aquaculture, growing a lot more tilapia, and studying the integration of ecological systems. Other students built a windmill out of a fifty-five-gallon steel drum just to see if it would work.

But, in the 1970s, agriculture was not seen as a plausible area of study within the liberal arts curriculum. Early attempts to launch a working/studying/research farm did not have all-college support. A farm meant growing food or animals. A liberal arts education meant the larger, intellectual topics: Does Darwin's theory of natural selection hold up today? Discussion of agricultural problems had not yet taken its place in undergraduate colleges. Hampshire's farm ideas were not funded either internally or externally. On campus, the farm-based projects were seen to be in competition with other programmatic tracks, which were considered by many of the faculty as having greater lasting social value. Issues of equality for women and racial minorities were the important topics of the day.

Neither were we farmers, nor was our goal to train farmers. The University of Massachusetts (UMass), just three miles away, was the state's land-grant agricultural college. Future farmers went to UMass. Our attempts at Hampshire to start an agricultural program seemed far outside the interest of our UMass colleagues.

Besides, there was no money.

CULTIVATING RESEARCH AND EDUCATION

And then, in the mid-1970s, several projects were created by Hampshire science faculty that qualified as bona fide science/agriculture studies and that had some money attached to them. Quite by chance, they all centered on sheep. While we were trying to fit a money-attracting program around our belief that sheep would be a good-sized animal for liberal arts undergraduates, the sheep industry released its "Blueprint for Expansion of the American Sheep Industry." We connected with an extension agent for sheep (in New Hampshire; Massachusetts did not have one), who advised us about a potential flock. One of our adjunct professors, Paul Slater, had just finished a master's thesis titled "How Shall We Preserve Our Family Farms?" Paul had also raised sheep, and sheep figured in his answer to the question posed by his thesis. "As ruminants," he wrote, sheep "can use marginal lands unsuited to crop production to produce food and fiber on a sustainable basis while supplementing small farm incomes."

At about the same time, Professor John Torrey, a Harvard botanist, arrived at our door asking whether we would be interested in providing land for experiments with nitrogen-fixing alder bushes as a source of animal forage. This was exciting, for it seemed to dovetail with Wes Jackson's ideas of developing perennial polycultures. We said yes, thinking that this would be an excellent use for some of Hampshire's farmland and could lead to interesting student projects. It did, and our rationale for adopting sheep became even stronger.

And then came the breakthrough. In 1972, President Nixon had signed an executive order that forbade the use of toxic chemicals on federal land for predator-control programs. As a result, publication of the sheep sector's "Blueprint for Expansion" coincided with reports of a serious decline in sheep production owing to predation by coyotes and free-roaming dogs. Producers were clamoring for nonlethal methods of limiting predation.

A major center for the study of ruminant production, both in the 1970s and today, is the Winrock International Livestock Research and Training Center in Arkansas. The president of Hampshire in 1976 was Charles Longworth, who suggested to us a visit to Winrock as a way of finding out more about predation on sheep. There the subject of nonlethal methods came alive. A staff researcher and sheep producer named Hudson Glimp told us of claims coming out of Texas that large European sheepdogs were having some success at protecting sheep there. What could be better than to go back to the Old World and study the dogs of traditional pastoralist cultures? We would bring back ideas—and puppies—to study their potential in the New World.

With such compelling evidence that Hampshire needed a farm to nurture these sheep-oriented projects, a proposal for the New England Farm Center was presented to the college in November 1978. It would encompass three projects, to start: sheep for New England pastures, livestock-guarding dogs for nonlethal predator control, and nitrogen-fixing plants for pasture improvement. A start-up grant for the dog project was obtained from Winrock; Susan Mellon of the Mellon Foundation provided a three-year challenge grant; and that, in turn, was matched by William Dietel at the Rockefeller Brothers Fund. These gained us a budget line in the business office, and we were official.

Within the next ten years, we had raised over \$1 million in grant money. During this time, Hampshire's third president, Adele Simmons, provided constant moral and academic encouragement. She initiated several funding projects, two of which—with Control Data Corporation and the USDA—funded research for three years each.



Figure 7.1. Students bottling maple syrup. (Courtesy Hampshire College.)

The projects all counted as alternative agriculture: unusual ways of solving current agricultural problems. They suited Hampshire's desire to serve as a good corporate citizen, to avoid the ivory tower image, and to operate in the real world with innovative solutions. Problems from far away were brought into the Farm Center and studied. For example, one might think of rangeland as a perennial polyculture of grasses. But there is a problem with grass in big open country—on our western ranges or the South American pampas, for example. Grasslands need to be fertilized. Essentially, to raise beef, sheep, or wool on the range is to convert grass into some kind of protein and then export that protein to some faraway market. Every one of those protein molecules, or chains of amino acids, has nitrogen atoms attached to it, and that nitrogen is continuously taken from the land. Slowly, or, in some cases, rapidly, the grassland deteriorates and eventually turns to dust. The only way to fertilize—unless a better strategy can be found—is an expensive process involving quantities of fossil fuel.

The Farm Center projects fit well into Hampshire's academic program, designed as a sequence of Division I, II, and III courses leading to the bachelor of arts degree. In Hampshire's planning document, *The Making of a College*, the first-year "Div I" is proposed "to give students direct

experience in conceptual inquiry in the company of faculty scholars who have a command of disciplines with which to approach subjects and problems they are really interested in.”¹ In practice, this resulted in students choosing a topic for in-depth research—and, the more hands-on, the better. This worked particularly well in the School of Natural Science, as students developed questions that could be answered with a simple experiment. For example, they tested nitrogen-fixing plants, including woody dicots such as alder. Conceivably, alder would never need to be replanted, and it fixes nitrogen. So the students read papers, asked questions, and hunted in the fields, finding species that could survive in different habitats such as the upland, the lowland, the wetlands, and the dry land. The campus had it all. Would sheep eat it, and, if they did, would they destroy the habitat? Each question led to that first-year, project-oriented Div I examination, or a senior-year, longer-term research study and the Div III thesis, and often even to a peer-reviewed scientific publication.

CONNECTING PEDAGOGY AND AGRICULTURE

Then we discovered that our rationale for teaching about agriculture in the liberal arts college had already been put into words—eloquent, scholarly words by two giants in nutrition and education. A paper had been published in 1974 called “Agriculture, the Island Empire.” It was written by André Mayer and Jean Mayer and published in the prestigious journal *Daedalus*. The article did two exciting things for us. It confirmed our view that agriculture was not beyond the scope of a liberal arts college. “The present isolation of agriculture in American academic life is a tragedy,” the Mayers wrote. And they validated our use of agriculture in teaching biology, animal behavior, botany, chemistry, geology, and astronomy—all sciences that had arisen because of the needs of agriculture. Indeed, they argued, agriculture “was the first science—the mother of sciences; it remains the science which makes human life possible, and it may well be that, before the century is over, the success or failure of Science as a whole will be judged by the success or failure of agriculture.”² They contended that children who know Shakespeare but nothing about their food could not be considered educated. It was a wonderful argument, and it made sense to us. All the disciplines could be involved, all who were interested in the environment, any of the Hampshire faculty. Studies of our food and water—even the world’s food and water—were an exciting prospect for the work of a liberal arts college.

There was more to engage us in the Mayer paper. Farming activities are a great way to lure kids into science. Most college students are interested in one or more aspects of reproduction—and agriculture is all about reproduction. The antiscience student of the 1970s was not antireproduction. Studying sheep, lambs, dogs, puppies, and even the fortunes of alder shoots is fascinating for students. The questions we were asking were new. And the answers were *needed* by farmers. Students progressed through Hampshire, asked big questions, found out the answers to little questions, and wrote up their studies and sometimes published them in scientific journals. We had found a way to attract students to science, to get them to practice real science and enjoy it, all the while learning.

Our farm became a favorite center of activity. All students are required to pass a Div I exam in science, and many chose a farm-related project. Working on the farm was favored by many students on work-study. In the years since the farm's establishment, the enthusiasm of the students for the outdoors work and physical labor at the farm has trickled back onto the main campus, with the result that professors of social science, humanities, arts, and cognitive science have joined those in natural science in paying attention to the rich living resources of the farm. Students jostled to be assigned to overnight lamb watch. They helped deliver lambs and puppies. They tackled onerous chores—happily. They took charge of medical schedules and nutrition analyses. They spent hours in the science labs and hours on a shed roof clocking dog behavior. They worked one-on-one with their professors, almost as colleagues. Hampshire's Div I program, the "freshman" year, fosters this collegial relationship as students learn the methods of inquiry used by researchers. As the first-year introduction to methods of learning at Hampshire College, the Div I curriculum has excelled at fostering the successful engagement of students. Students are immediately immersed in the professional inquiries of their professors. The Div I year is when many would-be future writers or architects discover the fascination of science. Many go on to graduate school, Ph.D.s, M.D.s, D.V.M.s, and entire careers in scientific fields.

Among the courses taught at Hampshire right from its beginning were ecology, ecological modeling, environmental values, ecosystems analysis, organic farming, and the evolution and behavior of domestic animals. Concurrently, the more standard undergraduate biology courses were available: genetics, microbiology, plant anatomy and physiology, organic chemistry, neurophysiology, and biochemistry. By the mid-1970s, students were getting more sophisticated in their approach to the problems of agriculture, and,

for many years, courses with such titles as “Biosocial Human Adaptation,” “The World Food Crisis,” and “The Future of Agriculture in New England” attracted dozens of students. “The World Food Crisis” was taught by a social scientist and a biologist and aimed to combine “natural and social science perspectives on the current world food situation with particular emphasis on New England, the United States, and Third World agriculture.” Topics within this course included technological change, export orientation, agribusiness, the use of fossil fuels, human population, small farmers, “the feasibility of efforts to revive rural communities around a small farmer base,” and “the promise and pitfalls of Green Revolution technology.”³

Courses offered now at Hampshire reflect the need of students to understand problems facing world populations, including agriculture. A sample includes the following:

Advanced Topics in Terrestrial Ecology
 Agriculture, Ecology, and Society
 Agriculture, Food, and Human Health
 Biomass Energy
 Farming in America
 From Generation to Generation: Seed Saving in Sustainable Agriculture
 The Microbial Farm
 Pesticide Alternatives
 Soil: Science and Society
 Sustainable Agriculture and Organic Farming
 Sustainable Agriculture: Local, Organic Food Production and the
 Urban/Exurban Interface
 Sustainable Agriculture Seminar

Related courses are also available through the Five-College Consortium:

Horticulture (Smith College)
 Plant Biology (Smith College)
 Plant Ecology (UMass)
 Soil Chemistry (UMass)
 Sustainable Agriculture (UMass)
 Tropical Agriculture (UMass)

Hampshire’s original array of the three academic schools has metamorphosed many times, and now they are found within broader programs. The

Environmental Studies and Sustainability Program meshes the Schools of Natural Science, Social Science, and Art. In 1992, faculty of Hampshire and several other institutions founded the Institute for Science and Interdisciplinary Studies, which, in a sense, reflects the embryonic ideas in the original EQP. One of its goals is to develop research to study economic crises of agriculture. The Agricultural Studies/Farm Center Program mixes intellectual, political, scientific, and cultural studies. Faculty in the Schools of Cognitive Science and Natural Science have joined together to advise students studying animal behavior and cognition. Two recent projects from the program are “Domestic Sheep: A Two-Part Bioacoustic Study” and “Apple Maggot Fly Responses to Sticky Red Spheres.”

Concurrently with this development of courses, the Farm Center was defining its landscape and objectives. Located a ten-minute walk from the library, past a dormitory, along a forest path, and across a field, the farm’s office/farmhouse, barns, pastures, sugar shack, community-supported agriculture (CSA) distribution barn cum root cellar, hoophouse for winter greens, kennel/offices, irrigation pond, compost pad, and weather station are located on the north side of the main campus. The series of original farm managers had been hired mainly to take care of the sheep and dogs in the original research projects, but, by the early 1990s, both projects had been successfully finished, and the Farm Center looked for new appropriate goals. The college had kept the farm manager position filled, and, in 1990, the manager hosted the summer conference of the Northeast Organic Farming Association (NOFA) at Hampshire. The weekend in August brought families, tents, camper vehicles, and enthusiasm to campus dormitories and fields. Three days of workshops, exhibitions, demonstrations, markets, and games raised the profile of Hampshire’s farm in the wider agricultural community. It was a center for studying about agriculture!

Then, as is typical for this college, a student-generated project helped keep the farm on the map. The students designed a CSA program to produce organic vegetables for thirty shareholders. Shareholding was initially limited to the Hampshire community—students, faculty, staff—but, very quickly, the CSA grew to two hundred shareholders from the Five-College community, and the original small garden area expanded to fifteen acres.

One of the attendees at the NOFA conference in 1996 was Leslie Cox, who had grown up on a large, progressive dairy farm, earned his B.S. in agricultural education at Cornell with a concentration in farm management, had worked in various states as a farm manager and teacher of agriculture, and was amazed to see sheep grazing on the Hampshire campus. He found out

later that the manager's job was open and applied for it. Under his expert direction, the Farm Center has evolved into a real farm, but a small-scale one relevant to a liberal arts college. Currently, the livestock consists of fifteen to twenty ewes, six to eight milking cows, six to eight beef cows, twenty-five chickens, twenty-five turkeys, nine to ten pigs, and about three llamas for predator control. Leslie bales six thousand bales of grass hay a year; together, pasture and hayfields for the livestock occupy seventy-five acres.

In 1998, the farm hired another full-time professional, Nancy Hanson, as manager of the CSA. Nancy is a fourth-generation farmer from a Connecticut dairy farm with a degree in plant science from the University of Connecticut. She manages the CSA on fifteen acres, with three acres usually in cover crops each year. She also manages summer interns, work-study students, and volunteers, scheduling the workload to coincide as much as possible with the academic year. The CSA's distribution of vegetables, herbs, and flowers begins in early September.

One of the advantages of a student farm, of course, is the number of students available to do the chores. One of Hampshire's perennial problems has been to find enough jobs on campus to employ the number of its students eligible for work-study. The farm has taken up the slack: Leslie gets forty-five to fifty-five applications every fall. He accepts them all, meets the students at the barn, and tells them about the 7:00 A.M. chores and the 7:00 P.M. chores. Very quickly the applicants sort out for themselves whether 7:00 A.M. is a valid part of their day. During the school year, two students work full-time with the livestock and maintenance chores, and three or four work part-time during the busy times of haying, lambing, or sugaring. Many others work an hour here, two hours there.

The two managers schedule the farming chores according to the availability of students. The annual cycle of planting, weeding, harvesting, marketing, haying, maintenance, sugaring, milking, and logging is kept within the scope of the small farm and the relatively inexperienced student workers. The managers run the operations on a seasonal cycle familiar to any farmer. At any time, faculty or students can lend a hand with the ongoing activities. Marketing is focused solely on the Five-College community so that local commercial farmers are not threatened by Hampshire's farm. Recently, the farm has applied to the state for a grant to acquire cheese-making equipment in order to create a demonstration of what can be done on a small scale. Information will be disseminated to interested local farmers.

Pedagogy and agriculture are well joined at Hampshire.



Figure 7.2. A student feeding the chickens. (Courtesy Laura Sayre.)

THE BOTTOM LINE

The greatest challenge to the Hampshire College Farm Center has always been funding. Who funds all the activities? It is still often difficult to get across the idea that the farm is about agriculture and not about plant and animal husbandry: it's not just about getting the chores done; it's about illustrating larger agricultural issues while getting the chores done. Early on, some administrators saw the farm as a good way to manage an acreage that it was our moral obligation to manage. Often, they saw potential dollars in produce or thought that the farm should be financially self-sufficient. That always created—and still does—an internal conflict because our job is to teach and to learn the culture of agriculture, not just to grow crops and sell them.

Changes in college administration brought financial managers who thought that it might be easier and cheaper to turn the farm into lawns, parking lots, and recreation areas. In almost every budget crunch, the administrators look to the farm as an obvious place to cut expenses. No one interested in the pedagogy of science would suggest that we close the science class-

rooms or labs, but the same people would suggest closing the farm.

The Farm Center was never part of the original college plan. It was never designed as an integral part of the new college. It was a program. As a program, the expectation was that it would be administered through the schools (Humanities and Arts, Social Science, and Natural Science). No budget line was ever prepared. The 1978 proposal for the Farm Center gained its stature solely from the *funded* projects it described. Since day one, the business office was anxious to know whether we could at least break even with the sheep on the farm. Running a commercial sheep farm for profit is difficult but not impossible. Making money on sheep at a college while accommodating student projects probably is impossible. It's hard for a business office to balance the cash outflow with the knowledge inflow.

Although the Farm Center has existed for over thirty years and presents a shipshape, organized, productive face to traffic along Route 116 in South Amherst, it exists on a precarious administrative and even academic ledge. Many Hampshire faculty still have the image of a farm as a place to do farming, not teaching, and, therefore, not relevant to a small liberal arts college. But other faculty have supported the combination of academic and agrarian ventures. They encourage student projects and write grant proposals for farm-based investigations. Some money for overhead is available to the college from grants, but this is neither a large nor a reliable funding source. As a result, thanks to the college's continuation of the farm manager's position and hiring of a CSA manager, the Farm Center in the 1990s began to focus seriously on earning a steady income through the sale of farm products and services.

Farm Center land now grows more than thirty different vegetables, flowers, and herbs for over two hundred shareholders. These are distributed once a week from early September through late November, at \$300 a share, in a purpose-built barn. In the summer, local kindergarten through twelfth-grade students attend the Farm and Garden Camp, which was created and is led by the Farm Education Collaborative of Western Massachusetts. The farm runs the School-to-Farm Program, creates and mentors apprenticeships, and holds workshops on weaving, beekeeping, natural fiber dyeing, and maple sugaring. And, thanks to the endeavors of the farm manager and the input and enthusiasm of the students, the Hampshire farm these days has many small enterprises that help support it: sheep, dairy cows, beef, pork, turkeys, chickens, eggs, firewood, maple syrup, honey, and cordwood. Besides increasing the cash flow to the farm and college, these outreach activities extend the college's corporate citizen endeavors locally.

During the 1980s, the Farm Center had hosted an annual summer conference for sheep producers (Sheeposium, of course), and, from 1990 to 2007, NOFA brought hundreds of people to campus for three days.

Currently, the net cost to the college of the Farm Center is about \$140,000 annually. A little over half of this is salaries. The CSA more than pays all its own expenses (minus salaries); farm expenses run about \$18,000 short. The goal is for both programs to pay for themselves, minus the salaries of the two managers, who are on the staff of Hampshire College and who participate in some teaching and advising of students. This goal seems reasonable. Farm faculty are writing proposals for funding of pilot research/demonstration projects. The staff want to increase the sales of meat and the number of CSA shareholders. The farm is looking to expand into cheese, yogurt, and ice cream. And, although the final product is not for sale, the growing of hops at the farm results in several experimental beverages, and the spent grain is recycled to happy pigs and chickens. The dean of natural science, Chris Jarvis, writes, "I was awarded an NSF grant to teach students to ask questions and pursue answers in brewing science and it bought me a small brewery (very small, 15 gallon vessels, but high tech nonetheless)! We teach cheese making at the 100 level to introduce [students] to fermentation (using milk from the farm) and the cheese-making course and organic chemistry are the pre-reqs for Zymurgy, the course in brewing science! And our beer is very good!"

EVALUATING THE FARM CENTER

Word filters from the admissions office that several students have chosen Hampshire specifically because of its integration of academic liberal arts with an agriculture program and working farm. Word has also filtered from several parents who visited campus during a fall "Parents and Friends" weekend that the sight of sheep grazing along one side of the long entrance driveway was an unexpected and totally enjoyable surprise.

Are the students successful? Is the faculty? Is the farm? Yes, the students progress through their four years of self-selected and self-directed studies, choosing hands-on agricultural projects that are framed by academic inquiry, scientific methods, responsible use of materials, and the presentation of results. Sometimes their studies take them far afield. They have traveled across the country visiting the Hampshire livestock guarding dogs in situ on farms and ranches in thirty-eight states and collected data on their behavior and their working environment. In British Colum-



Figure 7.3. A student making yogurt. (Courtesy Hampshire College.)

bia, where sheep were being used in forest clear-cuts as an organic way to keep weeds cleared until the replanted trees were tall enough to outcompete them, a student went with a guarding dog to help protect the sheep. The Canadian government had mandated that, if there were going to be sheep grazing the weeds on the clear-cuts in the high country, then there needed to be a shepherd with them and also a livestock-guarding dog. We sent dogs and students.

Yes, the faculty are teaching science—to enthusiastic science majors and nonmajors alike. We teach that area of science called *hypothesis testing*. We teach experimental design, we teach methods of inquiry, and, most of all, we teach students *how* to learn. As the new college matured, the needs of the students for faculty to teach agriculture studies increased. The Schools of Natural Science and Social Science and the new School of Cognitive Science have each hired faculty expressly (although not exclusively) to participate in farm activities. We added a reproductive physiologist, international experts in food and nutrition, and several animal behaviorists. Which professors are active at the farm at any given time depends on the interests of the students. In a recent semester, four disciplines were profiled: botany, politics and environmental studies, ecology and entomology, and microbiology. The range of academic subjects is worldwide, from detecting stress in vocalizations in sheep in Ireland to agricultural policy in Africa. Think of any agricultural problem you can, and chances are a Hampshire student has investigated it.

The original research project at the farm, investigating whether Old World livestock-guarding dogs could protect New World livestock, expanded from a few sheep farmers in Massachusetts to a nationwide and international program, eventually keeping records on fifteen hundred dogs. By the early 1990s, the project had passed into the hands of the livestock producers themselves. In the spring of 2008, sheep and goat producers in Texas welcomed us back to their ranches and told us that, without the dogs, they could not stay in business.

Dozens of farm-based research projects continue. To mention just one, in the first decade of the twenty-first century, Dula Amarasiriwardena, a professor of chemistry, and his students published papers about remediating arsenic pesticides in apple orchards, measuring lead content in maple syrup, and teaching environmental analytic chemistry in a project-based lab study. As a result, to mention just one outcome, Vermont wrote new legal requirements for maple syrup production.

Thus, the results of student and faculty work in the field of agriculture at

our small liberal arts college are often significant in the wider world as well as within our small college. We underline the real-world importance of what we do by submitting the results of the research to scientific publications, where it is reviewed by established scientists according to the professional standards of each field. Our pedagogical requirements are well satisfied every time we graduate an undergraduate with a publication record.

Those requirements are also well satisfied when we look at the Hampshire College Web site and see, listed under “Academic Programs,” *Farm Center*. Within the School of Natural Science is an area of study called *Agricultural Studies and Rural Life*. The text goes:

The study of food, agriculture, and rural life brings together faculty and students interested in the central intellectual, political, scientific, and cultural issues that dominate contemporary discussion of food and agriculture.

The program combines a diverse academic curriculum with practical experience at the Hampshire College Farm Center, an organic working farm, and workshops with visiting writers, artists, and scholars. Students gain experience with the complex issues of sustainability through internships and apprenticeships with farms and advocacy groups.⁴

André Mayer and Jean Mayer would be pleased. So are we.

STUDENT REFLECTIONS

GOOD SOIL

MARADA COOK

When I came to Hampshire College, I already knew how to drive a tractor. After growing up on a family farm and working on organic farms on both coasts, I thought I knew a thing or two about growing vegetables, too. But I'd never seen broccoli like Nancy Hanson's.

Hampshire broccoli stands three feet high, glows with a blue-green verdant sheen, and produces head after head of perfect—and I mean perfect—worm-free, vitamin-rich, over-the-top, catalog-quality broccoli. When the admissions staff asked, “Why do you want to come to Hampshire?” I told them I wanted to learn the scientific reasons we should link soil health to the

highest of mankind's achievements on earth. The broccoli, though, loomed large in my mind—I had to learn how to grow broccoli like that.

The Hampshire CSA farm manager, Nancy, proved to know more than a thing or two about broccoli. She was also the perfect blend of modern mentor and New England skeptic. She encouraged us to help with the next year's crop planning as well as pick vegetables with about forty of our friends. Being college kids, hunger was a common cause, the farm was full of edible rewards, the work was social, and, hey, why not get up early if it means the only shot at the community raspberry patch?

I picked vegetables with an intense and sensitive fellow student with no ability to teamwork. I taught him about how a large family like mine worked the land; he taught me about the importance of small things and stunning writing. We somehow stuck out several years of shared classes, farm shifts, and apartments. I learned how to grow broccoli, and he insisted that there was more to it all than broccoli. We stayed four years at Hampshire and the farm. One interest led to another; they all seemed to lead back to the land; the thrill of mental gymnastics along the field edges didn't get old. By the eighth semester there was still more to learn.

Hampshire's great broccoli came in part from the design work behind nurturing the soil. Nancy's farm plan fed the land; the land produced healthy soil and healthy crops. As we struggled to keep up with the harvests that flowed from such good land care, we ate the food we harvested, and we thought about how to change the world. I'm not saying we came up with any better answers than the generation that started Hampshire College, but we were there, and we ate of the earth of the place. And then we took it with us. In fact, we often went to classes wet, dirty, cold, and tired. We formulated our approach for the next five to ten years or more with a day that started in the dirt. Many of us still do.

Good ideas come from good soil. Each individual's every bite and every thought crafts a facet of the landscape of this new New England region. Those of us who work in the food and agricultural world see how fast and how furiously it is changing. The movement toward sustainable agriculture and locally produced, healthy food has sprung directly out of the mental seedbed of the 1970s. Hence the existence of Hampshire College and its unique Farm Center. Hampshire College was a good idea that landed on good soil.

A generation later, its soil feeds the minds of the movement.

Marada Cook is director of Crown O'Maine Organic Cooperative, a family business she owns and runs. She graduated from Hampshire College in 2007.

STUDENT REFLECTIONS

A FARM EDUCATION

NANCY HIRSHBERG

I can still remember the look on the faces of the schoolchildren who would tour the Farm Center. “Ick, what’s that smell?” “Does it hurt them when you shave off their wool?” “You mean you’re going to eat them?” For most it would be their first, and perhaps last, time on a farm. Their visit would connect them with the root of a daily ritual that is completely taken for granted—eating. As a young and aspiring educator, I knew that the students were more engaged than I had ever seen them in a classroom.

I was studying education and plant and soil sciences, specifically, “The Application of Piaget’s Theories to a Middle School Science Curriculum.” While agriculture was the theme, we weren’t teaching farming. We were a testing ground for exploring how to reawaken minds that had been lulled to sleep, how to instill a sense of curiosity, excitement, and inquiry. What better place than a farm to awaken the senses and the mind? Farms are rife with teachable moments in the arts and sciences. Whether through exploring bacteria and molds in compost, learning about ecosystem sciences through the complex farm system, or studying the immigrant historical experience through the voices of farmworkers, farms provide rich resources for experiential study.

Democracy cannot thrive unless we have an informed citizenry capable of critical thinking. My studies at Hampshire taught me that, in many ways, the three R’s of education had given way to the three C’s: conform, comply, and consume. Yet, on the farm, I would witness the brightening eyes as the lights went on in the students’ brains. It’s hard not to be fascinated on a farm. The simple fact of understanding that food comes from somewhere beyond the back of the grocery store can have a profound effect on a child’s understanding of the world. It connects him or her with the notion that all things come from somewhere. Maybe, then, things *go* somewhere, too. Students gain a greater appreciation of the world and how they are connected to it. After all these years I can finally fess up. We were a breeding ground for budding environmentalists! The Farm Center was a learning laboratory for all involved.

Nancy Hirshberg is vice president of natural resources at Stonyfield Yogurt. She graduated from Hampshire College in 1985.

STUDENT REFLECTIONS

TANGIBILITY

LISKA CLEMENCE CHAN

It was the Farm Center that attracted me from high school in Minneapolis to Hampshire College. The farm is where I learned to dock lambs' tails, drive a stick-shift truck, back a trailer, build fences, and plow with horse and harness. As a student with the dog project, I learned not only about the behavior of livestock-guarding dogs but also about evolutionary biology, animal husbandry, and ways of composing a scientific paper. Most importantly, I think, the farm and the people I encountered there taught me how to ask questions and how to pursue answers.

Almost twenty years later, a central part of the work I do each day is rooted in the hands-on mode of inquiry I gained at the Hampshire College farm. I am a landscape designer, and I teach in a university landscape architecture department. The parallels between what I do now and my days at the Farm Center seem distant, yet to me they are inextricable. My Div III was titled something like "Why Do Dogs Bark?" Under the guidance of Ray and Lorna Coppinger, it was an investigation of breed differences in vocal behavior. The path from there to teaching landscape architecture is linked through a desire to pass on ideas of cause and effect and my deep interest in the many facets of landscape change.

Dress in layers. Walk to my bike. Spin wheels from the dorms through the woods to the farm. The ground at the farm is lumpy. Each morning when I ride my green bike along the path, holes and lumps in frozen mud rattle fenders and knock the kickstand down. My memories are clear. I park my bike, march up the stairs to Ray's office, where, in stark contrast to the sharp morning air, I find the familiar warm haze of cigar smoke. After checking in for a couple of stories and instructions, I go down to the kennel, check on the puppies, take one five-month-old pup up to the Blazer, open the back, and load it in the crate. As I do this, she whips around and takes a chunk out of my sleeve. Ach! Damn dog.

The farm provided me—an idea-oriented city kid—with a controlled uncertainty and rare exposure to tangibility. The dogs were unpredictable, crafty, and often kind of horrible. The sheep escaped. The horses kicked, chewed, and breathed steam. When tart concord grapes popped out along the fence in late August, it meant school was starting again. I lead Jack, the Bel-

gian draft horse, in a circle with my boyfriend (now husband) on Jack's back. Francis, who had left the city only one other time before going to Hampshire, floated, for a fleeting moment, five and a half feet in the air, gripping the mane and cringing. Hold on; if you surprise him, he will throw you.

Time on the farm is free from classroom abstractions. When it is cold, the sheep's troughs freeze, and that icy water is painful to fingers. Lambs born on a February night to a ewe with mastitis have a slim chance of surviving without hot water bottles and formula. When the baler breaks during haying, it's a crisis. Tomorrow there's rain. The hay has been tedded, and it'll mold if it gets wet. For me, the farm is where time fades. It's the place where a kid's idealism merges with dirt, bumps, bites, scrapes, stink, and joy.

Liska Clemence Chan is an associate professor and chair of the Department of Landscape Architecture at the University of Oregon.

NOTES

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1. Franklin Patterson and Charles R. Longworth, *The Making of a College: A New Departure in Higher Education* (Cambridge, MA: MIT Press, 1975), 108.

2. André Mayer and Jean Mayer, "Agriculture, the Island Empire," *Daedalus* 103 (1974): 83–95, 33.

3. *Hampshire College Catalog, 1985* (Amherst, MA: Hampshire College, 1984), 101.

4. <http://www.hampshire.edu/admissions/agriculture.htm>.

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◆ Part 3 ◆

Coming of Age

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