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OF HIGHER EDUCATION AND ECONOMIC DEVELOPMENT

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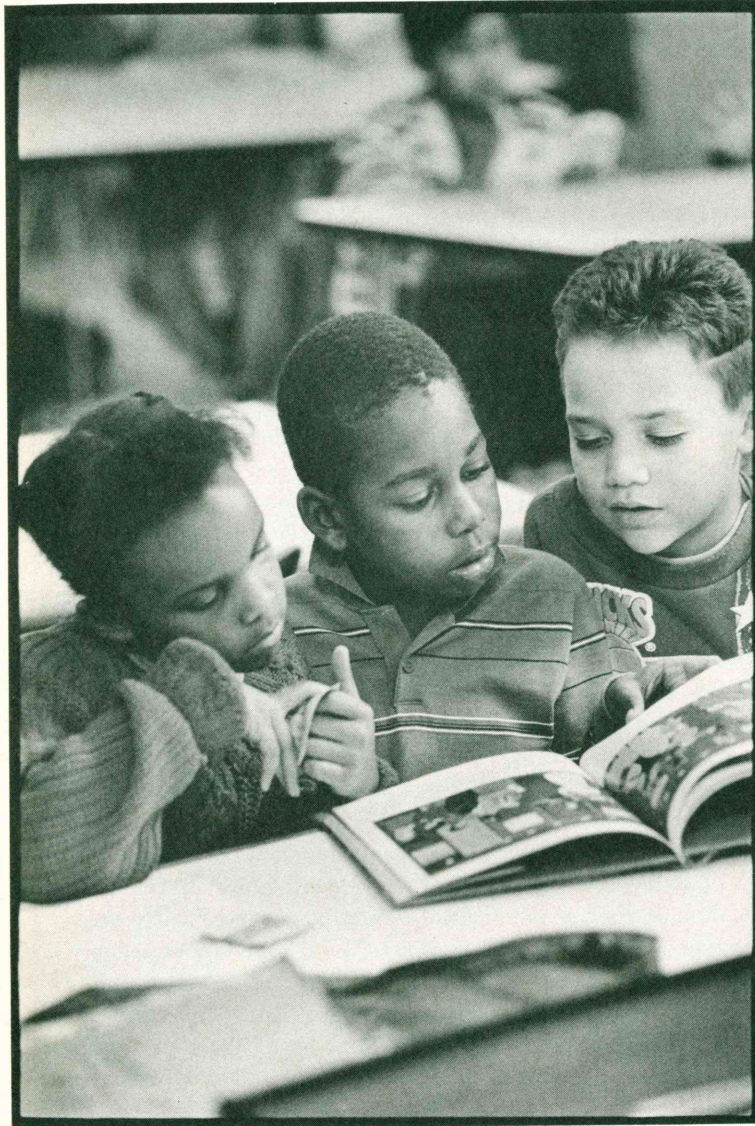
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NOT ALL KIDS
HAVE THE CHANCE
TO GO TO COLLEGE.

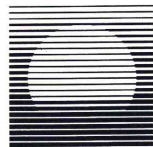
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The New England Board of Higher Education is a nonprofit, congressionally authorized, interstate agency whose mission is to foster cooperation and the efficient use of resources among New England's approximately 260 colleges and universities. NEBHE was established by the New England Higher Education Compact, a 1955 agreement among the states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

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Just a few years ago, when CONNECTION's "Cover Stories" last focused on higher education finance, terms like "downsizing" and "reorganization" were greeted with a dose of cynicism. Now, these concepts are grudgingly accepted on most campuses. After all, by the end of the 1980s, higher education had become paunchy. As the economy soured and the pool of 18-year-olds dwindled, academia's belly began to offend financially pressed taxpayers and tuition-paying families. Anti-intellectual commentators prescribed a lean new diet, and an army of higher education consultants showed institutions how to stick with it.

In the short term, it may be easy to keep weight off. David W. Breneman, a visiting professor at Harvard University and former college president, warns in this issue that no income source — tuition, endowment, private giving, state or federal appropriations — is likely to grow enough to allow higher education to solve its budget problems on the revenue side alone.

The dilemma, according to the scholar Adam Yarmolinsky, is that education is a little like a Mozart symphony, and "it takes the same number of person-hours to perform a Mozart symphony today as it did when Mozart was alive."

And so, with revenues and potential gains in efficiency both limited, the old slogan of doing "more with less" has necessarily given way to doing "less with less."

What remains to be seen is how the consultants' advice aimed at making individual institutions leaner, if not meaner, will shape the larger goal of maintaining — better yet, expanding — access to quality higher education opportunities throughout New England. It may make good economic sense for an institution to cancel an academic program due to underenrollment. It doesn't make sense to let less popular programs disappear entirely from New England's academic landscape, just because too many institutions were competing for a relatively small number of students.

It's heartening that many New England institutions have cut through the consultants' mumbo jumbo and found something more precious — each other.

Most recently, six Maine institutions formed the Greater Portland Alliance of Colleges and Universities. This agreement permits students at one institution to enroll in undergraduate courses at another college in the consortium at no extra charge, as long as the class isn't offered at their own school and won't be in the near future.

In Massachusetts, meanwhile, more than 50 public and private colleges and universities jointly purchase goods through the Massachusetts Higher Education Consortium. Since it began in 1977, the consortium has saved member institutions about \$170 million on items ranging from dorm furniture to computers.

In New Hampshire, a loose association of public and private four-year institutions called the New Hampshire College and University Council flies in groups of guidance counselors from across the United States to tour New Hampshire's campuses. The idea is to bolster enrollment at *all* New Hampshire colleges. "We all compete in a multitude of ways," says Walter Peterson, president of Franklin Pierce College and former governor of New Hampshire. "But the aim is not to put people out of business, it's to work toward raising the level of quality everywhere."

Peterson also chairs the New England Board of Higher Education, which epitomizes higher education cooperation. Since 1957, the board's Regional Student Program (RSP) has allowed tens of thousands of New Englanders to pay significantly reduced tuition at out-of-state public colleges and universities within the region, if the students pursue specialized degree programs not offered by their own states' public institutions. This year, the RSP saved New England students \$25 million in tuition. The program also saves the states millions of dollars, because they don't have to duplicate costly academic programs.

The "Cover Stories" in this issue of CONNECTION shed light on some of the difficult economic choices facing New England colleges and universities. We trust that one choice will be increased cooperation.

John O. Harney is the editor of CONNECTION.

Heads Up, Credits Down

Commonly cited "headcount" data may mask a sluggish economy's true effect on college enrollment. Just ask the folks at Northern Essex Community College. There, the fall 1993 headcount — the total number of full- and part-time students — was up nearly 8 percent over the previous fall. But more students from the surrounding Merrimack Valley region of Massachusetts simply couldn't afford to carry a full courseload of 12 credits or more, according to Northern Essex President John R. Dimitry.

Average credit hours per student dropped from 10.8 in fall 1992 to 9.7 in fall 1993. Even part-time students who normally take two three-credit courses a semester tended to take only one course last fall, according to Dimitry.

Northern Essex saw a 30 percent increase in requests for financial aid this year. And federal Pell Grant awards to students at the college have grown from \$1.5 million five years ago to \$5 million today, reflecting what Dimitry characterizes as the sharply increasing "financial distress level of our students."

It's an ominous sign for higher-priced institutions. Though tuition and mandatory fees at Northern Essex have increased significantly over the past five years to soften the impact of cuts in state support, the cost per-credit remains a modest \$75. Says Dimitry, "If they can't afford Northern Essex, they clearly can't afford anywhere else."

Business Climate

More than 90 percent of executives in New Hampshire's four leading industries — fabricated metals, machinery, electric and electronic equipment and instruments — are satisfied with their New Hampshire locations, according to a recent survey by the New Hampshire Industry Group at the University of New Hampshire's Whittemore School of Business and Economics.

But about 40 percent of the executives concede that a location outside New Hampshire would offer superior conditions, mainly lower energy and labor costs and closer proximity to customers. Two-thirds of those business leaders said they

would prefer locations outside the Northeast and the remainder said they'd be better off outside the United States.

Asked what gave New Hampshire advantages as a place to operate a business, respondents cited the quality labor force, especially in terms of technical skills.

Meanwhile, an unrelated survey by the Massachusetts High Technology Council shows business confidence rebounding in the Bay State. The new survey shows 73 percent of Massachusetts high-tech CEOs rate the state's business climate "outstanding" or "good," up from 60 percent in 1993 and just 38 percent in 1992.

R&Decline

New England doctorate-granting institutions performed \$1.6 billion worth of research and development in fiscal 1992, according to new data from the National Science Foundation. But the region's share of total R&D expenditures at U.S. universities dipped below 8.7 percent, continuing a decline that began a decade ago when the six states accounted for 10.1 percent of the nation's university R&D.

Meanwhile, President Clinton's proposed fiscal 1995 budget would increase *federal* R&D spending by about 4 percent, even as most other parts of govern-

College-Bound Seniors Are Regionalists

Where high school students have their SAT scores sent provides evidence that New England colleges and universities are operating in a single regional market.

The following New England Board of Higher Education analysis of College Board data shows how the main campuses of each New England public land-grant university rank among *all* U.S. colleges and universities in the number of SAT score reports received from college-bound seniors in each New England state in 1993.

	Land-Grant Universities					
	UConn	UMaine	UMass	UNH	URI	UVM
Connecticut	1st	*	17th	16th	8th	13th
Maine	20th	1st	27th	4th	33rd	12th
Massachusetts	18th	*	1st	8th	17th	19th
New Hampshire	13th	19th	11th	1st	21st	5th
Rhode Island	8th	*	14th	13th	1st	17th
Vermont	21st	20th	23rd	9th	32nd	1st

* Not among top 40 recipients of SAT scores.

Among independent colleges and universities, Boston institutions have the most regionwide appeal. Boston University ranks among the top five private destinations for SAT scores from students in every New England state — second among test-takers from Massachusetts, but first among those from Connecticut and New Hampshire. Boston College ranks third among test-takers from Massachusetts, second among their counterparts in Connecticut and fourth among those in New Hampshire. Northeastern University ranks first among Massachusetts test-takers and third among New Hampshire test-takers.

The top five private destinations for SAT scores from each state follow in order.
Connecticut: Boston University, Boston College, Quinnipiac College, Fairfield University and the University of Hartford.

Maine: the University of New England, Saint Joseph's College, Colby College, Boston University and Husson College.

Massachusetts: Northeastern University, Boston University, Boston College, Stonehill College and Tufts University.

New Hampshire: Boston University, Dartmouth College, Northeastern University, Boston College and Saint Anselm College.

Rhode Island: Providence College, Roger Williams University, Boston University, Bryant College and Brown University.

Vermont: Champlain College, Saint Michael's College, Middlebury College, Dartmouth College and Boston University.

ment experience cuts. Expect above average growth in computing and communications research — all part of the administration's vision of a National Information Infrastructure.

New England Beaming

The New England Board of Higher Education has convened a special council to examine new regional approaches to telecommunications in higher education and economic development. The council is co-chaired by George P. Connick, president of the University of Maine at Augusta, and Charles I. Bunting, chancellor of the Vermont State Colleges.

Among other things, the panel will explore how the states may share academic programs through telecommunications and forge a united regional front as the federal government launches its "information superhighway" initiative. Says Connick, "Given the directions the Clinton administration is going in creating a National Information Infrastructure, the time for regional collaboration is now."

The challenges are not only technological: New England has no tradition of correspondence education, and many faculty at the region's prestigious colleges think there is only one way to teach — live and in person.

Information Poor

Many small independent colleges are being left behind by the information technologies revolution, according to a recent survey by the Washington, D.C.-based Council of Independent Colleges (CIC) and CAUSE, a national group that studies information management in higher education.

CIC members — including 22 New England colleges — make up about 13 percent of the nation's higher education institutions and enroll about 5 percent of full-time undergraduates.

More than half the CIC members said they have four or fewer full-time staff members devoted to academic and administrative computing per 1,000 students. Forty-nine percent said they invest less than 2 percent of their educational and general budgets on academic and admin-

istrative computing combined; 72 percent invest less than 1 percent of their budgets on academic computing specifically.

Furthermore, computer use in CIC classrooms lags behind that of larger — and often wealthier — non-CIC institutions. In 1991-92, 53 percent of CIC members reported the use of microcomputers in some classrooms, compared with 59 percent of independent institutions that are not CIC members and 69 percent of public four-year institutions.

The survey found that less than 25 percent of CIC members had access to the Internet as of the summer of 1992, prompting CIC survey researchers to warn: "Already candidates for faculty positions at many private colleges consider access to the Internet when deciding to accept or reject an offer. We are also sending our graduates to graduate and professional schools where use of the Internet is taken for granted. So, it is more and more the case that our graduates would benefit from undergraduate experience with the Internet."

The message is sinking in. By 1994, the CIC estimated that about half its members had access to the worldwide computer network.

Selling to Mexico

The North American Free Trade Agreement's provisions protecting U.S. intellectual property rights, opening the Mexican communications market and toughening Mexican environmental laws could be a boon to New England's important software, telecommunications and environmental technology industries.

But New England exporters aren't accustomed to looking southward. The region historically has shipped a larger share of its exports to Europe and Canada than the rest of the United States has. Because those traditional markets grew slowly in the early 1990s, New England's overall export growth trailed the nation's.

New England exports to Mexico did manage to reach \$664 million in 1992, up 14 percent from the previous year and 171 percent from 1987, according to the Massachusetts Institute of Social and Economic Research and the Bank of Boston. Still, just 3 percent of all New England

exports went to Mexico in 1992, compared with 9 percent of all U.S. exports.

New England's chief exports to Mexico include industrial machines and computers, electric and electronic equipment, scientific and measuring instruments, chemicals, transportation equipment and primary metals. Notably, however, Maine shipped millions of dollars worth of leather and forestry products to Mexico, while Vermont shipped considerable amounts of paper and food products.

Minority Ph.D.s

Minorities made up 10 percent of Harvard University's Graduate School of Arts and Sciences' incoming class of doctoral candidates for the fall 1993 term. The 59 students, who are African-American, Mexican-American, Puerto Rican or Native American, gave the college its largest number of minority Ph.D. candidates in at least 20 years, according to Harvard officials.

New England's overall performance in Ph.D. production among minorities remains poor. In 1991, the most recent year for which federal figures are available, only 2.4 percent of the 3,137 doctorates awarded by New England institutions went to African-Americans, 2.1 percent to Hispanics and less than 1 percent to Native Americans.

Harvard's Graduate School of Arts and Sciences employs impressive resources in its effort to attract minorities, sending recruiters across the entire country and to Puerto Rico. Twenty-five such trips are planned this year, followed by aggressive "telethons" to lure potential students.

New Chief Accrator

Connecticut Education Commissioner Vincent L. Ferrandino has been named to head the New England Association of Schools and Colleges (NEASC), starting in August 1994.

Ferrandino takes the helm of the nation's oldest accrediting agency for higher education at a stormy time. Under heavy pressure to reform their practices, NEASC and the other five regional accrediting associations earlier this year agreed to raise the standards by which they evaluate institutions and to make public their studies of individual applicants for accreditation.

Monthly Expenses	Income
Rent 775	1915
Telephone 6032	845
Gas 60	
Electricity 4568	
Car Loan 240	
Student Loans 175	
Insurance 125	
Credit Cards 165	
Overdraft (CHK) 189	
Groceries 300	
Entertainment 100	
Clothes 50	
Medical 100275	

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- Percentage of Americans age 25 or older who have at least a bachelor's degree: **20.3%**
- Percentage of New Englanders who do: **25.6%**
- Percentage of Americans who say it is more difficult to get a college degree now than it was 10 years ago: **55%**
- Percentage who say it will be more difficult in 10 years: **66%**
- Percentage of Californians who rank "overpaid professors" as a very important reason for rising college prices: **22%**
- Percentage who rank "overpaid administrators" as a very important reason: **46%**
- Median earnings of Whites age 25 and older who hold at least a bachelor's degree, 1991: **\$37,486**
- Median earnings of African-Americans age 25 and older who hold at least a bachelor's degree: **\$30,910**
- Women as a percentage of Ph.D. recipients at U.S. colleges and universities in 1962: **11%**
- In 1992: **37%**
- Boston University's rank among all U.S. private, four-year institutions in applications for freshman admission: **2**
- Harvard University's rank: **4**
- Percentage of undergraduates at University of Maine System campuses who say they are "satisfied" or "very satisfied" with their overall university experience: **90%**
- Percentage who say they expect to stay in Maine after graduation: **64%**
- Increase in number of help wanted ads in *The Hartford Courant* for July 1992 to June 1993, compared with the previous 12 months: **11.5%**
- Number of hot tub and spa companies listed in Hartford Area Yellow Pages in 1988: **24**
- Number listed in 1993: **15**
- Number of credit reporting agencies listed in Hartford Area Yellow Pages in 1988: **11**
- Number listed in 1993: **21**
- Average annual change in corporate contributions to charitable causes between 1978 and 1987, adjusted for inflation: **+7.7%**
- Average annual change between 1988 and 1992: **-2.7%**
- Share of family-owned businesses that survive to the second generation: **30%**
- Share that survive to the third generation: **10%**
- Number of thrip researchers attending the 1993 International Conference on Thysanoptera organized by the University of Vermont and held in Colchester, Vt.: **200**
- Acres of Vermont sugar maple trees severely damaged by pear thrips in 1988: **2,400,000**
- Estimated percentage of students taught in traditional lecture-based physics courses who understand Newton's Laws: **10%**
- Estimated percentage completing selected hands-on curricula who do: **80-90%**
- U.S. average per-capita Medicaid expenditure in fiscal 1991: **\$308**
- Average per-capita Medicaid expenditure in the New England states in fiscal 1991: **\$418**
- Projected loss of U.S. defense industry jobs between 1992 and 1998: **1%**
- Loss over 10-year period following the Vietnam War: **3%**
- Loss over four-year period following World War II: **28%**
- Percentage of U.S. drivers who wear safety belts: **60%**
- Percentage of Massachusetts drivers who did so before introduction this year of a mandatory seat belt law: **32%**

Sources: 1,2 U.S. Department of Education; 3,4,5,6 The California Higher Education Policy Center and the Public Agenda Foundation of New York; 7,8 U.S. Bureau of the Census; 9,10 National Research Council; 11,12 1993 Peterson's Higher Education Survey; 13,14 University of Maine System; 15,16,17,18,19 University of Connecticut; 20,21 Council for Aid to Education; 22,23 University of New Hampshire; 24,25 University of Vermont; 26,27 Tufts University; 28,29 Rhode Island Public Expenditure Council; 30,31,32 Defense Budget Project; 33,34 Mothers Against Drunk Driving



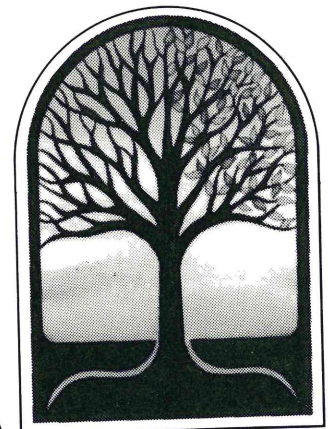
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COIN OF THE REALM

Students are the Key to New England's Economy

by John C. Hoy

In New England, college students are the coin of the realm. They move about in the most complex human resource marketplace in the nation. Their parents' savings and their own earnings from after-school and summer jobs along with grants, scholarships — and increasingly, long-term loans — underwrite New England's unparalleled system of advanced teaching and research in the arts, sciences, technology and the professions. Upon graduation, they provide the new skills and fresh aspirations that fuel economic growth. In short, the number and quality of New England students determine the vitality of the region's higher education institutions and the buoyancy of the regional economy. And student preferences may write the final chapter in the mostly untold story of New England's most bruising recession in half a century.

We already know that the beginning of the 1990s saw an unprecedented number of New England businesses restructure, downsize, institute layoffs, merge, sell out, declare bankruptcy or otherwise attempt to reinvent themselves. Few industries have been spared: Small and large manufacturers, banks, insurers, law offices, high-tech and low-tech companies, construction firms and hospitals have all pursued various avenues to reestablish a competitive position. They have been pushed not by a process of long-term strategic planning, but by the fierce pressures of a harsh recession.

Recent signals have bred a tentative sense of confidence that New England is emerging from the economic thicket. But one crucial sector of the region's economy remains mired in recession. True, higher education is an \$18 billion industry in New England. True, all of the region's approximately 260 colleges and universities have so far survived the recession intact (in some cases to the surprise of creditors, benefactors and even their own trustees). But all is not well.

Witness the recent warning from Harvard University Dean Jeremy Knowles to the Faculty of Arts and Sciences: "The faculty is essentially without financial reserves, and the current unrestricted deficit of nearly \$4 million is serious," Knowles wrote. "To eliminate this shortfall, we must permanently remove \$11,000 from our lines of expense every day of this year. We are still living beyond our means. There are some thunderclouds in sight."

Indeed, this singularly significant unit of New England's best-endowed university began the spring 1994 term facing a fourth consecutive year of budget stress. Twenty-nine percent of the FAS budget is derived from income on Harvard's gargantuan endowment, 8 percent from unrestricted current gifts, and 17 percent from other sources. But by far the largest piece — 46 percent — comes from tuition. Even in Harvard Yard, students are the coin of the realm.

In Waterville, Maine, Thomas College faces a smaller-level, but higher-stakes version of Harvard's challenges. As Thomas

celebrates its centennial this year, tuition and fees stand at \$9,050, compared with Harvard's \$17,200. Thomas enrolls about 1,000 full- and part-time students, compared with Harvard's more than 18,000. Nearly 68 percent of the college's 1993 revenues were generated from tuition and fees, 20 percent from auxiliary enterprises, 1.6 percent from gifts, less than 1 percent from endowment income and 10 percent from other sources, including federal grants.

"We are an institution whose budget is hypersensitive to enrollment levels and to net tuition revenues," says Thomas President George Spann. "Our students come from families which have not seen their incomes increase during the current recession and are in need of ever-increasing financial aid. State financial aid has remained static while federal grant aid has actually decreased. The squeeze this puts on our institution is potentially lethal: If we raise tuition too much, students may not come; raise it too little and revenues will be inadequate to meet rising costs. With a negligible endowment, we operate rather close to the edge of the precipice."

Spann says the college's financial turnaround depends on success in two broad areas: development of new programs, including non-traditional offerings, to respond to changing student demand, and a well-planned and focused fundraising program. "The risks involved are significant," he says, "since there is no margin for failure."

Virtually all New England colleges and universities are tuition-driven — therefore dependent on student preferences. The price of higher education rises continually to meet the cost of instruction. A margin above cost allows institutions to invest in existing programs, upgrade equipment, maintain existing facilities and provide modest increases in faculty and staff salaries. Institutions flourish only when enrollment stability or growth — combined with tuition increases — permits investment in new programs and state-of-the-art technology, as well as recruitment of young, talented faculty.

But today, many campuses are concerned — or should be — that student demand may not continue to with-

stand price increases. Between 1982 and 1991, while personal income grew by 99 percent in New England and the U.S. Consumer Price Index rose 40 percent, average tuition rates shot up 134 percent at public institutions and 127 percent at private institutions.

Thus far, students and their families have been willing to pay the price for higher education. But the public is increasingly distressed by the tuition cost spiral.

Meanwhile, only about 10 percent of private institutions are endowed at a sufficient level to provide adequate financial aid for all financially needy students and a meaningful subsidy for all students.

The dozen or so New England institutions with endowments above \$100,000 per student can keep tuition increases under control while continually improving academic programs. These institutions also have a unique capacity to attract unrestricted gifts from alumni, parents, friends and foundations who are strongly predisposed to their sustenance.

Yet even these institutions face troubling scenarios. Harvard's endowment grew by \$660 million or 12.8 percent in 1993 alone, to stand at \$5.8 billion. Ironically, as Harvard embarks upon a \$2 billion fundraising campaign, one of Knowles' "thunderclouds" may presage a downpour of resources indiscriminately flooding the university with preferred programs of donors new and old. Knowles warns that unless a compelling case for sustaining existing world-class programs is thoughtfully presented and accepted by potential donors, Harvard runs the risk of watering down the academic strength that permitted it to set New England's most ambitious ever fundraising goal in the first place.

An array of other challenges face New England colleges and universities. Consider:

- Reflecting the belief that taxpayers have a vested interest in access to higher education, public institutions receive state appropriations in order to hold down tuition. But New England's appropriations, historically low, have been flat or declining in real terms since 1988. Meanwhile, support for New England state scholarship programs has

Revenue Sources at New England Private Institutions ...

	1982	1991
Tuition and Fees	42.5%	44.4%
Private Gifts,	9.6	9.6
Grants or Contracts		
Endowment Income	7.6	7.5
Grants and Contracts	15.9	12.9
(Local, State and Federal)		
Auxiliary	17.6	13.4
Appropriations	0.3	0.1
(Local, State and Federal)		
Hospital Resources	0	0.1
Independent Operations	4.2	5.0
Other	2.3	7.1
(Including Indirect Cost Recovery)		
Total	100.0%	100.0%

Source: NEBHE analysis of U.S. Department of Education data.

... and at New England Public Institutions

	1982	1991
Tuition and Fees	19.1%	23.4%
Private Gifts,	2.4	3.6
Grants or Contracts		
Endowment Income	0.2	0.3
Grants and Contracts	11.0	12.1
(Local, State and Federal)		
Auxiliary	12.7	11.1
Appropriations	43.2	34.6
(Local, State and Federal)		
Hospital Resources	7.4	8.8
Independent Operations	0.1	0.3
Other	3.9	5.8
(Including Indirect Cost Recovery)		
Total	100.0%	100.0%

Source: NEBHE analysis of U.S. Department of Education data.

Average Undergraduate Tuition and Fees: A Decade of Change

	Public 1982 (In-state)	Public 1991 (In-state)	\$ Change	% Change	Private 1982	Private 1991	\$ Change	% Change
Connecticut	\$725	\$2,313	\$1,588	219%	\$5,266	\$12,315	\$7,049	134%
Maine	1,195	2,263	1,068	89	5,038	10,928	5,890	117
Massachusetts	887	2,580	1,693	191	5,060	12,446	7,386	146
New Hampshire	1,509	3,110	1,601	106	4,783	11,154	6,371	133
Rhode Island	983	2,311	1,328	135	4,708	10,885	6,177	131
Vermont	1,819	4,092	2,273	125	5,227	10,694	5,422	104
New England	\$1,186	\$2,778	\$1,592	134%	\$5,014	\$11,396	\$6,383	127%
United States	\$721	\$1,888	\$1,167	162%	\$3,972	\$9,083	\$5,111	129%

Source: NEBHE analysis of U.S. Department of Education data.

The successful search for highly qualified undergraduates became the measure of institutional quality well before R&D dollars and endowment size determined the elite campuses.

also eroded. Total student grant aid provided by the 50 states rose by 44 percent between 1988 and 1993, but shrunk by 11 percent in New England, primarily due to a major decline in Massachusetts grants.

- A small fraction of New England institutions — about 5 percent — compete formidably for federal research and development grants and contracts. But even these institutions face a painful reallocation of resources — and more pressure on tuition — as the federal government vigorously renegotiates the rates at which it reimburses universities for indirect research costs.

- New England campus facilities tend to be older than their counterparts elsewhere in the United States, yet investment in physical plant has been declining since the 1970s. Massachusetts public campuses, for example, spent just 7 percent of their budgets on physical plant maintenance in 1991, down from 12 percent in 1982.

- Perhaps most troubling, the coin of the realm is being devalued. Students and their families are increasingly burdened with debt, as federal financial aid policy focuses on heavy borrowing to cover the cost of a degree. Low- and middle-income students confront the dilemma of accepting long-term debt as the price for education.

- Between 1982 and 1991, minority student enrollment in New England grew by 75 percent to 84,000. But reaching the goal of full participation of minorities in New England higher education will require a redoubled financial commitment.

Wise investment of the coin of the realm has been the concern of New England higher education's visionaries for half a century.

Former Wesleyan University President Victor L. Butterfield and his friend from Harvard graduate school days, Nathan Pusey, who later became president of Harvard, were among the first college presidents to “strategically” pursue the intimate connection between admissions policy, financial aid and institutional quality — what today we call *enrollment management*. (For a contemporary and candid examination of this interrelationship, see the article by William Hiss, beginning on p. 15 in this issue.)

In the 1930s, if you had a high school diploma, a reference from a teacher, perhaps an alumnus willing to attest to your moral character, and cash, you were accept-

ed to college with the implied promise that the faculty were open to your thoughtful — if not intimate — instruction. World War II and the G.I. Bill changed the equation, as a grateful Congress sought to keep young and not-so-young veterans off the unemployment roles by encouraging them to become educated and prepared for new jobs in the postwar economy. Butterfield and Pusey took the spirit of the bill a step further. They had the resources to offer financial aid in behalf of worthy but impoverished candidates from schools across the nation — and they did so as a matter of policy. This *need-blind* approach opened the doors of higher education for the first time to remarkably talented, though not necessarily wealthy, Catholics, Jews and Blacks. And the successful search for highly qualified undergraduates became the measure of institutional quality well before R&D dollars and endowment size determined the *elite* campuses.

Changes in admissions and financial aid policy have taken place concurrently with — and to some degree, in relation to — changes in New England's economy.

In the years following World War II, the odd combination of new peacetime industrial demands and the military research of the Cold War created entire new technology-based industries. Rapid expansion of federal R&D investment in universities continued through the 1970s, providing the backbone of the New England economic “miracle” a decade later. Higher education benefited from the boom. When the roof caved in on the economy during the late 1980s, higher education was hit hard.

The essays in this issue of CONNECTION seek to penetrate several of the critical issues on the table in 1994 as colleges and universities prepare to respond to the demands that regional economic recovery will present.

There is a bright spot on the horizon: History tells us that higher education tends to benefit or readjust toward the end of an economic upswing, when politicians and corporate and foundation executives come to appreciate the essential contributions of people with new skills and aspirations—the coin of the realm.

John C. Hoy is the president of NEBHE and publisher of CONNECTION.

A High-Stakes Bet On The Future

As if making strategic decisions were not difficult enough in an academic setting, administrators in public and private higher education today must weigh these decisions under extraordinarily uncertain revenue conditions. While higher education's financial prospects have always lacked clarity, the range of possibilities (particularly on the downside) and attendant doubts are greater now than at any time in the past 40 years. In essence, college and university leaders must make a bet on the future — a bet that will profoundly affect all other decisions and determine the long-run vitality of each institution.

One bet on the future takes the gamble that the pattern of the past 40 years will continue. This pattern is characterized by strong and largely uninterrupted growth in enrollments and revenues, pocked with cyclical short-run recessionary periods of reduced growth. According to this view, higher education revenues will get back on track as soon as the economy improves.

This outlook has the weight of history on its side and caters to the congenital optimism of most educators. Under this view, all an institution has to do is weather the current storm, maintain as comprehensive a program as possible — perhaps institute small, across-the-board budget cuts — and prepare to reap the next round of increased appropriations, gifts and tuition. In the short run, this position is undoubtedly the easiest one for an administrator to adopt, since it permits institutions to avoid fundamental questions about priorities and delay hard decisions to cut back or eliminate programs.

An alternative bet on the future foresees a far grimmer revenue picture. In this scenario, current financial strains do not diminish once the economy rebounds; revenue growth is not automatic. Robert Atwell, president of the American Council of Education, subscribes to this view, writing recently that “higher education is in its most dire financial condition since World War II” and will not improve “until sometime after the year 2010.”

The latter scenario has better odds than the former. In reviewing the prospects for each major revenue source — tuition, endowment, gifts, state appropriations and federal support — I see no reason to expect brightening financial horizons for higher education. Federal and state governments are in the grip of structural, rather than merely cyclical, financial pressures, and an improved economy will not by itself permit a sharp increase in public expenditures on higher education. Similarly, tuition increases in the private sector have slowed and seem unlikely to return to the high growth rates of the 1980s. While public tuitions may continue to rise rapidly, such increases will only partially offset declines in direct state support, resulting in a net loss for many institutions. Growth in endowment and private giving also seem headed for slow-downs, compared with the 1980s when a booming stock

market and hot real estate investments promised strong returns for colleges. Today, no income source seems likely to grow by enough to allow higher education to solve its budgetary problems on the revenue side alone.

Naturally this scenario demands a more aggressive response than the optimistic view. If budgets cannot be balanced by increasing revenues, the alternative is to cut costs, increase efficiency and enhance quality selectively. It might make sense to spread the pain of budget cuts evenly if the problem were short-run. But if the problem is long-term — as it seems to be — college administrators must reduce costs by eliminating programs of lesser value while selectively identifying and strengthening programs that comprise an institution's distinctive features. As any experienced administrator knows, the personal risks of this approach are enormous, for the upshot may be loss of support within the institution. On the other hand, if this analysis is accurate, colleges that fail to respond appropriately may experience significant loss of quality and resources, leading to a future of mediocrity or even market failure.

Another significant implication of this grimmer view is that public university leaders might at long last endorse the policy of “high tuition, high aid” as a way of ensuring access for low-income students. This policy — long praised by economists and scorned by leaders of public higher education — would reduce the across-the-board subsidies currently enjoyed by all in-state students at public colleges and universities, regardless of income, while increasing investment in need-based student financial aid. As long as increases in aid do in fact keep pace with tuition hikes, this may turn out to be both more efficient and more equitable than the current system in terms of saving the states money while preserving access.

Clearly, it would be desirable to reduce the uncertainty surrounding this strategic bet on the future, but I know of no way to do that. The track record of past forecasts regarding higher education is poor, and there is no expert to whom a college president or board of trustees can turn for definitive information. A forecasting exercise requires an ability to foresee and interpret economic, political and sociological trends. No methodology exists for such efforts.

An improved economy will not by itself permit a sharp increase in public expenditures on higher education.

**By
David W.
Breneman**

(This is not to say that an active market in forecasts does not exist, just that there is little reason to have faith in any of them.) Instead, the best that college leadership can do is to examine and think hard about visible trends, discuss prospects for each revenue stream in a hard-headed fashion and ultimately gamble on a vision of the future, knowing that the choice may prove to be in error.

A secondary strategy, then, is to monitor relevant trends with an eye to course correction as needed. What cannot

be avoided, however, is the necessity of adopting a vision of the future, basing subsequent decisions on it, and living with the consequences. College administration in the 1990s is not for the faint-of-heart.

David W. Breneman is an economist and Visiting Professor of Education at the Harvard University Graduate School of Education. He served as president of Kalamazoo College in Michigan from 1983 to 1989.

A Message From Hillary?

Does the current debate over health care reform carry a message for higher education? The cost of medical care in the United States rose 117 percent between 1981 and 1991, spurring a national re-examination of health care delivery and sending the health care establishment into a tizzy over a potential federal overhaul of the system.

During the same period, the cost of attending private colleges rose 146 percent, according to a 1993 study by a Brown University panel studying financial aid policies. Meanwhile, family incomes grew by only 88 percent. As in the case of health care, higher education's price hikes did not significantly broaden access or ensure higher quality.

Already, rumblings from Washington indicate that the federal government could use its billions of dollars in student aid to exert downward pressure on college costs.

In early 1993, the federally appointed National Commission on Responsibilities for Financing Postsecondary Education proposed that all full-time undergraduates be eligible for a federal aid package covering the cost of attendance up to the national average cost of educating a student at a four-year institution — currently about \$14,000. The bottom line would be the same for all students, but the proportions of grants, work-study funds and loans would vary dramatically based on financial need.

Later in the year, the Clinton administration floated the idea of a system in which the federal government would provide student aid only up to what it considers "reasonable cost standards," leaving students and institutions to cover the rest.

* * * * *

There is some consolation for students and families grappling with spiraling tuition costs. The more you learn, the more you earn. The latest confirmation of education's earnings premium comes

in a study by the Massachusetts Institute for Social and Economic Research, which was commissioned by the New England Education Loan Marketing Association (Nellie Mae).

In 1991, a New Englander with a college degree earned an average of \$35,000, compared with \$25,000 for a worker with "some college," \$20,000 for someone with a high school diploma only and \$15,200 for a worker without a diploma.

The study also found that between 1979 and 1991, the average annual income of New Englanders with college degrees rose 119 percent, compared with 107 percent for their counterparts with "some college," 100 percent for workers with high school diplomas only and 62 percent for those with no high school diploma.

Even in the slow-growth period between 1989 and 1991, college graduates saw their incomes grow by 3 percent, while less educated workers experienced flat income growth or declines.

* * * * *

Six of the nation's 10 most expensive four-year colleges and universities and 7 of the 10 most expensive two-year institutions are located in New England, according to the 1993 Peterson's Higher Education Survey.

Among the most expensive U.S. four-year institutions in terms of tuition, fees, room and board are: #2 Brandeis University, \$25,655; #5 Yale University, \$25,110; #6 Tufts University, \$24,962; #7 Hampshire College, \$24,930; #8 Bennington College, \$24,850; and #9 Massachusetts Institute of Technology, \$24,800.

The most expensive two-year institutions include: #2 Lasell College, \$17,350; #3 Sterling College, \$17,317; #4 Mount Ida College, \$17,080; #5 New England Culinary Institute, \$16,890; #7 Endicott College, \$16,800; #9 Fisher College,

\$16,300; and #10 Dean Junior College, \$16,260.

* * * * *

Stalled state support for higher education has forced public colleges and universities to depend increasingly on tuition revenues. Between 1982-83 and 1992-93, tuition rates increased 131 percent at public research universities, 125 percent at state colleges and comprehensive universities and 111 percent at community colleges, according to the National Center for Education Statistics.

Most state support for higher education goes straight to public campuses in an effort to hold down tuition. But some economists have noted that this institutional support amounts to an enormous subsidy for upper-middle-income families who send their children to public institutions. They contend that states should instead adopt "high tuition, high aid" policies, in which tax funds are focused on student aid for low- and middle-income students, while the institutions — having lost much of their direct state subsidy — would be able to generate revenue through higher tuition. The added tuition revenue, in turn, could be used to expand financial aid.

A variation of high tuition/high aid is already in place in Vermont, where grant aid makes up about 20 percent of the total higher education appropriation — more than three times the U.S. average — and the University of Vermont charges higher tuition than any other public land-grant university in the nation.

Not surprisingly, however, several states have succumbed to the temptation to hike tuitions without corresponding increases in aid. In Massachusetts, for example, state grant aid declined by 35 percent between fiscal 1988 and fiscal 1993, even as tuition and mandatory fees for state residents at the University of Massachusetts rose by nearly 170 percent.

Financial Aid: The Bumpy Road Ahead

Bates College, by good fortune and careful planning, has not been driven before the winds of enrollment decline or budget cuts. Applications to Bates have grown by 60 percent in a decade; the college graduates 90 percent of its entering classes and sees more than 60 percent of its graduates go on to earn advanced degrees. Having made a fiscal religion of Maine Yankee restraint, Bates has little debt; its last red budget was in 1942. The Bates endowment has doubled in the past four years to more than \$100 million, and the college has reduced its dependence on student fee income by 5 percent, though reliance on the comprehensive fee (which includes tuition, room and board) is still too high at 80 percent of the total budget. There have been no budget cuts at Bates. Not a single course, program, club or employee has been eliminated for financial reasons. But ...

Like other New England institutions, Bates has seen steady, worrisome increases in the number of families qualifying for financial aid. Yale University's financial aid director recently observed that certain scenarios could swamp the ability even of Yale — with its \$3 billion endowment — to admit all students on a need-blind basis. Clearly, New England liberal arts institutions like Bates — with strong national applicant pools but much more modest endowments — have some difficult choices ahead.

The portion of the Bates student body qualifying for financial aid has grown by two to three percentage points in each of the past three years. With a 1993-94 comprehensive fee of \$24,000, the price wall is hardly a metaphor for the future; Bates has already hit it. The percentage of the student body receiving grants from the college has risen from 35 percent to 43 percent in only four years — a pattern that seems to be common among New England institutions with national reputations. But fearing that college-provided financial aid is becoming a budget-buster, trustees and presidents at these institutions are telling their enrollment and financial aid officers that financial aid funding cannot keep rising to the point where 50 percent or 60 percent of the student body is on institutional grants.

The current average institutional grant from Bates is \$12,400. The average total financial aid package is worth \$17,200 or two-thirds of the comprehensive fee. For families receiving aid, this should be good news: The average net price after aid, \$7,000, is roughly equal to the cost at public flagship institutions.

But the strain on college budgets is worsening. In response to this problem, colleges must navigate between two extremes: meet all need, no matter how high the demands, or set a fixed ceiling for financial aid beyond which the institution will not go. Both extremes are

unworkable. The first creates dramatic cuts elsewhere in the college or an insupportable ratcheting up of tuition charges. The second means almost certain underenrollment for most institutions and a loss of quality for the strongest. (Already, the middle-class student with sound but unspectacular credentials and no apparent “hooks” — no legacy or special athletic ability, for example — is becoming a rare commodity at many colleges, partly because those students are taking themselves out of the applicant pools and partly because colleges will not be able to fund as many of them as in the past.)

At Bates, most solutions have focused on measured, multifaceted changes to meet financial aid demands. Here are four approaches that are helping Bates navigate the bumpy, expensive and inescapable road ahead:

1. Plan, plan, plan, and then be prepared to change. Recognizing that the critical facets of the college's life are interrelated and interdependent, we continually test and talk out how changes in any one area would impact another area. This year, for example, the percentage of admitted students who chose to enroll at Bates jumped by over 4 percent, resulting in an enrollment that was 60 students over target. While these 60 additional students theoretically provided an additional \$1.4 million in tuition over projected levels, the tuition windfall was illusory. The combination of more students, a higher percentage of students with financial need and larger grants meant that additional financial aid costs consumed most of the additional tuition revenue. The experience illustrates how independent shifts in financial aid can have a dramatic layered effect. One Bates administrator commented that the snake had eaten a very large egg and would require four years to digest it. So, we are now examining ways to gradually return both enrollment and financial aid commitments to more comfortable levels.

The percentage of the Bates student body receiving grants from the college has risen from 35 percent to 43 percent in four years — a pattern that is common among New England institutions with national reputations.

**By
William C.
Hiss**

2. **Make financial aid a key topic for institutional research.** Computer modeling has helped the college's two financial aid officers test hypotheses about the effects of various simultaneous shifts in financial aid, such as modestly raising levels of self-help — student loans and student employment — while increasing hourly wages for student employment to try to take pressure off the grant budget. Modeling has also helped find places where the financial aid director and controller were merging aid categories in different ways, making it hard to track funds. Not surprisingly, we found that federal and state grants had been flat since the mid-1980s. Total need and Bates institutional grants, on the other hand, were rising rapidly; we knew we had to find ways to control the growth of the institutional grant funds.

Our analysis also revealed another problem: Family contributions and college fees are now on such different bases that even if they grow at roughly the same rate, the change in dollar amounts may be very different. For example, the average family contribution for a student on grant aid rose by 6 percent this year, but the average contribution of those families was only a bit over \$9,000, so their ability to contribute rose by only about \$500. Meanwhile, the Bates comprehensive fee rose by 5 percent, but that hike equaled \$1,150. The resulting average additional need of \$650, plus the new aid cases created with each fee increase, led to a 16 percent increase in total need. (We had originally hoped to raise total institutional grant funds by 7 percent.)

The modeling also helped us adjust various parts of aid packages. To support more students, we stopped “preferential packaging,” in which we had been funding our most desirable candidates with packages comprised of \$1,000 more in grants and \$1,000 less in loans — that practice required roughly \$50,000 in additional grant funds per class.

We are currently projecting a 5 percent annual increase in self-help to hold down the rate of increase in Bates grants. Though this will require modestly increased student borrowing, federal loans will be cheaper due to falling interest rates and lower origination and guarantee fees.

Dozens of potential financial aid scenarios run on five-year spreadsheets have already yielded some helpful information. For example, we may ask returning students who intend to request financial aid for the first time to file a

financial aid application by Feb. 1, as do first-year students, so that we could estimate the total need of returning students before we make offers to first-year students. Furthermore, as families spend down their assets to pay for college, they become more needy, so the percentage of students funded tends to rise as a class moves through Bates. We are testing projections that hold at some reasonable level the percentage of entering students who are funded with Bates grants, while raising the funded percentage of those students by 1 percent for each of their four years. If a first-year class entered Bates with 39 percent of its students funded with Bates grants, we would expect to fund 42 percent of the class as seniors. These models seem to hold promise both to control and to plan for aid.

3. **Face the need-blind admissions issue.** Acknowledging that a totally need-blind admissions philosophy involves a set of insupportable fiscal risks for Bates, we allow for some adjustment upon a final review of applications. While the final review is normally designed to balance the class academically, demographically and geographically, I reserve the right if our aid budget is over its target by several hundred thousand dollars to change some admissions decisions based on financial need. Some years I am obliged to do it, and some not. Usually, it would affect from 10 to a few dozen students from our admitted pool of about 1,200. It is not easy, and there is a great deal of heated debate over the need-blind issue in our professional associations. But there would seem to be only a handful of options:

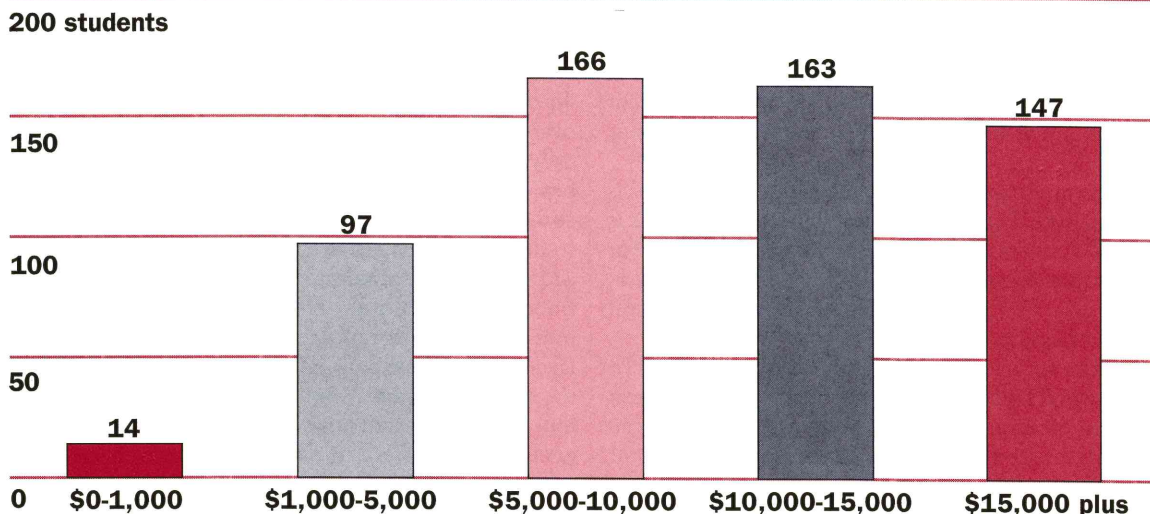
- admit students on a need-blind basis and meet all need;
- admit students on a need-blind basis and deny aid to needy students;
- raise self-help levels dramatically;
- meet only a percentage of need for academically less desirable students; and or
- make the minimal amount of need-based admissions decisions to stay on budget, but provide a package that meets full need.

Bates has chosen the last option. We don't like making those need-based decisions, but we prefer that to making aid awards that would require budget cuts or to meeting only partial needs of students.

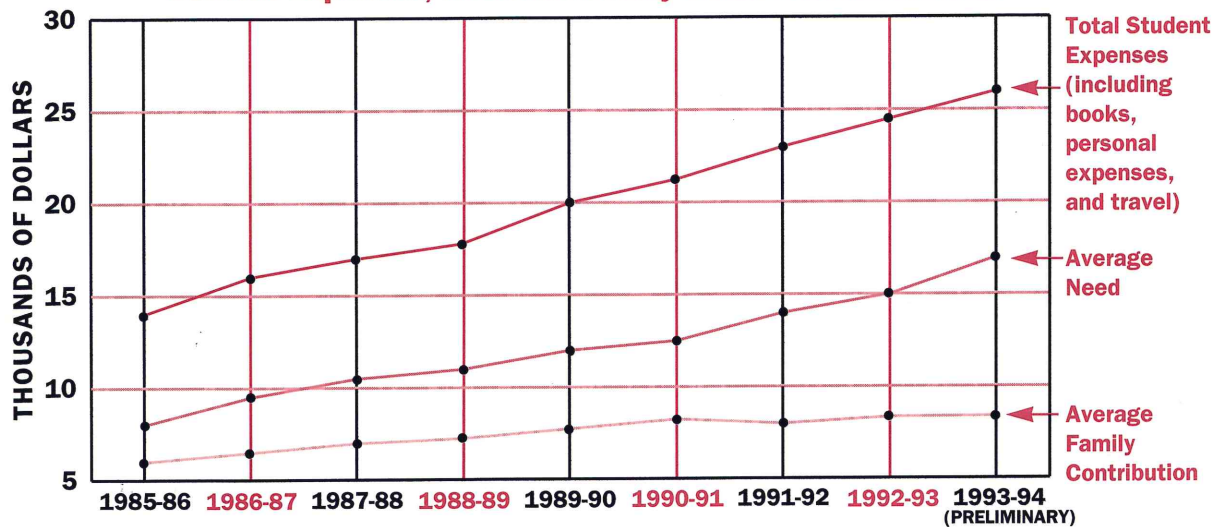
We found that federal and state grants had been flat since the mid-1980s. Total need and institutional grants, on the other hand, were rising rapidly; we knew we had to find ways to control the growth of grant funds.

Number of Students Receiving Bates Grants (by grant size) 1992-1993

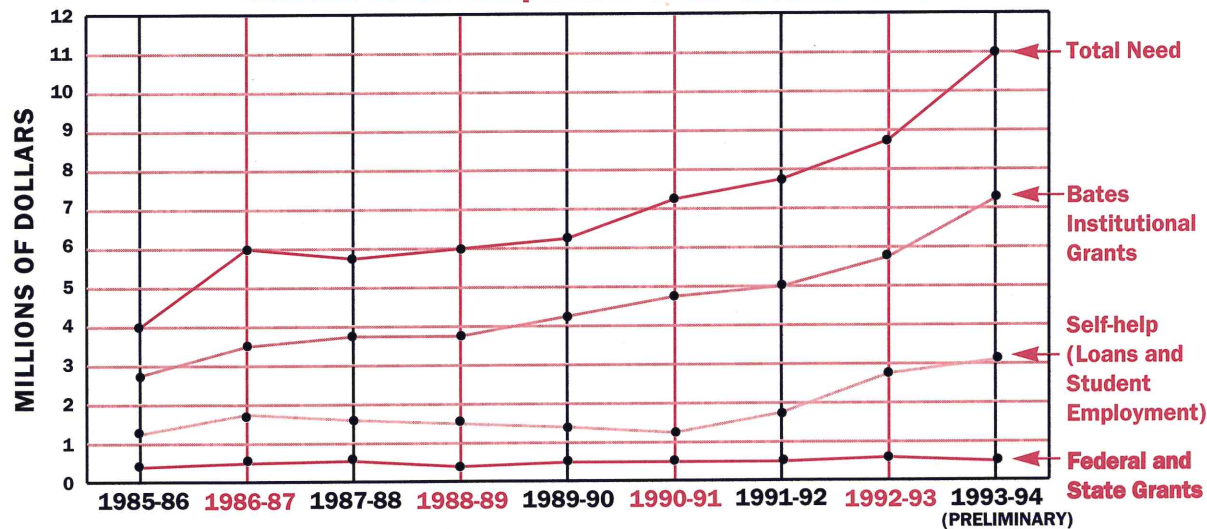
Total number of students with Bates Grants: 587 (additional grants made mid-year)



Student Expenses, Need and Family Contributions at Bates



Sources of Aid Compared to Total Need at Bates



4. Be prepared to analyze and explain your financial aid policies. Virtually everyone who has experienced the student financial aid system has commented on its complexity. Many of the financial aid programs are in flux, and families feel as if they are in a maze, especially if they are dealing with multiple institutions or repaying loans.

Colleges should evaluate their own need-analysis methodologies. At most high-cost institutions, aid analyses are generally conducted with two or three different protocols simultaneously: a federal methodology that does not use farm and home equity; a College Scholarship Service methodology that does; and, in many cases, a college's own methodology that takes into account income from such sources as non-custodial parents, contributions to retirement plans or shares of business profits. In New England, with relatively high home-equity levels but tight cash flows, consideration of home equity can create serious financial problems for some families. Yet for the colleges, with budgets already stretched, removing any items from the analysis drives up institutional grant totals.

Colleges, if they haven't done it already, should conduct an evaluation of their aid system and give families a

thorough manual of instructions and advice. Too often, separate instructions are in place for each part of the system, but no coherent map of the entire financial aid process exists. The move toward simplification and standardization — evident in the federal direct lending program currently being planned in the U.S. Department of Education — is badly needed at many colleges, including Bates.

In years past, admissions and financial aid officers often felt that for all the imperfections in the system, student aid mechanisms were working as they should, allowing students to attend colleges they would otherwise not have been able to afford. To a significant degree, this is still true, albeit with a higher loan component than most of us would like and with increasing strain on colleges' grant budgets. But most of us who serve as engineers of the financial aid system can see the needles on the pressure gauges approaching the red. Careful planning, research and management can help, but it seems likely that all colleges are in for a bumpy ride — sooner rather than later.

William C. Hiss is the vice president for administrative services and dean of admissions at Bates College.

We don't like making need-based decisions, but we prefer that to making aid awards that would require budget cuts or to meeting only partial needs of students.

Tuition Futures In New England

Five New England states have taken a major step in helping families cope with rising college costs. Since 1988, Connecticut, Maine, New Hampshire, Rhode Island and Vermont have sold a combined \$1.2 billion in tax-free college savings bonds, which will be worth about \$2.6 billion upon maturity.

Rhode Island and Connecticut adopted their college savings bonds programs in June 1988. New Hampshire and Vermont followed suit within the next two years, and Maine did so in 1992.

Connecticut leads the pack with 11 sales totaling \$945 million. New Hampshire has had three sales totaling \$140 million, and Rhode Island has had three totaling \$125 million. Vermont has had two sales totaling about \$30 million and was conducting a third at the time of this writing. Maine has had one sale totaling \$7 million.

The idea is simple: Under the Rhode Island College and University Savings Plan, for example, the parent of a four-year-old child could pay \$2,250 for a college savings bond in 1993. The bond would be worth \$5,000 upon maturity in 2007 when the child reached age 18, the traditional age of college entry. Investors do not pay state or federal taxes on interest earned by the bonds, so a tax-exempt yield of, say, 6 percent, would translate into an effective rate of return of 9.33 percent for joint filers with taxable income between \$36,000 and \$89,150.

The genesis of the Rhode Island plan is typical. A panel of Ocean State legislators and higher education leaders studied two other operations as potential models: one a tuition prepayment plan launched by Michigan in 1986, the other a college savings bond program initiated in Illinois a year later.

The Michigan plan allowed parents and other benefactors to prepay tuition at a state college or university at a set rate years in advance of attendance. The Michigan plan was perceived as an insurance policy giving parents the security of prepaid tuition in a period when college costs were escalating well beyond inflation. But the plan also had significant limitations. It covered only future enrollments at four-year public colleges and universities in Michigan. More importantly, the plan faced scrutiny from the Internal Revenue Service, which ultimately ruled that interest on the pooled, prepaid funds around which the plan was based would be subject to federal taxes.

Rhode Island adopted several features of the Illinois plan, including the provision that the first \$25,000 of bonds held would not be considered an asset when the student applied for financial assistance. However, unlike the Illinois plan, Rhode Island's program also allows students to use the savings at out-of-state colleges and universities without any disincentives.

The first Rhode Island college savings bond sale — conducted in the spring of 1989 — totaled \$46.4 million, with a projected value of \$93.2 million at maturity.

Despite the negative effect a deteriorating economy in Rhode Island had on personal spending, a second sale held in August 1990 totaled nearly \$43 million worth of college savings bonds, with a maturity value approaching \$83 million. In 1993, a third sale totaled \$35.7 million, with a maturity value of \$76.4 million.

Although skeptics worried that the bonds would be purchased mostly by large investors interested in general investment, a Gallup Poll conducted after the first sale in 1989 revealed otherwise. About 30 percent of those who responded to the survey bought just one bond, and a similar percentage bought two. Furthermore, for about 60 percent of the sample, the total value of bonds purchased was \$5,000 at maturity.

The poll indicated that young parents comprised the chief market for the bonds. The average age of Rhode Island bond purchasers was 45, and 41 percent of investors were between ages 30 and 39. The survey also showed a strong "secondary market" of grandparents.

The annual family income of bond purchasers was spread fairly evenly across three levels ranging from \$35,000-\$50,000, \$50,000-\$75,000 and \$75,000 or more.

When asked why they purchased the bonds, 80 percent of respondents cited college tuition. The ages of the oldest intended beneficiaries were spread between 12 months and 12 years. An overwhelming 75 percent of investors pointed to savings accounts as the source of funds for their bond purchases. What's more, 64 percent of bond purchasers indicated that they were "very likely" to buy the bonds again, and 24 percent said they were "somewhat inclined" to do so.

In Rhode Island, the plan was judged successful enough that the General Assembly passed legislation in 1992 requiring that a portion of any future issue of general obligation bonds be in the form of college savings bonds. Most of the other 25 states which have initiated college savings bond programs have reported similar success.

In a broader context, it is noteworthy that tax-free municipal and state bond holdings in the United States have increased from \$49 billion in 1987 to \$192 billion today. The sale of college savings bonds has clearly been a contributing factor, promising an immediate dividend of increased personal savings and a long-range dividend of expanded higher education options for the next generation.

Eleanor M. McMahon is a Distinguished Visiting Professor at Brown University and former Commissioner of Higher Education in Rhode Island.

College savings bond programs promise expanded higher education options for the next generation.

By Eleanor M. McMahon

Direct Lending: Is New England's Student Loan Industry Living on Borrowed Time?

Administrators at the University of Vermont are anxiously anticipating the fall 1994 term. It's not that they're expecting a phenomenal jump in applications or some record-breaking grant — certainly not a generous upsurge in state support. No, the cause of all the excitement in Burlington is the new Federal Direct Student Loan Program, the most sweeping experiment in higher education financing since the first federal student loans were offered almost 30 years ago. Next fall, UVM becomes one of only a dozen New England higher education institutions — and 105 across the nation — to participate in the first year of the program.

Though it's a distinction whose true merit has yet to be proven — most New England colleges opted to sit out what they fear will be a bumpy start — UVM Director of Financial Aid Donald Honeman says he is pleased to be “on the cutting edge” of student aid policy. “Those of us here at UVM who have looked at [direct lending] closely decided this is what student loan programs are going to look like in four or five years,” says Honeman. “We see a certain inevitability to this.”

At the offices of the Vermont Student Assistance Corp. (VSAC) in Winooski, the mood is very different. The same inevitability that UVM welcomes is viewed with dismay by VSAC and the 46 other guaranty agencies across the nation. UVM students make up a major portion of VSAC's market. With the university in the direct lending program, VSAC will lose almost \$14 million in loans — nearly one-quarter of the business it saw in fiscal 1993. “We are one of the hardest hit [guaranty agencies] in the nation,” says VSAC Executive Director Don Vickers.

VSAC is not alone. As the direct lending revolution plays itself out over the next few years, the traditional role of the multibillion-dollar student loan guaranty industry will be eliminated. The impact in terms of lost jobs could deal a serious blow to a region only now hobbling out of recession.

VSAC currently employs 150 people, but Vickers estimates that New England could lose 1,000 jobs once direct lending is fully implemented. “No one has sat down and said what's really going on here,” says Vickers. “We're taking jobs out of New England and giving them to Washington.”

The current federal student loan system — known as the Federal Family Education Loan Program (FFELP) — was launched in 1965. The program has grown to involve about 8,000 private lenders, 47 guaranty agencies, and 7,000 U.S. schools and colleges. Last

year, FFELP's three major loan offerings — the Stafford Loan, the Supplemental Loan for Students (SLS) and the Parents Loan for Undergraduate Students (PLUS) — together accounted for \$18 billion in federally guaranteed and, in the case of Stafford Loans, federally subsidized loans to students and their families. The total volume of lending, which has almost tripled since 1980, is expected to reach \$25 billion by academic year 1997-98.

Direct lending takes private lenders, guaranty agencies and the secondary market out of the federal student loan business by issuing funds directly from the U.S. Treasury, through colleges, to students. The direct lending model was initially envisioned as a reform that would save money for students and parents and, by cutting down on student-loan defaults, produce overall savings that could be used to increase the number and size of loans. That was the theory at least.

In reality, the plan President Clinton signed into law in August 1993 as part of the Student Loan Reform Act responds primarily to an earlier budget agreement mandating that \$4.3 billion in savings over five years from the loan program be applied to the federal deficit. Direct lending's implementation schedule is in fact driven by the deficit-reduction goal. Under that schedule, the share of total student loan volume consumed by direct loans will increase rapidly over the next five years to reach at least 60 percent by the 1998-99 academic year. Unless the U.S. Department of Education encounters substantial obstacles to implementation, direct lending will fully replace the current system for delivery of loans to college students and their families by the turn of the century — perhaps sooner.

“Our objective is to make the program so attractive as to make schools want to participate, and reach 100 percent [participation] by 1998-99,” says Diane Sedicum, chair of the Education Department's Direct Lending Task Force.

The vast private industry involved in the student loan system will see its market dry up over the next five years.

**By
Julie Lanza**

Lawmakers and others charged that banks were making large profits while assuming little risk under FFELP.

There is ample interest among higher education institutions already. The group of 105 institutions selected for the program's first year was culled from a list of approximately 1,100 interested applicants. The Education Department would not release the original list of applicants but noted that the institutions represented a range of sizes and missions.

The Education Department's direct lending schedule calls for 5 percent of all FFELP loans — accounting for almost 300,000 students — to be transferred to the new program in fall 1994. Direct lending's volume share will jump to 40 percent in its second year, academic year 1995-96, then to 50 percent in 1996-97 and 1997-98, and to at least 60 percent by 1998-99. Subsequent steps will bring participation in the program, if successful, to 100 percent. Moreover, federal officials have promised that any qualified institution can take part in direct lending during the final three years of this five-year schedule, so the share of loans made directly by colleges could easily exceed the 50 percent and 60 percent goals for those years.

Many observers have noted that the real challenges to the Education Department bureaucracy won't come in the final years of the schedule, but in the second-year shift from 5 percent to 40 percent of FFELP volume. Honeman of the University of Vermont expressed hope that UVM's participation in the first year will allow the university to play an important role in shaping the still-evolving program. Direct lending pioneers know that the Education Department has garnered plenty of criticism for its inability to carry out Congressional mandates, but Honeman says he would be "more concerned if we were a first-time participant in the *second* year."

Lynn Fawthrop, director of student financial aid and financial planning at Roger Williams University — another first-year participant in direct lending — says the impact of the second year will be felt by lenders, not the schools in direct lending. But considering that direct lending and FFELP are meant to run concurrently for the next five years, Fawthrop says she is concerned about student access to lenders in the continuing FFELP.

"We don't want to create a new program at the expense of [other] students," says Fawthrop, but she adds that the Department of Education is "extremely sensitive to the access issue."

The vast private industry currently involved in FFELP will see its market dry up over the next five years; eventually, some players will be forced out of business entirely.

Six guarantee agencies operate in New England. By far, the largest is American Student Assistance (ASA), the Massachusetts-based agency which backed \$750 million in loans to 225,000 students and families in 1993. The region also hosts a major player in the secondary market for student loans. Massachusetts-based New England Education Loan Marketing Corp. (Nellie Mae), with \$1.5 billion worth of federal student loans, is the nation's third largest secondary market. The largest secondary market, Sallie Mae, also employs people in Massachusetts. The two corporations buy student loans from lenders and service them in repayment. While Nellie Mae president Lawrence O'Toole believes direct lending will make FFELP loans less expensive for agencies like his to purchase in the short term, the full implementation of direct lending will eventually make secondary markets obsolete and result in the demise or substantial downsizing of the industry.

Scores of private banks and credit unions regionwide have also been involved in FFELP for years. Although some smaller community lenders have withdrawn from the traditional loan programs as a result of last year's passage of the Student Loan Reform Act, the predicted wholesale abandonment of FFELP is clearly not going to happen — not this year at least.

NEW ENGLAND POSTSECONDARY INSTITUTIONS CHOSEN FOR DIRECT LENDING'S FIRST YEAR ...

CONNECTICUT:

Connecticut Institute of Art; New England Technical Institute; Western Connecticut State University.

MAINE:

Mr. Bernard's School of Hair Fashion; University of Maine, Presque Isle.

MASSACHUSETTS:

Amherst College; Harvard University; Stonehill College; Williams College.

RHODE ISLAND:

Brown University; Roger Williams University.

VERMONT:

University of Vermont.

One major U.S. bank, however, already has quit FFELP. NationsBank, based in Charlotte, N.C., stopped participating in federal student loan programs as of Jan. 1, 1994. The bank, which has recently completed major acquisitions and now controls assets of \$156 billion, has sold most of its student loans to the secondary market.

NationsBank held only 1 percent of the U.S. federal student loan market and decided, according to bank spokesman Ellison Clary, "If we can't be in a business in a big way, we don't want to be in it." Clary acknowledges recent changes to FFELP will decrease banks' profit margins, but denies that was the major consideration in NationsBank's decision to withdraw.

No large New England lenders have followed NationsBank's lead yet, but caution is in the air.

In 1993, BayBanks, one of the nation's top lenders of guaranteed student loans, originated \$130 million in Stafford, SLS and PLUS loans, accounting for 6 percent of the bank's total consumer loan portfolio, according to Jim Cosman, president of BayBanks Credit Corp. What does Cosman think about the bank's future in the program? "Right now, we are planning for 1994 only," he says.

First New Hampshire Bank, headquartered in Manchester, also is taking a "wait-and-see posture," according to a statement released in December by the bank. Bank officials refused to provide any specifics about the size of First New Hampshire's student lending portfolio, but since the majority of its student loan customers are local, officials do not expect to lose business to increased competition from national lenders as the entire industry maneuvers for fewer accounts.

Direct lending's negative impact on commercial lenders is no coincidence. During the Congressional debate on direct lending, lawmakers and others argued that banks were winning big profits while assuming little risk under FFELP. Since banks don't choose who should receive federal student loans (that's based on federal guidelines), don't oversee the application process (colleges usually do), don't administer loans while in repayment (banks typically sell their student loans in bulk to the secondary market), critics charge that FFELP merely guarantees banks healthy profits in exchange for minimal investment. In addition, banks get an important introduction to customers through FFELP; college students often open their first checking accounts and apply for credit cards in their borrowing or loan repayment years.

Banks, especially smaller ones, counter that low yields combined with inconvenient regulations make involvement in FFELP more an accommodation to customers than a source of great earnings, compared with other more profitable consumer lending areas such as car loans or mortgages.

One slice of evidence that some smaller banks are choosing to get out of FFELP sooner than expected may be found in the success of Nellie Mae's "Loan Sense" program allowing lenders to sell off their student loans immediately upon origination. O'Toole believes the rapid rate of enrollment in the program — about 80 banks joined in the first year — may indicate banks' desire to dissociate themselves with the disappearing FFELP.

... AND THE LOAN VOLUME IMPACT THEY WILL HAVE ON STATE GUARANTY AGENCIES*

CONNECTICUT	2%
MAINE	3%
MASSACHUSETTS	3.5%
RHODE ISLAND	5%
VERMONT	25%

* No New Hampshire schools were chosen for participation in the direct lending program for 1994-95.

Source: U.S. Department of Education; state guaranty agencies.

Still, for most larger lenders who can achieve economies of scale, the student loan business has been very good. And large annual increases in volume indicate that there is always new business in student lending. "[The system] allows lenders to make and sell loans and avoid the servicing," acknowledges Fritz Elmendorf, a spokesman for the Consumer Bankers Association. "They can kind of skim the cream of the business a bit."

As it became clear that Congress, with the backing of the Clinton White House, would enact some form of direct lending, banks decided to go along with reforms to the current FFELP. The Student Loan Reform Act set in motion the phase-in of direct lending and made changes to FFELP that will cut private sector profits.

For lenders, the most costly measures include: a new 0.5 percent fee, which cannot be passed on to borrowers, paid to the Department of Education for each loan originated; reduction of principal and accrued interest insurance covered by the federal government from 100 percent to 98 percent; and reduction of lender yield on Stafford Loans from Treasury bill plus 3.1 percent to Treasury bill plus 2.5 percent during in-school, grace and deferment periods.

The impact in 1994 of these changes will be minimal considering that loan volume will at least remain steady, and possibly increase as larger banks take over the accounts of smaller lenders who choose to drop out of FFELP this year. At the same time, rising colleges costs and stagnant family incomes are forcing students and parents to borrow more, and new government regulations have, in some cases, created newly eligible borrowers.

Guaranty agencies are also affected by the 1993 legislative changes to FFELP. The agencies' principal task — to form a frontline against student loan defaults by guaranteeing the loans — becomes more expensive, as the federal government drops its reinsurance share per loan and asks agencies to increase their risks. Starting in July 1994, the guaranty fees agencies charge on every loan will fall from 3 percent to 1 percent of the amount borrowed. In addition, the law reduces the share of collections guaranty agencies retain on delinquent accounts that they successfully bring into repayment, even after the federal government has paid off the defaulted loan. These reductions combined with possible declines in the loan volume allowance paid annually by the federal government to agencies could cost New England guarantors millions of dollars in the coming years.

Still, except for VSAC, the New England guaranty agencies are expecting no major budget upheavals in academic year 1994-95. New Hampshire, for example, was one of only five states nationwide where no schools were chosen for participation in the direct lending startup (only two of the 39 eligible institutions in that state were said to have even applied). Thus, business should not decline at the New Hampshire Higher Education Assistance Foundation, which guaranteed — and in most cases originated — \$82 million worth of student loans in 1993.

In Rhode Island, Brown University and Roger Williams University are participating in direct lending. But the Rhode Island Higher Education Assistance Authority has escaped serious harm, mainly because it has guaranteed only a small portion of Brown's student loans, and Roger Williams' \$1.7 million in accounts represent only about 2 percent of the authority's total loan volume. Together, the losses mean a 5 percent reduction in the Rhode Island authority's 1993 volume — not enough to force layoffs or program cutbacks this year. "We're a very, very healthy organization ... so far," explains acting executive director Russ Woodward.

In Massachusetts, ASA's volume will drop only 3.5 percent in the first year of direct lending, as four Massachusetts institutions — Harvard University, Amherst College, Stonehill College and Williams College — adopt the new program. And ASA President Daniel S. Cheever Jr. predicts those losses will be offset by an increase in the amount of per-student borrowing, as college costs climb.

The institutions chosen to participate in the first year of direct lending have low default rates and sophisticated financial aid operations.

Without UVM's loan guaranty business, VSAC may have to eliminate other special loan programs.

The Department of Education had originally estimated it would begin the direct lending program with between 300 and 400 institutions. The low number of institutions chosen, 105, surprised many observers, but the technical credentials of the schools did not. The chosen institutions share relatively low student loan default rates and relatively sophisticated financial aid operations. All have administered similar "direct" transactions through the government's Pell Grant and loan programs, and many have even managed their own education loan programs. Picking such a group to begin the conversion to direct lending is intended to minimize first-year flaws and allow federal officials to present a smooth, sophisticated alternative to the FFELP status quo.

But no federal student loan program can be truly reformed until and unless default rates are lowered.

Student loan defaults — which cost taxpayers \$2.5 billion in fiscal 1993 — have dropped in recent years, but their startling escalation throughout the 1970s and 1980s said much about the rapid, unsteady growth of FFELP itself. For-profit training institutes as a group account for the highest percent of Stafford Loan defaults. Because of income eligibility regulations, proprietary school students are leading recipients of federal grants and loans, but there is no federal effort to assess a student's likelihood of employment (and, thus, on-time loan repayment) after graduation. According to a recent report in *The Wall Street Journal*, the Education Department currently gives 81,600 loans to cosmetology students annually, when the job market has room for only 17,000 new professionals a year.

New England is home to few proprietary schools, which accounts in part for the six-state region's low loan default rates. Paul Taub, executive director of the New England Technical Institute of Connecticut, one of only three proprietary schools in New England chosen to participate in direct lending this year, acknowledges that the federal government's plans to lower the maximum default rate allowable for participation in all federal student loan programs will put pressure on the proprietary sector. New England Technical Institute's default rate now stands at 11.1 percent — low compared with the average proprietary rate of almost 36 percent in fiscal 1991.

The direct lending plan contains proposals, as yet undeveloped, to offer automatic payroll deductions to students in repayment, a scheme proponents say should cut down on defaults. But direct lending should lower default rates on its own, insists Taub, because many defaults result from "poor communication between students and banks."

In the fall of 1995, when the Department of Education is expected to increase by almost tenfold the volume of loans funneled to students through direct lending, the impact on guarantee agencies and banks will be dramatic: Although they avoid speaking expressly of layoffs and program cutbacks, guaranty agency officials do caution that conditions will have to be "reexamined" once direct lending expands. "Clearly, we would need to take a look at downsizing," concedes ASA's Cheever.

The Rhode Island Higher Education Assistance Authority's Woodward notes that, "it would be an understatement" to suggest his organization would be concerned if the University of Rhode Island joined direct lending in its second year; URI accounts for almost 25 percent of the Rhode Island Higher Education Assistance Authority's loan volume.

NEW ENGLAND LENDERS AMONG U.S. TOP 100 IN FFELP

Lender	Fiscal 1991* Total Dollars	U.S. Rank
Fleet National Bank	\$165.0 million	12
BayBank	\$80.4 million	29
Key Bank of Maine	\$49.6 million	41
Vermont Education Loan Finance Program	\$39.9 million	58
Shawmut Bank	\$37.8 million	59
Bank of Boston	\$33.5 million	66
Connecticut Bank & Trust Company	\$28.9 million	82
Harvard University**	\$25.3 million	93

* Fiscal 1991 is the most recent year for which the U.S. Department of Education has statistics. In nearly all cases, lenders' portfolios have increased.

** Harvard University already originates some federal loans on its own.

Source: U.S. Department of Education

In Vermont, cutbacks are being discussed already. VSAC's Vickers warns that the loss of so much business this year will threaten VSAC's ability to continue offering other programs such as the Second Chance program, which offers education loans to mothers on welfare who have had student loan default problems in the past. One VSAC medical school access program, the Health Education Assistance Loan (HEAL), can save UVM resident medical students \$20,000 over the period of repayment on undergraduate and medical school loans. It too is in danger of being eliminated as a result of UVM's participation in direct lending, according to Vickers. HEAL, Second Chance and similar programs rely entirely on revenues generated from VSAC's regular student loan guaranty business; a reduction in volume cannot help but affect them, says Vickers.

The private players in the FFELP system contend that they are ready to compete with the federal government over the next five years, though they are confronted with the awkward dilemma of facing off against their own regulators. Many guaranty agencies are touting the advances they've recently made in automating the student loan application process, as well as the resources they make available to schools and students to educate borrowers about their repayment responsibilities.

VSAC, perhaps fighting for its survival, will begin offering in July 1994 a 1 percent per-year forgiveness of the principals of all guaranteed student loans through the agency. It's a savings, Vickers is quick to point out, UVM students will not enjoy. Students and parents can expect to see more well-publicized efforts from all the guaranty agencies to hold on to market share as genuine competition in a once secure and staid field heats up throughout New England.

Julie Lanza is the associate editor of CONNECTION.

Financing Public Higher Education in New Hampshire

Since 1980, the New Hampshire state government's share of the University System of New Hampshire (USNH) operating budget has shrunk from 40 percent to about 29 percent. But last year, spurred on by the realization that businesses will favor states with educated citizens, legislators in Concord made a historic decision to end the 12-year decline.

The Legislature approved a biennial appropriation of \$125 million for fiscal years 1994 and 1995 — up \$15 million or 13.6 percent from the previous biennium. USNH will receive an 8 percent increase in its state appropriations in fiscal 1994 and a 6.6 percent increase in fiscal 1995. It's a significant improvement. During the four previous years, annual increases in state funding for the system averaged less than 2 percent per year. With USNH expenses rising steadily, the budget shortfalls had to be made up from other sources, mainly tuition.

The new money will be well spent. Consider, for example, that the university system in the late 1970s and early '80s had fallen behind comparable systems in faculty and staff salaries. Prior to a collective bargaining agreement reached in the spring of 1993 with the American Association of University Professors, faculty salaries at the University of New Hampshire were lower than at most New England land-grant universities, and salaries at other institutions in the system were no more competitive. The additional dollars provided by the fiscal 1994 appropriation — as well as increased tuition revenues — will help fund staff and faculty salary increases of about 4 percent and maintain current benefit levels. This increase — coming as many colleges and universities are forced to hold the line on salaries — should help our institutions begin to overcome the salary deficiencies they have lived with for a number of years.

Most of the budget increases for nonpersonnel expenses are at or below the inflationary level. These include supplies, utilities, equipment and library acquisitions. One exception is physical plant repair and renovation. With a \$100 million backlog in deferred maintenance on New Hampshire's public campuses, the Legislature granted a 9 percent increase in the biennial budget for repairs and maintenance in both fiscal years 1994 and 1995.

The new biennial budget will also signal the beginning of a four-year effort to bring Keene State College's appropriation up to the level enjoyed by Plymouth State College, which received \$428,000 more than Keene State in fiscal 1993. In the past, this difference was justified, because Keene State enrolled a greater proportion of out-of-state students who pay higher tuition than New Hampshire residents. In recent years, the colleges have begun to serve similar student bodies, so their respective shares of the state higher education appropriation should be

equitable. The increases in Keene State's share over the next four years will not cost Plymouth State, but instead will be drawn from the overall budget increase.

Apart from the added dollars dedicated to Keene State, the biennial budget for public higher education in New Hampshire does not include any "enhancements" or extras. That is, while each line item in the budget increased to the benefit of each institution, there is no special allocation this year or next for new ventures. This is clearly not the time to add new programs or encourage ventures at the state's or students' expense.

Some New Hampshire residents were disappointed that the increased state appropriation to the university system did not allow trustees to forego tuition increases. Unfortunately, the decline in the state's share of USNH's operating budget since 1980 left such a small base of state support that even the impressive increase in the state budget did not eliminate the need for tuition increases last fall. Indeed, holding the line on tuition would have come only at the expense of other priorities, such as overdue increases in salary and in repair and renovation funds.

In September 1992, when USNH submitted its biennial budget request, the board proposed — and later set — tuition increases of 5 percent for state residents and 7 percent for out-of-state students for the 1993-94 academic year. The systemwide increases in faculty and staff salaries approved by the board in April 1993 required an additional annual increase of \$200 for students at UNH and \$130 for students at the state colleges. Generous as the state budget increase is, the added dollars do not match the revenues from the tuition increases.

In a public higher education system as dependent on tuition as ours, it is critical that we invest added dollars in student financial assistance. To help students cover rising tuition, about 27 cents of every dollar in increased tuition this year will go to financial aid, raising the amount of available student aid by more than 20 percent.

Our institutions have prided themselves on meeting the full financial needs of those New Hampshire students eligible for aid. But our ability to do this has been threatened by the federal government's expanded definition of student eligibility, combined with a 20 percent decline in inflation-adjusted federal aid dollars since 1982 and a dramatic shift in federal aid from grants to loans. Thanks

The decline in the state's share of USNH's operating budget since 1980 left such a small base of state support that even an impressive increase in state appropriations did not eliminate the need for tuition increases last fall.

**By
William J.
Farrell**

To help students cover rising tuition, about 27 cents of every dollar in increased tuition this year will go to financial aid.

to this year's investment in financial aid, we should be able to meet the full needs of all New Hampshire students who are eligible for assistance under the congressional formula used to determine aid prior to the 1992 reauthorization of the Higher Education Act.

The price of attending New Hampshire's public institutions remains high, precisely because the system is tuition-dependent. Yet, USNH institutions do a good job controlling expenditures, and costs such as room, board and mandatory fees remain comparatively low. In fact, despite our dependence on tuition, UNH ranks second lowest among New England state universities in total costs. This is because the USNH board of trustees has recognized that added resources are not the only answer, and it has insisted on more effective use of existing dollars. To maintain competitive salaries, for example, the USNH

trustees have asked each institution, as well as the system office, to internally reallocate 5 percent in salary dollars over the next biennium for increased compensation.

Still, the university system cannot rest on its laurels. It is a disturbing national trend that students and their parents are bearing a greater share of escalating educational costs. We must improve productivity on our public campuses and reduce the tuition burden on students, whether through more effective course scheduling, avoidance of program duplication or greater use of technology.

With the state of New Hampshire again willing to bear its fair share of the costs, the university system should be able to meet the challenge of providing quality education at affordable rates.

William J. Farrell is the chancellor of the University System of New Hampshire.

New England's Lagging Investment in Higher Education

As Medicaid, corrections, public schools and other pressing items continue to strain state budgets, higher education has taken it on the chin.

Across the nation, the share of state budgets devoted to higher education slid from 14 percent in fiscal 1989 to 12 percent in fiscal 1994, according to the National Conference of State Legislatures (NCSL).

Meanwhile, state appropriations for higher education nationally grew from \$19.2 billion in fiscal 1980 to \$40.8 billion in fiscal 1994, according to the Center for Higher Education at Illinois State University.

But state support has not been enough to cover rising costs for most public institutions. The NCSL reports that tuition revenue

equaled almost 29 percent of state higher education appropriations by the end of the 1980s, up from 23 percent at the beginning of the decade.

The growing importance of tuition to public campuses has made it more difficult to compare public investment in higher education from state to state. Indeed, the Center for Higher Education, long the authoritative national source of data on appropriations of state tax funds for higher education operating expenses, and the commonwealth of Massachusetts, cannot agree on how to report the Massachusetts appropriation. (See table.)

The problem stems in part from the fact that three times in the past five years, Mas-

sachusetts has changed its policies on how much tuition campuses are allowed to retain and how much they send to the state's general fund. Currently, institutions send all tuition revenue back to the general fund.

Massachusetts officials reason that a fiscal 1994 appropriation should include the tuition money that is sent to the general fund, then *reappropriated* to public higher education. Center for Higher Education officials say other states that use similar systems subtract the tuition funds from the reported higher education appropriation. Unable to resolve the disagreement, the Center has published fiscal 1994 Massachusetts data that is not comparable to data from other states or previous years.

State Appropriations for Higher Education Operating Expenses in New England

	1994 Appropriations (in thousands)	1-Year % Change	2-Year % Change	10-Year % Change	Per-Capita Approp.*	Appropriations Per \$1,000 of Personal Income**
Connecticut	\$494,937	14.3	-1.3	80.8	\$150.39	\$5.81
Maine	172,451	0.2	-0.3	124.7	139.64	8.06
Massachusetts	826,995	MASSACHUSETTS DATA NOT COMPARABLE				
New Hampshire	80,415	8.6	7.0	95.5	72.77	3.48
Rhode Island	112,358	4.4	5.8	26.9	111.91	5.94
Vermont	54,016	-0.1	-3.1	36.1	95.27	5.35
United States	40,775,516	3.3	1.7	57.5	161.69	8.47

*1991 population figures were used to calculate this data.

**1991 preliminary personal income information was used to calculate these figures.

Maine Coalition Halts Budget Slide

Maine has traditionally underinvested in public higher education, partly because it is a rural state whose major industries have not required legions of college-educated workers, and partly because policymakers have reasoned that private colleges provide Maine residents with adequate access to higher education.

While the University of Maine System, the Maine Maritime Academy and the Maine Technical College System (MTCS) all posted major improvements in state support during the 1980s, some of those gains began to erode during the lean years of the early 1990s. Indeed, public higher education has suffered more than its share of the state's fiscal pain. From fiscal 1990 to fiscal 1994, while Maine's total state budget has grown by 4 percent, state appropriations for the University of Maine System have *declined* by about 4 percent.

In 1993, even as the Maine Legislature cut \$700 million from a total biennial budget of \$3.5 billion for fiscal 1994 and 1995, a grassroots coalition of educators and concerned citizens successfully lobbied the state to maintain funding of higher education at the previous year's level. But with the state facing an uncertain revenue picture and rising social services costs, many Maine residents wonder whether 1993 will prove to be the year that Augusta stopped the hemorrhaging from public higher education or just a reprieve.

Maine's public colleges and universities experienced real growth during the late 1960s and early '70s under Gov. Ken Curtis, now president of Maine Maritime Academy. But that was followed by tight budgets from 1974 to 1978 under Gov. James B. Longley, an independent who had little admiration for public higher education. The University of Maine System — created in 1968 by the affiliation of the land-grant University of Maine and the state's six teacher colleges — suffered through the Longley years with meager increases in state appropriations. In fact, in the second half of the 1970s, annual growth in state appropriations never kept pace with inflation as measured by the Higher Education Price Index.

The 1980s were the golden years of Maine's investment in public higher education. State appropriations to the university system grew an average of 9 percent annually from 1979 through 1984 and nearly 14 percent annually from 1984 to 1991. In some years, the government support was phenomenal; the system enjoyed a 21 percent increase in appropriations in 1985 and a 28 percent increase in 1987, the latter coming on the heels of a visiting committee report recommending that the state maintain a "first-class undergraduate program at Orono," upgrade library and computer facilities and decrease the system's reliance on tuition.

This infusion of capital made it possible for the university system to boost the competitiveness of faculty salaries vis a vis other New England land-grant universi-

ties and address the serious pay inequity between men and women, as well as attend to physical plant maintenance, which had been neglected to the point where much more expensive repairs were required.

In June 1989, the Maine Legislature commissioned a study to examine the impact of these additional appropriations on the University of Maine System. Between then and the release of the study in December 1990, the University of Maine System suffered a series of budget reductions. The study concluded that the previous years' budget increases had improved the system markedly, but it also noted concerns that expected future cutbacks would place those gains at risk — and indeed the subsequent cuts resulted in layoffs, program elimination and tuition increases.

When the Maine Legislature convened in January 1993, the fiscal situation in the state was bleak. The state faced a projected revenue shortfall of about \$900 million, due partially to the scheduled repeal of the so-called "sunset taxes" on which the previous biennium's budget of \$3.5 billion was balanced. These taxes included surcharges on personal and corporate income taxes and an increase in the state's sales tax, from 5 percent to 6 percent.

The budget submitted to the Legislature by Gov. John McKernan would have cut about 13 percent from the University of Maine System, 20 percent from the Maine Maritime Academy and 10 percent from the MTCS over the course of fiscal 1994 and 1995. Furthermore, the proposal would have required higher education institutions to absorb the loss of a full month's allocation, which had been withheld by the state back in June 1991 in an effort to balance the overall budget. If implemented, these cuts would have required the widespread elimination of programs and staff and forced further significant tuition increases. (Tuition already had increased by almost 60 percent in four years.)

Preliminary discussions between the Legislature's joint education committee and leaders of Maine's public colleges and universities revealed that any cuts beyond those already implemented would have undermined the ability of the institutions to fulfill their missions. The education committee committed itself to "funding education as a system," rather than encouraging the various constituencies to compete against each other.

In March 1993, members of the education committee appealed to everyone with an interest in education in Maine to engage themselves in the political process. Com-

The education committee had committed itself to "funding education as a system," rather than encouraging the various constituencies to compete against each other.

**By
John J.
O'Dea**

Three of the 16 announced candidates for governor have direct ties to the University of Maine System.

mittee members traveled to school districts and college campuses, met with editorial boards and addressed business groups across the state. The legislators carried the message that education is a crucial component of Maine's long-term economic viability and it shouldn't be cut any more than it already had been.

The committee invited these groups to a follow-up meeting in April. The education committee room at the state capital was jammed beyond capacity with teachers, chairs of local school boards, students, school superintendents, college and university trustees, parents, business people and others. Committee members explained the state's fiscal situation and what was at stake if schools and colleges were not adequately funded. The committee then gave a crash course in grassroots lobbying, including how to lobby legislators in their districts and how to organize letter-writing campaigns. The result was a firestorm in the media, in the State House and, most importantly, in the districts. Legislators — many of whom were now intimately aware that cutbacks in state aid would result in further cuts to their local schools, increases in their property taxes or both — were hearing, "do whatever you need to do but don't come home without level-funding education." It worked. When the Legislature passed the biennial budget in June 1993, education was level-funded for both fiscal 1994 and fiscal 1995. This was unimaginable just three months earlier.

This victory was possible because the entire educational community in Maine acted as one in its advocacy for Maine students. Any one faction could have jumped from the coalition and attempted to undermine the others. For instance, the technical colleges — with their ability to turn out skilled graduates in 12 to 24 months and the added leverage of some 6,000 applicants — looked especially attractive to legislators and the governor. MTCS was in a prime position to go it alone at budget time, but remained a "team player" throughout the budget process. MTCS President John Fitzsimmons made an impassioned plea not only for his campuses but also for the University of Maine System, the Maine Maritime Academy and K-12 education.

This battle was joined by many people who had never

State Appropriations to the University of Maine System (in millions)

1990	137.0
1991	143.6*
1992	133.5
1993	132.3
1994	132.7
1995	132.7

* Includes \$11 million deferred payment, which the state has failed to make.

participated in the legislative process. Especially noteworthy was the effective involvement of the boards of trustees of public higher education institutions in lobbying the Legislature and the governor. A number of trustees were surprised at how well they were received and how effective they could be.

The outcome of the 1994 gubernatorial race will have a great impact on the future of higher education funding in Maine. At least three of the 16 announced candidates have direct ties to the University of Maine System. The candidates include Robert L. Woodbury, the former chancellor of the University of Maine System; Jonathan Carter, a biology professor at the University of Maine at Farmington; and Richard Barringer, director of the Edmund S. Muskie Institute of Public Affairs at the University of Southern Maine.

Still, the future of higher education funding in Maine remains uncertain, as the two groups responsible for revenue projections are divided over the prognosis for the balance of the biennium.

What is certain is that the key to preserving higher education funding in Maine during good times and bad will be the strength of the coalition that was willing to put aside parochial differences to fight for education as a whole.

John J. O'Dea is the Senate chair of the Maine Legislature's Joint Committee on Education.

Public Universities Capturing Major Gifts

Budget-strapped public institutions are just beginning to capture the kind of deferred gifts that have been standard at prestigious private colleges and universities, whose relationships with families reach back several generations.

In October 1993, the University of Massachusetts at Dartmouth received a bequest of a shorefront property in Wellfleet, Mass., worth between \$3 million and \$5 million. This largest single gift to any part of the University of Massachusetts System was made

by Cape Cod resort owner and retired schoolteacher Robert White, who died one month after making the bequest. The property eventually will go to the university's Foreign Literature and Languages Department, where White took several Spanish classes. The university is expected to sell the property and use the proceeds to establish a scholarship endowment for students of Spanish.

Around the same time, the University of Maine announced it would receive more than \$1.5 million from a bequest made by

the estate of Grace A. Cutting. The university will use the money to fund scholarships for students at the College of Natural Resources.

Interest in bequests and other forms of deferred giving is increasing among alumni, friends and even employees of the University of Maine, according to Rebecca Peters, finance director of the University of Maine Foundation, which operates independently of the university to raise funds primarily for the Orono campus.

New England's Endowment Wealth Is Enormous ... and Enormously Skewed

The total market value of endowments held by New England colleges and universities grew from \$3.6 billion in 1977 to \$16.7 billion in 1992, and an estimated \$20 billion today, according to *New England Endowments, 1977-1992*, a study of endowment trends by the New England Board of Higher Education (NEBHE). Ironically, however, the majority of the region's students are endowment have-nots.

The study — based on data collected through NEBHE's annual FACTS Survey of New England colleges and universities — examines the 128 New England college endowments worth \$1 million or more as of June 30, 1992.

NEW ENGLAND'S 20 LARGEST ENDOWMENTS: 1992

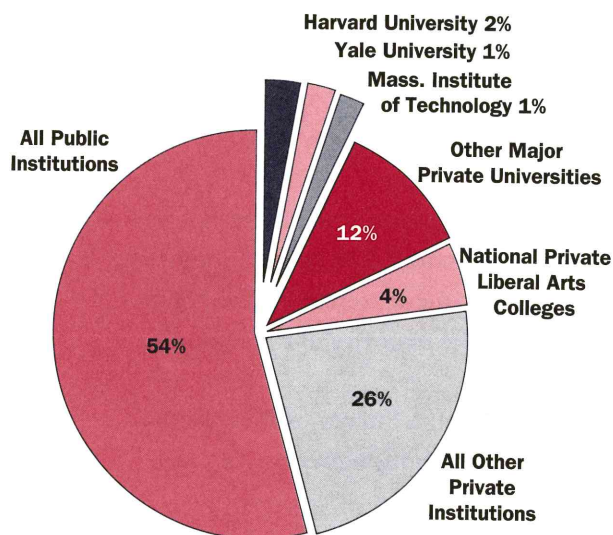
	Endowment Market Value, June 1992	FTE* Enrollment 1992-93	Endowment per Student (FTE)
Harvard University	\$5,118,119,000	18,114	\$282,558
Yale University	2,838,233,000	10,732	264,477
Massachusetts Institute of Technology	1,600,000,000	9,621	166,303
Dartmouth College	661,500,000	5,024	131,681
Brown University	499,485,000	7,363	67,842
Wellesley College	426,628,000	2,238	190,629
Smith College	387,769,200	2,559	151,561
Williams College	380,533,500	2,099	181,293
Boston College	355,000,000	12,774	27,792
Boston University	302,500,000	25,659	11,789
Amherst College	291,280,000	1,598	182,335
Wesleyan University	290,000,000	2,800	103,571
Middlebury College	254,000,000	1,960	129,592
Mount Holyoke College	205,852,300	1,904	108,144
Tufts University	193,033,900	7,653	25,223
Northeastern University	188,906,000	21,110	8,949
Brandeis University	168,448,000	3,774	44,640
Bowdoin College	165,764,000	1,435	115,515
Trinity College (Conn.)	156,848,800	1,982	79,157
College of the Holy Cross	120,000,000	2,790	43,018
Top 20 (cumulative)	\$14,603,900,700	143,183	\$101,995
New England Total	16,700,000,000	661,779	25,235

Major private universities and prestigious liberal arts colleges control the lion's share of New England's endowment wealth. The 20 institutions listed opposite control 87 percent of New England's endowment funds, though they enroll only 22 percent of the region's college students. Note that no public institution appears on the list. In fact, NEBHE estimates the combined endowments of the region's 80-plus public colleges and universities to be about \$250 million — a little less than the endowment of Middlebury College.

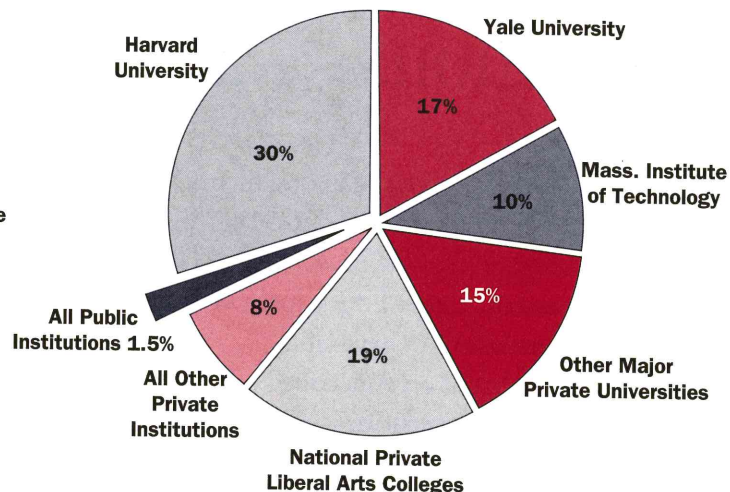
* New England institutions in 1992-93 enrolled 508,366 full-time students and 306,826 part-time students. This amounts to a "headcount" of 815,192 and a Full-Time Equivalency of 661,779.

HARVARD, YALE, AND M.I.T. ENROLL LESS THAN 5% OF NEW ENGLAND'S COLLEGE STUDENTS ...

... BUT CONTROL 57% OF THE REGION'S ENDOWMENT WEALTH



**New England Enrollment
Total (Headcount) = 815,192***



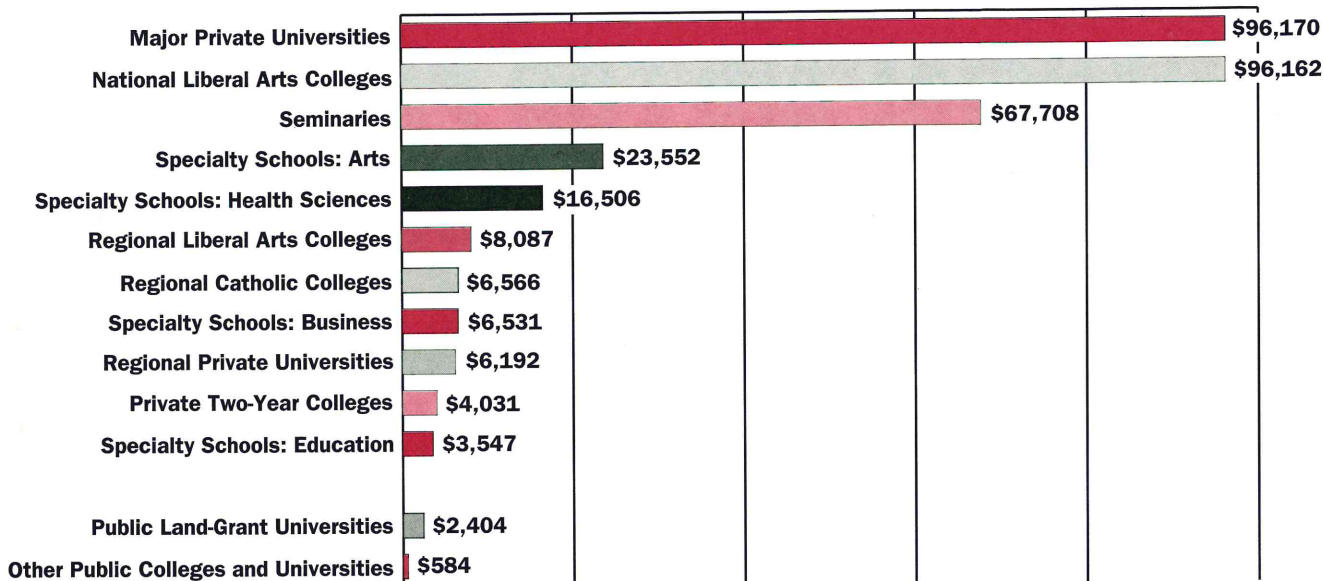
**New England Endowment
Total = \$16.7 billion**

NEW ENGLAND'S 20 HIGHEST ENDOWMENT LEVELS PER STUDENT: 1992

	Endowment Market Value, June 1992	FTE* Enrollment, 1992-93	Endowment per Student (FTE)
Woods Hole Oceanographic Institute	\$118,000,000	145	\$813,793
Swedenborg School of Religion	4,300,000	9	505,882
Saint Thomas Seminary	6,500,000	14	464,286
Harvard University	5,118,119,000	18,114	282,558
Yale University	2,838,233,000	10,732	264,477
Hartford Seminary	24,599,400	96	256,244
Forsyth School for Dental Hygienists	30,000,000	119	252,101
Episcopal Divinity School	23,080,000	108	214,698
Wellesley College	426,628,000	2,238	190,629
Amherst College	291,280,000	1,598	182,335
Williams College	380,533,500	2,099	181,293
Massachusetts Institute of Technology	1,600,000,000	9,621	166,303
Smith College	387,769,200	2,559	151,561
Dartmouth College	661,500,000	5,024	131,681
Middlebury College	254,000,000	1,960	129,592
Bowdoin College	165,764,000	1,435	115,515
Mount Holyoke College	205,852,300	1,904	108,144
Wesleyan University	290,000,000	2,800	103,571
Trinity College (Conn.)	156,848,800	1,982	79,157
Brown University	499,485,000	7,363	67,842
Top 20 (cumulative)	\$13,482,492,200	69,915	\$192,841
New England Total	16,700,000,000	661,779	25,235

New England's total endowment wealth amounts to \$25,235 per student (full-time equivalent) on average. But because the distribution of wealth among institutions is skewed, only 39 institutions — or about one institution in seven — are above this regional average. Half of all New England college students attend institutions with endowment levels below \$976 per student — a level that is "insufficient to support more than a fraction of 1 percent of all institutional expenditures," according to Todd Graham, the NEBHE research associate who authored the study.

AVERAGE ENDOWMENT PER-STUDENT AMONG SELECTED TYPES OF NEW ENGLAND INSTITUTIONS: 1992



NEW ENGLAND'S 20 FASTEST GROWING ENDOWMENTS: 1977-1992

	Endowment Market Value		5-Year % Change	
	June 30, 1977	June 30, 1992	Current \$	Constant \$*
Berklee College of Music	\$412,000	\$54,122,000	+13,036 %	+5,194 %
Bentley College	890,000	60,000,000	6,642	2,617
Roger Williams University	207,000	13,500,000	6,422	2,528
Pine Manor College	203,000	12,200,000	5,910	2,322
Boston College	6,332,000	355,000,000	5,506	2,159
Fairfield University	660,000	27,416,000	4,054	1,574
Western New England College	607,000	16,731,000	2,656	1,011
Westbrook College	531,000	11,600,000	2,085	780
Wheelock College	536,000	11,000,000	1,952	727
Regis College	1,674,000	34,102,600	1,937	721
Stonehill College	2,070,000	42,000,000	1,929	718
University of Connecticut	1,730,000	31,736,400	1,734	639
College of the Holy Cross	7,176,000	120,000,000	1,572	574
Saint Michael's College	1,631,000	21,600,000	1,224	434
Quinnipiac College	1,069,000	12,000,000	1,023	352
Boston University	29,807,000	302,500,000	915	309
Hampshire College	1,164,000	11,500,000	888	298
Bay Path College	1,516,000	14,290,900	843	280
Bryant College	5,194,000	45,000,000	766	249
University of Rhode Island	1,645,000	12,607,300	666	209
Top 20 (cumulative)	\$65,054,000	\$1,208,906,200	+1,758 %	+649 %
New England Total	3,550,000,000	16,700,000,000	370	89

Boston College led all U.S. major private universities in endowment growth from 1977 to 1992, as its funds shot up 2,159 percent in real terms from \$6.3 million to \$355 million. Holy Cross ranked second among the so-called Oberlin 50 liberal arts colleges in endowment growth, as its funds grew by 574 percent from \$7.2 million in 1977 to \$120 million in 1992. Some types of institutions didn't fare so well. The total value of endowments at seminaries and schools of theology, for example, declined by 18 percent after inflation.

Note: This table includes only institutions with endowment growth of at least \$10 million over the period.

* Constant dollar change in value based on 148.1 percent higher education inflation over the period 1977 to 1992.

**TO ORDER NEW ENGLAND ENDOWMENTS, 1977-1992,
USE THE ORDER FORM ON PAGE 56.**

FINALLY...

FINANCIAL AID FOR PARENTS WITH KIDS IN COLLEGE.

With first semester bills coming due, many parents of college students are beginning to feel caught in a squeeze.

Your income is too high for your student to be considered needy and thus you're ineligible for low cost government guaranteed loans. But, your income isn't high enough to easily pay for today's ever-increasing college costs.

FINANCIAL AID FOR PARENTS NOT ELIGIBLE FOR FINANCIAL AID.

Now, thanks to the Maine Educational Loan Authority, a program established by the State of Maine, there's real help for parents caught in this kind of a squeeze. Your own good credit rating can be the source of an easy-to-apply-for, easy-to-repay education loan.

BORROW THE FULL COST OF EDUCATION.

In fact, this is one of the few programs of its kind in the country and it is only available to Maine residents *or* for the education cost of students

who go to school in Maine. You can borrow up to the full cost of education (minus any financial aid) each year, *unsecured*, with low interest and deferred principal or extended repayment plans. It's as easy as applying for a credit card.

APPLY NOW.

Thousands of Maine people as well as others have already taken advantage of this unique program to make college dreams come true. Just contact your college financial aid officer or call the Maine Educational Loan Authority toll-free at 1-800-922-6352 (in Maine), (207) 623-2800 (outside of Maine) or write P.O. Box 510, Augusta, Maine, 04330 for an application and full information.



These plans are offered through the Maine Educational Loan Authority which is associated with Maine Education Services – Maine's own college loan people.

8.9%
SET RATE

5.96%*
VARIABLE RATE

*As of April 1, 1994



What Scientist Shortage?

KEVIN AYLESWORTH

Most employers actively recruit scientists and engineers for their specialized training, rather than for their general problem-solving skills, which are probably more valuable.

Despite reports to the contrary, the traditional job market for Ph.D.-level scientists and engineers is dismal. In physics, for example, U.S. universities granted about 1,350 Ph.D.s in 1992. Meanwhile, the American Institute of Physics (AIP) projected that approximately 700 traditional research or teaching jobs would open up for Ph.D. physicists — about 250 at doctorate-granting institutions, 200 at other four-year colleges and 200 to 300 in government and industrial labs. Assuming that every opening were filled by a recent graduate, universities produced about two Ph.D.s for every job available in physics.

No wonder less than 40 percent of new physics Ph.D.s accepted potentially permanent traditional jobs in physics in 1991, according to the AIP. In contrast, about 60 percent were able to find traditional jobs in 1979.

Although the physics job market is probably among the worst, nearly all technical fields have a substantial oversupply of graduates and there is little evidence to suggest that this will change in the next few years. Indeed, in physics, the AIP projects the number of new Ph.D.s to increase by about 3 percent annually, while no major new source of jobs is envisioned. Unfortunately, the problem has been compounded by some science policymakers who, in their quest for stable science and engineering enrollments and continued funding of science programs, have spread poorly supported tales of an actual or “impending” shortage of scientists and engineers.

Scientists and engineers who have been struggling to find jobs since the late 1980s recognize these tales as part of “The Myth.” The current generation of

Ph.D. scientists is still trying to undo the damage done by former National Science Foundation (NSF) Director Erich Bloch, who repeated The Myth in more than 50 speeches and congressional budget hearings during the second half of the 1980s. Bloch’s dire warning of an “impending shortfall” of 160,000 bachelor’s-level scientists and engineers — and attendant shortage of Ph.D. scientists — was apparently intended to extract more money for his agency from Congress. By 1990, NSF officials were quoted almost daily in news stories implying that a shortage of scientists had reached crisis levels. Congress — by this time whipped into a frenzy about America’s global competitiveness — passed immigration and education laws in an attempt to immediately increase the supply of scientists and engineers.

The NSF study that sparked the “shortfall” scare had some major defects as a measure of supply and demand. First, it considered only degree production, so the large number of U.S. scientists biding time in temporary positions — some unrelated to science — were not considered in esti-

mating the supply of scientists. Secondly, the study looked at U.S. citizens only, neglecting to take into account the large number of foreign nationals educated at U.S. universities for advanced science jobs. Finally, it assumed that demand matched record-high degree production reached around 1984 — it did not — and that it would continue to do so in the future. As early as 1987, there were indications that the demand for scientists and engineers was weakening. For example, more than 50 percent of 1987 physics Ph.D.s were taking postdoctoral fellowships, rather than permanent positions. And according to data published by the NSF itself, industrial funding of research and development has been flat and federal funding has been declining since the mid- to late 1980s. By 1990, it should have been evident to policymakers that there was no shortage of scientists and engineers.

The Myth is still being perpetuated by unwary science policymakers and reporters. One example is a 1993 report from the U.S. Department of Education, *National Excellence: A Case for Developing America's Talent*. In November 1993, the *New York Times* — and several other newspapers — quoted the report (slightly out of context) as stating that there is “a dearth of high-achieving graduates, particularly in mathematics and science. The U.S. shortage of graduates in mathematics and science forces many large companies — such as Texas Instruments, Bell Laboratories and IBM — to fill jobs, particularly in research, with people educated outside the United States.”

The fact is that many big U.S. companies, including the three named above, have reduced their number of research employees in the last few years. After the restructuring of AT&T in 1984, Bell Labs reduced its research staff from 25,000 to 18,000 — and has not expanded since. Three years later, General Electric sold off its Sarnoff Research Center and the center's staff was reduced from 1,250 to 800. Most recently, IBM announced in June 1993 that it would cut research spending by \$1 billion over the next fiscal year. Incidentally, the newspapers took the quote out of a report focusing primarily on *precollege* education.

In another instance, remarks by the director of the Department of Energy's (DOE's) Office of Science Education and Technical Information were taken out of context in the November 1993 issue of the agency's own newsletter, *DOE This Month*. According to the published excerpt from the director's address: “The technological sector is where the jobs are. The number of employment opportunities are expected to double, triple, and in some cases, quadruple in practically every scientific dis-

cipline by the year 2000 ...” What's not clear from the quote is that the speech was about jobs in specific fields like environmental cleanup; the projections certainly were not intended to apply to every scientific sector. (In addition, the speech itself failed to address the existence of a large pool of underutilized scientists and engineers who could be retrained for these jobs.)

Even if perpetuation of The Myth results in increased federal spending on research and more science students in the short run, the ultimate consequences of running what looks like a confidence game often outweigh the benefits. The NSF's apparently self-serving behavior resulted in an embarrassing investigation by Congress in the spring of 1992. Rep. Howard Wolpe, the Michigan Democrat who chaired the House Science, Space, and Technology Committee's investigations subcommittee, chided the NSF for “never publicly repudiating the study or the manner in which it was used.” Wolpe added that there was “little evidence to indicate that the NSF [was] particularly concerned about repercussions this study has had on the Foundation's reputation or the structural weaknesses that allowed this terribly flawed work product to be given wholly undeserved legitimacy.”

The departments of Education and Energy need to be more scrupulous in their presentation of supply-demand data. Some in Congress are looking for excuses to reduce spending on science. If lawmakers feel these institutions are conveniently fudging data to get more money, they may reduce the agencies' budgets instead. Moreover, the resulting negative publicity could further degrade the sagging public image of scientists.

There are ways to improve job prospects for Ph.D.-level scientists and engineers without reducing the number of students — and compromising the nation's scientific strength. One is to help the students find careers outside traditional areas.

Several obstacles must be overcome if this strategy is to succeed. In the recent past, leaders of the scientific community told science students they need only work hard to pursue a career as a scientist. That may have been good advice 25 or 30 years ago when the leaders of today's scientific community finished graduate school, but now it just perpetuates the foolish idea that only failures leave science. Young scientists need advice based on the realities of the job market, not negative stereotypes.

Another challenge is that most employers actively recruit scientists and engineers for their specialized training, rather than

for their general problem-solving skills (which are probably more valuable). These hiring practices — combined with poor advising by academic mentors — give students the impression that following non-traditional career paths amounts to failure.

From the student's perspective, there are other disincentives to exploring career alternatives. To earn a Ph.D. under the current academic system, a scientist must spend about six years — after four years of bachelor's-level study — in monastic devotion to a very narrow field. Then, the student is required to work at least two additional years in temporary postdoctoral positions before searching for a “real” job. By this time, many Ph.D.s are at least 30 years old; some are close to 40. Because Ph.D.s must devote so much of their lives to such narrow pursuits, the notion of changing fields is often alien and unpleasant. Furthermore, many scientists are unaware that their talents can be applied to other fields.

Eliminating barriers to nontraditional careers could take years. Nonetheless, universities, employers and job seekers should all assume some share of the responsibility for the current situation.

■ Universities should find living examples of Ph.D.s who have “made it” in careers other than traditional scientific research or teaching, and present them in a positive light to students.

■ Potential employers should look beyond the negative stereotype of scientists and engineers as socially inept ‘nerds’ who are good only at one very specialized task and instead hire them for their ability to identify and solve complex problems.

■ Young scientists who have earned their Ph.D.s and feel they are locked in “Postdoc Hell” should investigate career alternatives and set a limit on how long they will wait for their ideal career.

New England and the nation are confronting many complex challenges ranging from competitiveness in a global market to environmental cleanup. Instead of wasting the talents of thousands of hard-working scientists by tracking them into narrowly defined, overcrowded career paths, we should liberate them to address some of our most pressing problems.

Kevin Aylesworth is the founder of the Young Scientists' Network, an “electronic association” devoted to informing the public about the supply and demand of scientists and developing employment opportunities for scientists. Aylesworth, a Ph.D. physicist, now works as a legal assistant in Cambridge, Mass.

Where The Job Engine Is Revving Up

Employment in Emerging High-Tech Companies

Since New England slid into recession more than five years ago, economists and others have been searching for “new engines of growth.” Now, a study of the regions high-technology manufacturers with under 1,000 employees detects the whirl of job creation among emerging firms that manufacture computer software and hardware, subassemblies and components, telecommunications equipment and environmental technologies.

The study by Corporate Technology Information Services (CorpTech) of Woburn, Mass., also reveals where many of the high-growth, high-tech companies are setting up shop. Bank of Boston economics editor Diane Fulman, who has analyzed CorpTech findings in the past, notes that in some cases, the data *imply* the presence of firms that have already passed the 1,000-employee mark. “These companies do clus-

ter together. If you get one company working in these industries, you get spinoff,” she says.

The data also show that, despite recent economic hardships, the region continues to be creating jobs in a wide variety of cutting-edge industries. Says Fulman: “Even in the dreary days of the early 1990s, one of the things that distinguished New England’s high-tech industry was its diversity.”

COMPUTER SOFTWARE

CITY	FIRMS	JOBS
Cambridge, Mass.	81	4,148
Waltham, Mass.	36	3,722
Burlington, Mass.	33	1,927
Westborough, Mass.	12	1,283
Stamford, Conn.	23	1,200

TELECOMMUNICATIONS

CITY	FIRMS	JOBS
Billerica, Mass.	3	1,197
Waltham, Mass.	8	1,077
Woburn, Mass.	3	936
Danvers, Mass.	1	741
Westborough, Mass.	5	719

COMPUTER HARDWARE

CITY	FIRMS	JOBS
Bedford, Mass.	10	2,215
Waltham, Mass.	13	1,606
Westwood, Mass.	3	950
Canton, Mass.	4	735
Framingham, Mass.	8	676

ENVIRONMENTAL

CITY	FIRMS	JOBS
Newton, Mass.	4	1,508
Dedham, Mass.	1	900
Windsor, Conn.	5	741
Warwick, R.I.	3	738
Portland, Maine	1	600

SUBASSEMBLIES AND COMPONENTS

CITY	FIRMS	JOBS
Wilmington, Mass.	3	1,440
Nashua, N.H.	7	1,365
Watertown, Mass.	6	1,362
Warwick, R.I.	6	1,201
Manchester, N.H.	10	1,187

BIOTECHNOLOGY

CITY	FIRMS	JOBS
Cambridge, Mass.	17	2,177
Worcester, Mass.	4	692
Bar Harbor, Maine	1	600
Beverly, Mass.	2	400
Westbrook, Maine	2	367

The tables on the left show New England cities ranked by employment at firms with under 1,000 employees in selected high-growth fields. Figures reflect locally based companies' worldwide employment.

GROWTH INDUSTRIES

Tables reflect employment and projected job growth at technology manufacturers with under 1,000 employees where the home office is in New England. New Jobs Projected column shows new technology manufacturing jobs projected over the 12-month period following Corp Tech's interviews with various companies, which were conducted between November 1992 and October 1993. City figures reflect employment and projected job growth at firms where the home office is in the city.

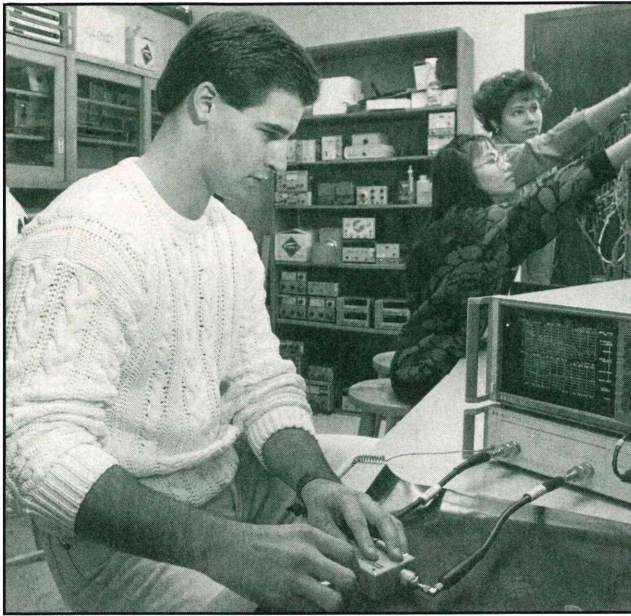
NEW ENGLAND TECHNOLOGY INDUSTRIES RANKED BY PROJECTED ONE-YEAR JOB GROWTH

INDUSTRY	FIRMS	JOBS	NEW JOBS PROJECTED
Computer Software	1,204	53,073	3,753
Computer Hardware	432	306,122	1,610
Subassemblies & Components	660	145,154	1,425
Telecommunications	223	167,697	1,107
Environmental	338	21,197	807
Biotechnology	100	11,680	723
Medical	238	33,345	681
Advanced Materials	201	40,567	581
Test & Measurement	317	56,203	568
Manufacturing Equipment	276	12,227	560
Factory Automation	337	52,921	462
Pharmaceuticals	41	10,019	232
Transportation	96	245,369	221
Photonics	182	19,752	203
Energy	80	49,815	190
Chemicals	106	63,190	91
Defense	48	77,296	41

HOT SPOTS

NEW ENGLAND CITIES RANKED BY PROJECTED ONE-YEAR HIGH-TECH JOB GROWTH

CITY	TOTAL FIRMS	JOBS	NEW JOBS PROJECTED	MAIN ACTIVITY
Cambridge, Mass.	167	9,994	920	Computer Software
Waltham, Mass.	122	11,238	831	Computer Software
Burlington, Mass.	75	4,850	389	Computer Software
Billerica, Mass.	56	6,783	384	Telecommunications
Boston, Mass.	106	6,127	383	Computer Software
Bedford, Mass.	48	5,717	379	Computer Hardware
Westborough, Mass.	33	4,017	357	Computer Software
Woburn, Mass.	111	5,909	313	Subassemblies & Components
Newton, Mass.	60	3,941	279	Computer Software
Windsor, Conn.	46	5,892	268	Environmental
Stamford, Conn.	77	3,382	253	Computer Software
Andover, Mass.	47	4,309	245	Subassemblies & Components
Hartford, Conn.	63	5,690	239	Transportation
Norwalk, Conn.	59	N.A.	222	Computer Software
Danbury, Conn.	49	4,724	217	Photonics
Lexington, Mass.	42	4,412	217	Photonics
Canton, Mass.	24	N.A.	212	Computer Hardware
Marlborough, Mass.	39	N.A.	208	Test & Measurement
Watertown, Mass.	37	4,090	190	Subassemblies & Components
Shelton, Conn.	31	3,675	185	Subassemblies & Components



Engineering Education's 21st Century Credo: Adaptability and Competitiveness

BERNARD M. GORDON

Engineering education is not the stuff of which headlines are made. To the general public, engineering itself may seem boring and remote, even *nerdy*. Practitioners in the field — consumed by daunting technical challenges such as how to take advantage of vast expansions in computer power or how to eliminate chlorofluorocarbons — tend to pay little attention to education issues. And although some educators have tried hard to ensure the relevance of engineering coursework, many have focused on research at the expense of teaching. Amidst all this neglect, engineering education has deteriorated — and that's bad news for New England's technology-intensive economy.

Once upon a time, New England companies were chock-full of eager, talented, driven young engineers anxious and able to vault their firms to the top. Not today.

There are clear signs that many practicing engineers cannot meet today's technical and business challenges, let alone tomorrow's. These signs are visible not only in the failing fortunes of well-known technology-based firms such as IBM and Prime Computer, but also in broad anecdotal evidence of declining engineering productivity.

Caught up in an era of rapid technological expansion, inadequately prepared engineers have been required to undertake increasingly complex work. Engineering schools have tried to prepare undergraduates for this challenge by packing more into a four-year curriculum. But this process has short-changed students on both the underpinnings of the engineer's craft and the basics of a sound general college education. Even the engineering schools' stated aim of providing students with more advanced professionalism may have gone wide of the mark.

What happened?

It scarcely bears repeating that New England's revered institutions of learning have played a cen-

tral role in fostering new industries, new technologies and new modes of thought. With the engineering talent trained by institutions such as Tufts University, Dartmouth College's Thayer Engineering School, Worcester Polytechnic Institute and, of course, the Massachusetts Institute of Technology, New England was able to parlay its early lead in the factory mode of production and English power loom technology into a general regional preeminence in an astonishing array of fields. Worcester became a center for steel and metals, the Connecticut River Valley became home to machine tool manufacturers, gun-makers, paper-makers and suppliers of the textile mills across New England and around the world. The Boston area hosted an even broader collection of firms in industries as diverse as shoes and electrical machinery. These industries kept New England at or near the top in per-capita personal income nationally and internationally until the Great Depression. Then, New England's difficulties could be attributed to shifting national markets, the absence

of fossil fuel resources, management grown too self-satisfied, and even a series of unusually severe floods, but not to any lack of technical expertise. Certainly the engineering schools of the time continued to produce capable graduates for local and national firms. In fact, the schools were midwives to New England's "second industrial revolution" in the second half of the 20th century.

The rise of high-technology industries — and the economic rebirth they spawned in much of New England — is by now familiar. In the years following the Depression, institutions such as MIT began to attract federal funding for both military and civilian research projects. And a profusion of new technologies — computers, semiconductors and radar, to name a few — presented fresh opportunities for a generation of young engineer-entrepreneurs who would scale the pinnacles of business. An Wang, founder of Wang Laboratories, helped make a whole industry of electromechanical calculators obsolete with his trend-setting electronic models. Later, he made word-processing a household term. Ken Olsen saw the future as early as 1957 when he began building Digital Equipment Corp. around the idea of providing broad access to computers. Other names such as William Poduska of Apollo Computer, John Cullinane of Cullinet, and Edson DeCastro of Data General are hardly less notable.

In recent years, however, the firms these worthies launched have faced troubled times, with consequences for the entire region. As in the 1930s, New England's future today seems uncertain. Some of the same culprits may be to blame. New England remains resource-poor and costly for some kinds of businesses. Geographic distance from the booming markets of Asia has also hurt the region's competitiveness. And management also bears some blame. For the most part, New England firms conspicuously missed their opportunity to lead in the semiconductor and microcomputer industries.

Yet the difficulties of the past several years also stem from another problem, which

must be seen as the most worrisome for the long term: a general loss of engineering effectiveness. Once upon a time, New England companies were chock-full of eager, talented, driven young engineers — anxious *and* able to vault their own firms to the top or start firms themselves. Not today.

Rather than being well-rounded and well-grounded, young engineers of the 1990s are often over-specialized and conditioned to succeed only within narrowly defined areas. In place of grit, ingenuity and commitment has come complacency and an expectation on the part of many younger professionals that solutions will be easy and automatic, and rewards substantial. Engineers no longer expect to accurately present their designs for examination and communication to others; they instead expect their talents to be self-evident. Engineers are no longer prepared to rigorously prove their ideas; rather, they believe that being able to state a solution *theoretically* is the same as making something that is marketable, manufacturable, reliable and affordable. As a consequence, engineers no longer see a need to "sell" their ideas to others and thus do not see their impoverished speaking and writing skills as a problem.

The specialization encouraged of student-engineers creates a "Tower of Babel Effect"

in which engineers — already perhaps inclined to individualism by nature — find agreement and coordination with others of different perspectives to be nearly impossible. Especially noticeable among today's engineers is an absence of the interpersonal skills and values which comprise "teamwork." These include but are not limited to a strong sense of personal responsibility and loyalty to the group. Also important is a willingness to take the lead and take risks when the occasion demands it. Yet the tendency toward over-specialization also means few engineers will have the breadth needed to assume positions of leadership within their organizations.

The consequences of this divergence between what companies badly need from their engineers and what colleges seem to have instilled in those entering the profes-

sion is significant — as is evident in indices of productivity.

In the early 1960s, the firm I managed, EPSCO Inc., had a general rule of thumb that was shared by many other firms: For every two engineers on their payroll, they would expect to ship a minimum of \$1 million in products.

By 1980, *Electronic Business* magazine estimated that this rule of thumb had been greatly skewed. Using 1964 dollars as a constant, the magazine revealed that by 1980, the ratio stood at about 12 engineers per \$1 million in military electronics shipped. Even in generally leaner industrial and commercial electronics, the ratio approached four engineers per \$1 million shipped. Today, some of the industrial and commercial electronics firms I am familiar with actually expect to tolerate even less favorable ratios — with perhaps five or six engineers for each \$1 million in shipments.

Indeed, examination of the industry as a whole corroborates these relationships of engineering input to product output. With some 300,000 engineers, the U.S. electronics industry ships about \$300 billion annually in *current* dollars. Using 1964 dollars for comparison, this reflects a ratio of about five engineers per \$1 million shipped. From these figures, it is apparent that the productivity of engineers in the electronics industry has decreased by more than 50 percent in only three decades. This, in turn, has decreased margins for companies and product lines and reduced revenue for further expansion.

Objections may be raised to such comparisons. Some will assert that electronic devices are more complicated than they were 30 years ago, or that markets are moving faster. But in fact, many aspects of design and manufacturing are actually less complex today. In the 1960s, engineers were just learning about transistors, and the integrated circuit was brand new. Existing technology was still oriented toward vacuum tubes and discrete components. Whole new kinds of processes and heretofore unknown products — the analog-to-digital converters and medical imaging equipment my firm specialized in, for example — were being developed. And computers were not generally available to assist in design and testing.

Although the loss of engineering effectiveness is partly a consequence of the kind of bureaucratized management under which most engineers operate, it is also a result of the kind of education engineers have received in recent years. The same

schools that helped foster the New England high-tech renaissance of the 1950s, '60s, '70s, and '80s must now share the blame for today's professional and economic malaise.

New Englanders are often credited with Yankee Ingenuity — a mystical quality, part inventiveness and part grit that is supposed to make us better able to lead in the march of progress. In the past, our engineering institutes drew heavily on this tradition in creating a "can-do" engineering culture that made our schools world famous.

From its beginnings, MIT made a habit of having its professors involved in industry, where they could test their mettle against the standards of the real world. It was a clever way to ensure that the freshest inspirations would be served up to new engineers and to ensure that graduates were not just dilettantes but hard-nosed realists, able to find workable and profitable solutions to business problems.

Such realists are hard to come by today. Seduced by the latest breakthroughs in science, many engineers have become, instead, glorified theorists. To be sure, a proud crop of graduates comes forth every year — and in numbers far greater than during the 1940s or '50s. These men and women still have many of the characteristics of their predecessors, including strong mathematical skills and a preference for rational discourse. Often, too, they represent an aspiring generation within their families, determined to make engineering a route to the middle or upper-middle class. But something is missing.

The contrast can be seen in two college catalogs separated by four decades. The MIT course catalog for 1946 boldly proclaimed the goals of the electrical engineering program: "The objective common to all options in Electrical Engineering is to train men for professional, industrial or commercial careers in progressive applications of present engineering art and in the development of new engineering applications of electrical science. In preparation for such a career, the electrical engineering student must develop a working mastery of the basic sciences of mathematics and physics emphasizing mechanics, thermodynamics and

especially electricity and magnetism. On these are built his fundamental professional work in principles of electrical engineering and associated applications. Equally vital to him is the ability to write and speak English effectively."

Today at MIT no such plainly stated goal informs the labors of the student. Instead vague assurances are offered regarding career growth in a "changing world," and a discussion of how independent study and a thesis topic will "complement" the "fundamental principles" of electrical science that the course will provide.

It is not merely a difference in rhetorical grace that separates the courses of study. Where once fundamental physics and mathematics were worshipped as a bedrock upon which subsequent study would be based, today, the fundamentals are treated as a bothersome episode to be endured before beginning the real work of say, learning how to design computer chips. At some schools, these fundamental engineering courses are shared across liberal arts, science and engineering curricula — inevitably devaluing the rigor that real engineering education requires. At the same time, liberal arts core studies have been so watered down — usually to a handful of survey courses — they are almost valueless. In fact, if today's student has not already established a love of art or music, a familiarity with language and an acquaintance with history, there is little likelihood anything provided in the typical engineering course of study will address that deficiency.

The changes in engineering education have done little to ensure that graduates will be able to continue to adapt and change, as the technological environment of the

21st century will surely demand. Rather than meeting the goal of *educating* for the long run, such programs merely provide *training* for the short run.

Most notable in the MIT mission state-

ment of 1946 is the implication that, at graduation, the engineer will continue learning by taking on progressively more difficult tasks in industry. It is here that the then and now part company, for in the new catalog it is clearly implied that four years of formal education will be all that is required to produce a *real* engineer.

In fact, nothing could be further from the truth: Engineers, more than practitioners in almost any other profession, must learn to coordinate their skills with the skills of others. While striving for personal excellence they must also understand the needs and capabilities of the team. None of this, as yet, is provided by schooling. Perhaps it cannot be. But so long as engineering schools create expectations of easy victories for their graduates, the split between what companies need and what schools provide will remain.

With the great expansion of modern technology — and the growing complexity of society — it may no longer be possible to create full-fledged professionals in only four years. Reserving specialization for postgraduate study may help. Perhaps too, broader use of internships and cooperative education can bridge the gaps between professor and practitioner. New England's engineering colleges have often led the way in the past. Their challenge today is to refocus and return to the task of producing truly effective professionals.

Regardless of what solution is ultimately found, however, these great technological educators owe it to their own history — and to the region that depends on them — to move forward, honestly facing up to problems and boldly seeking solutions.

Today, the leaders who made places like Route 128 famous in the decades following World War II are looking over their shoulders for successors. Too often they look in vain. With a renewed focus on engineering education, the next century may again see New England preeminent in this vital area.

Bernard M. Gordon is the president and chairman of Analogic Corp. and founder of the Gordon Institute of Tufts University.

The productivity of engineers in the electronics industry has decreased by more than 50 percent in only three decades. This, in turn, has decreased margins for companies and product lines and reduced revenue for further expansion.



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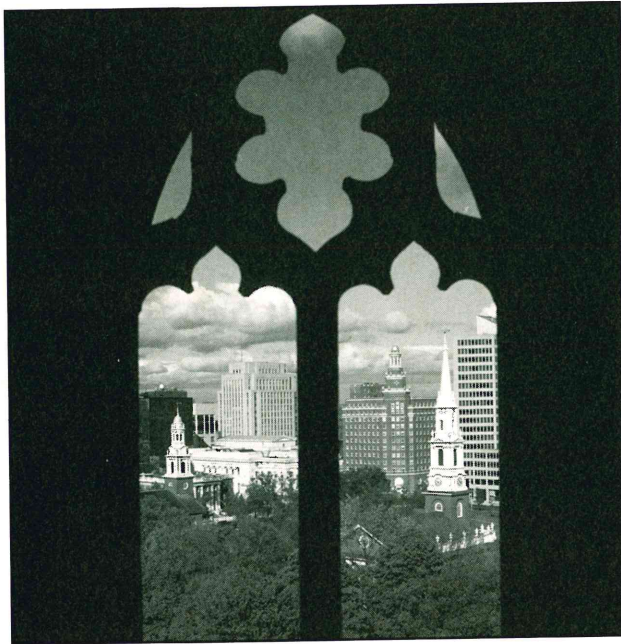
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Town Meets Gown in New Haven

JOHN C. DANIELS

In fiscal 1992, Yale's total payments to New Haven — including property taxes, pay for police overtime, fees for building permits and other charges — rose to more than \$4.5 million. The city also received \$11.3 million from the state that year as compensation for Yale's tax-exempt properties.

We in New Haven, Conn., have our share — and more — of the problems afflicting cities all over the country today: poverty, crime, drugs, guns and gangs, too little housing and too little money.

More than half the city's households earn less than \$25,800 per year; about 60 percent receive public assistance or some form of entitlement. And despite a comparatively high tax rate, the city has been hard-pressed to maintain its traditional level of services. I ran for mayor of New Haven in 1989 because I thought I could do something about those problems.

I quickly determined that improving relations between the city and Yale University would be high among my priorities. Specifically, we needed to try to amend Yale's tax-exempt status and address the perception long held by New Haven "townies" that Yale and its students enjoy a privileged existence, cloistered away from the urban community. I stress *perception* because, in reality, Yale's presence enhances the quality of life in New Haven. Yale students provide thousands of hours of voluntary service to various groups in New Haven and the university is the city's largest employer. In 1992, 35 percent of Yale's 9,400 full-time employees lived in the city of New Haven, and an additional 36 percent lived in the eight towns surrounding New Haven, according to the university. Meanwhile, Yale purchasing, combined with spending by faculty, staff, students and visitors, injected as much as \$275 million into the city's economy, according to the university's estimates.

Following my election in November 1989, I met informally with Yale officials to begin reshaping relations between the city and the university. Upon assuming office, I met with then-Yale President

Benno Schmidt to lay the foundation for a lasting partnership. This meeting led to the April 1990 signing of the memorandum of understanding known as the New Haven-Yale Agreement. The package we negotiated after only three months in office was fair, logical and gutsy. It was not a case of Yale doing what it *had* to do. Indeed, both the city and the university were pursuing austere fiscal policies at the time; the agreement represented a leap of faith for both sides.

Under the New Haven-Yale Agreement, Yale began paying the city annual fees for fire service based on the number of responses by the city's fire department to Yale properties. In fiscal 1992, the payment reached almost \$1.3 million and raised the university's total payments to New Haven — including property taxes, pay for police overtime, fees for building permits and other charges — to more than \$4.5 million for the year. (The city also received \$11.3 million from the state in fiscal 1992 as compensation for Yale's tax-exempt properties.)

The agreement also revised the tax status of the 220-acre Yale Golf Course. In light of Yale's plans to market the golf course as a venue for national tournaments and expand its clubhouse for private functions, it was agreed that the golf course should be added to the city's property tax rolls. Yale will pay the city about \$300,000 each year on the golf course property.

One of the gutsiest aspects of the agreement was the controversial sale to Yale of portions of two city

streets leading to the campus. The city agreed to turn over part of Wall and High streets to Yale and close them to general traffic in exchange for \$1.1 million. The City Plan Commission had unanimously approved the sale of the streets, stating that the impacts on traffic and parking would be minimal, and that Yale's payment would offset lost parking revenues for years to come. Still, the plan ran into stiff opposition from members of the city's Board of Aldermen and some private citizens, armed with misleading information and bent on indulging in a little "Yale bashing" — a popular sport in some New Haven circles. Though

the area has been considerably improved by the measure, with a beautifully landscaped interior walkway almost complete, some critics of the sale still refer disparagingly to the area as "Benno Boulevard."

Yale also agreed to contribute \$50,000 a year over five years to launch an independent "Center for the City," which will draw on Yale's intellectual resources to address some of New Haven's most pressing social problems and help improve relations between the university and its neighbors. The city is seeking matching contributions from other major institutions, the business community and national foundations to support the think tank.

Relations between New Haven and Yale have been rocky at times, partly because of the feeling among some city residents that Yale students, most of them from out of town, lead privileged lives within the university's ivy walls.

No serious attempt was made to improve relations between Yale and New Haven until Richard Lee was elected mayor in 1953. Lee had worked for Yale President Charles Seymour and his successor, A. Whitney Griswold. In fact, Lee and Griswold were personal friends. Not a day went by after Lee took office without telephone calls between City Hall and Woodbridge Hall, Yale's administration building. During his first year as mayor, Lee created the Citizen's Action Commission and made Griswold its vice chairman. And in early 1954, Lee and Griswold worked together on the city's ini-

tiative to replace most of its elementary schools, some of which were built before the Civil War. Lee and Griswold negotiated an agreement whereby Yale purchased a piece of city property — containing two antiquated high schools — in order to build two residential colleges and the Yale Co-Op. The appraisal on the property came in at \$2.7 million, a figure considered too low by Lee. Yale agreed to buy the land for \$3 million. Yale was happy; the city was happy. From that point on, the city and the university worked together increasingly.

One of the strongest examples of collaboration between Yale and New Haven was the

1981 establishment of the Science Park Development Corp. Under the leadership of former Yale Secretary Henry Chauncey Jr., the university, the city of New Haven, the state of Connecticut and the Olin Corp. redeveloped the industrial site once owned by the Winchester Repeating Arms Co., then by Olin, to attract high-technology and biotechnology companies to New Haven — and to increase job opportunities in the city's impoverished Dixwell and Newhallville neighborhoods. Today, Science Park is headquarters for more than 100 technology-oriented firms. And early in 1993, the Connecticut Department of Economic Development awarded a \$350,000 planning grant to Science Park for development of a new biotechnology park, Science Park II, to be located near the Yale Medical School. According to plans, the medical school along with Yale-New Haven and St. Raphael's hospitals will serve as resources for technology-intensive firms.

By 1987, Yale and New Haven announced the New Haven Initiative, in which the university promised to invest \$50 million over the next 10 years in New Haven real estate and economic development projects. During the period from the announcement of the initiative to the close of 1992, the university committed \$2 million toward restructuring of the debt on

downtown's Chapel Square Mall; increased to \$12 million its investment in Ninth Square, a downtown residential and commercial development; lent more than \$1 million to a nonprofit housing group in New Haven to buy 29 units in nine multi-family dwellings in the Hill and Newhallville neighborhoods; and committed \$200,000 to finance construction of a condominium development for low- and moderate-income families.

The New Haven Initiative continues today, though activity has been constrained by the depressed New England economy.

Yale's role in the community is reflected in various other initiatives. A chief reason behind my decision to run for mayor was the city's incredibly high infant mortality rate and high incidence of HIV infection. After some serious moral tussles of my own, some visits to babies infected with HIV and talks with addicts on the street, I became a convert to a needle exchange program coordinated with the aid of Yale scientists and doctors. Initially, I was convinced that such drastic measures couldn't possibly work. Giving needles to drug addicts just didn't seem right. But my confidence in the needle exchange program was rewarded in July 1991, when the city posted a decrease of 33 percent in the rate of new HIV infections. Yale scientists and graduate students helped in monitoring and tracking the incidence of HIV/AIDS.

The program created by the city and the university together is now recognized as a model for other cities.

In addition, the city's partnership with Yale has had a significant impact on public K-12 education in New Haven. Yale students

tutor public school students, and Yale's Peabody Museum offers scholarships to its summer program introducing children to science and nature. Yale medical students go into the city's classrooms to discuss how drugs and alcohol affect the body and to teach students about AIDS-related issues. Hundreds of New Haven public school teachers have attended free seminars and worked on curriculum-development projects with Yale faculty through the New Haven Teachers Institute. Yale has also joined forces with the New Haven public schools to create a unique community partnership that seeks to increase minority representation in the sciences. A five-year, \$2.5

Yale agreed to contribute \$50,000 a year over five years to launch an independent "Center for the City," which will draw on Yale's intellectual resources to address some of New Haven's most pressing social problems and help improve relations between the university and its neighbors.

If there were one thing I would change at Yale, it would be to increase the enrollment of New Haven residents, especially African-Americans.

million National Science Foundation grant will revamp math and science education at all grade levels and encourage talented minority students to become scientists.

Yale also stepped in to help the city with a \$4 million reconfiguration of Broadway, New Haven's most infamous traffic circle. The work, which will improve traffic patterns and revamp the commercial strips sandwiching the downtown area, will be funded largely by a grant under the federal Surface Transportation Assistance Act. Under the act, the federal government provides 80 percent of funding for such projects, but stipulates that the state and city governments put up 10 percent each in matching dollars. In this case, Yale covered the city's portion — supplying funds which the city would not have been able to raise on its own. The university also committed \$10 million to improve the neighborhoods around Yale and the Broadway area.

During my two terms in office, I have come to know three Yale presidents: Ben-

no Schmidt, Howard Lamar and Richard Levin. I admire and respect all three. They are men whose calling in life — education — does not detract from their practical understanding that a university has a responsibility to the community in which it's located. President Schmidt and Acting President Lamar were committed to social service and did much to improve New Haven. The city has good reason to expect the same from Levin.

At his inaugural address last fall — appropriately titled "Beyond the Ivy Walls: Our University in the Wider World" — Levin reminded his audience, "As we seek to educate leaders and citizens for the world ... we must remember that we have important responsibilities here at home ... We contribute much to the cultural life of New Haven, to the health of its citizens and to the education of its children. But we must do more."

Indeed, if there were one thing I would change at Yale, it would be to increase the enrollment of New Haven residents, espe-

cially African-Americans. Judging from past accomplishments, I believe the day will come when this goal will be achieved.

Yale University and the city of New Haven are indeed inextricably linked. And, when we want to, we work pretty well together. While there may be some room for improvement on both sides, I am convinced that an abundance of goodwill prevails. Despite challenges, the partnership between the city and the university continues to flourish.

Yale is well aware of the hardships New Haven faces as a poor city located in one of the country's richest states. Yale and New Haven both are aware that the city's problems are the university's problems as well, and that each must work constructively and creatively with the other to ensure a positive future.

John C. Daniels was the mayor of New Haven, Conn., from 1989 to 1993.

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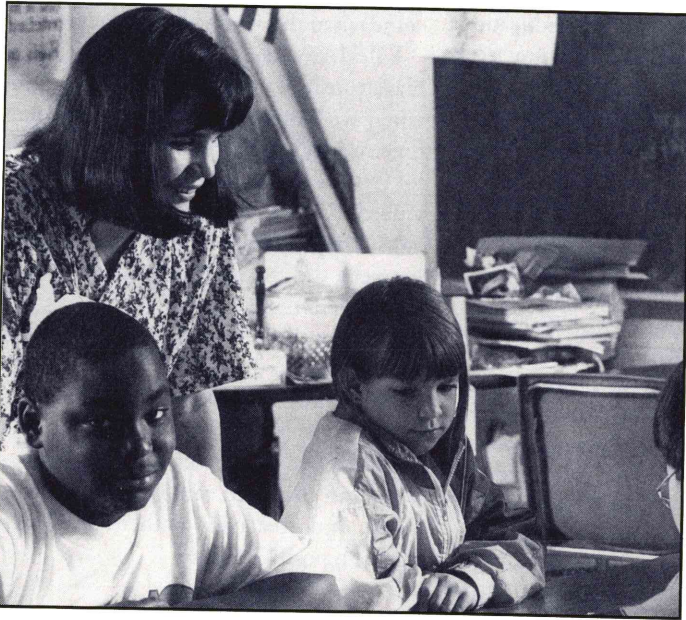
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School Ties: Colleges and School Reform

ANDY S. GOMEZ

Faculty and teachers' ideas about each other are frequently tied to stereotypes and unrealistic expectations, with faculty doubtful about what teachers can accomplish and teachers overly reliant on faculty to solve their problems.

Public schools and higher education institutions are moving beyond hierarchical cooperative programs, in which most decisions are made by the college or university partner, toward collaborative relationships in which the schools and higher education institutions work together as equals to achieve mutually defined objectives.

Still, efforts to bring schools and colleges together to improve education often produce cultural conflicts that can stall, even sink, the most determined efforts. The cultures of higher education and public schools are different in almost every way — sources of institutional support are different, so are decision-making processes and modes of professional conduct. Moreover, school teachers and academics may have sharply contrasting ideas about their respective educational roles and different expectations of each other. To be effective, programs linking higher education and K-12 must recognize this culture clash at the outset.

Between 1988 and 1992, as a doctoral student at Harvard University's Graduate School of Education, I studied two collaborative programs that were miles apart but strikingly similar in the problems they faced. One collaborative was taking place in Texas, between the University of Houston-Downtown and Jefferson Davis High School in Houston. The other was the Boston University/Chelsea Partnership — the 10-year collaborative program begun in 1989 in which Boston University is managing the Chelsea, Mass., Public Schools.

The Houston collaborative was designed to help prepare high school juniors and seniors for college. Among other things, the university hosted a four-week, summer institute designed to help students

develop their academic skills, particularly in math, science and English. The BU program was designed to rebuild the Chelsea school system — among the state's poorest academically and financially — while providing a national model for education reform.

My study asked the following questions: How did the universities differ from the schools in organizational structure and culture? What did the institutions do within their collaborative agreements to address their differences? And how did their differences and similarities influence the roles that faculty and teachers played in the collaborative process?

The findings — based on extensive interviews and data collected between 1988 and 1992 — revealed several obstacles to effective collaboration. For example, teachers at the schools did not enjoy the same liberties as college faculty did. Faculty schedules were more conducive to involvement in the collaborative programs. And unlike faculty, teachers typically felt they needed permission from a superior before taking an active part in the collaboration.

While the universities followed programmatic and administrative plans, which *they* controlled and constantly revised, the schools operated on a day-to-day basis, with little control over their own resources. The schools' budgets and curricula were devised by district offices over which the schools themselves

wielded little or no influence. Many principals weren't even allowed to present budget proposals to their district offices on a regular basis.

These divergent professional cultures create conflicting expectations between school and college teachers involved in collaborative efforts. For example, 85 percent of the teachers in both collaborative programs reported they were unaccustomed to making their own decisions on issues such as curriculum, budgets and institutional management. In fact, these public school teachers were rarely asked to make decisions beyond what occurred in their own classrooms. One Chelsea High School teacher called her school's participation in the collaborative "a marriage made in hell," noting that teachers had never been asked for their input on what was needed for success in the program. The university faculty, on the other hand, expected input from the teachers without asking for it.

It is worth noting that 75 percent of the teachers and administrators interviewed in Houston and Chelsea said they felt "used" by the university with which they worked. The teachers reported that the university officials were constantly telling them how to run their classrooms and schools. In fact, 80 percent of the teachers interviewed indicated that the university faculty considered them "second class citizens" in the collaborative programs. As one teacher put it, "They [university personnel] blame the school teachers for the academic failures of the students, without looking at all the other problems."

Effective collaboration between public schools and universities hinges on the quality of relationships between individuals at the participating institutions. Personnel at each institution must understand one another's roles. Yet the study showed that faculty and teachers' ideas about each other were frequently tied to stereotypes and unrealistic expectations, with faculty doubtful about what teachers could accomplish and teachers overly reliant on faculty to solve their problems.

Interestingly, school teachers in both communities hesitated to involve themselves in the collaboratives because they feared doing so would mean additional work, with no meaningful rewards. As a result, each program offered incentives for participation. In Houston, teachers were paid for participating in the summer institute. In Chelsea the gains were less direct, but the arrangements with BU led to a resolution of longstanding contract disputes with the city.

Collaborations work best when clear purposes are stated, as in both the Houston and Chelsea programs. However, plans of action should be flexible enough to allow for changes.

For example, the early days of the BU/Chelsea relationship were marked by the type of centralized control characteristic of older cooperative programs. Most of the authority was placed at the top of the university-controlled management structure, discouraging participation from teachers and parents alike. But the top-down approach eventually gave way to a collaborative model that today sees BU soliciting participation from teachers and school administrators.

In 1993, Chelsea's new superintendent, John Gawrys Jr., took steps to involve Chelsea public school teachers and administrators more closely in curriculum development. Today's structure is more flexible, so more people are actively involved in the program. Yet, BU officials felt it was necessary in the early days of the program to establish a rigid management style in order to bring about rapid changes with little opposition.

Both the Houston and Chelsea programs have logged successes. Students involved in the University of Houston's summer institute improved their academic performance the next school year. For instance, in 1989 only 50 percent of freshmen at Jefferson Davis High School graduated after four years; by 1992 that percentage had risen to 70. And, in 1992 the number of seniors who passed the state's achievement test had jumped to 57 percent, up from only 37 percent in 1989.

Chelsea has achieved particular success in expanding early childhood education to reach 80 percent of the city's eligible 3- and 4-year-olds, according to BU's recent report to the Massachusetts Legislature. (That success, however, is not evident systemwide. Test performance at the middle and high school levels continues to trail state averages.)

Arrangements between schools and colleges are increasingly seen by business and political leaders as vehicles to improve public K-12 education. But if future collaborative efforts are to succeed, schools and colleges first will have to become sensitive to the cultural baggage each brings to the endeavor.

Andy S. Gomez is the undersecretary of education in Massachusetts.

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TERMS: \$20,500 for 1994-95, with committed faculty advisors assigned from the appropriate departments or divisions at the host campuses. The Dissertation Scholars will be expected to present their work-in-progress at campus forums and to participate in several discussions with undergraduates on "how to succeed in graduate school." There will be no formal teaching assignment during the year. Office space and library privileges will be provided. The host campuses select their Dissertation Scholars. The New England Board of Higher Education will organize regionwide networking for the Dissertation Scholars and provide job-placement assistance.

HOW TO APPLY: Submit the following materials by April 15, 1994, to the appropriate person named below:

- a full curriculum vitae
- a copy of the dissertation prospectus
- a statement of scholarship and teaching goals
- a graduate school transcript and three letters of recommendation (one must be from the dissertation advisor at the home campus).

1 Fellowship available in Psychology, English, History or Anthropology. Send materials to: Professor Charles Tarr, Dean, Graduate School University of Maine Orono, ME 04469-5782

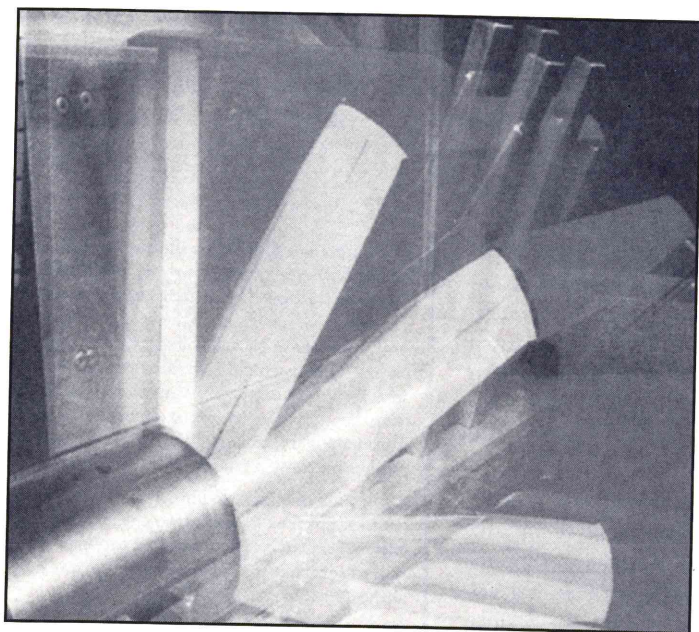
1 Fellowship available in Humanities or Social Sciences. Send materials to: Nancy MacKnight Vice Chancellor, Academic Affairs University of Maine System 107 Maine Avenue Bangor, ME 04401

1 Fellowship available in Humanities or Social Sciences. Send materials to: Lynne Bond, Dean, Graduate School University of Vermont 335 Waterman Building Burlington, VT 05405-0160

1 Fellowship available in History, Sociology or Music. Send materials to: Harry Richards, Assoc. Dean, Graduate School University of New Hampshire Durham, NH 03824-3547

Pressing Demands: The Future of University Publishing

JULIE LANZA



In the midst of a commercial publishing world dominated by international conglomerates and focused increasingly on the trendy and superficial, university presses offer a rare commodity called substance. That the scholarly monographs, regional histories and journals, specialized reference materials and fiction and poetry published by these campus-based operations rarely hit the bestseller list is a source of both pride and frustration.

“Among commercial houses, the competition is almost only a matter of money. Among university presses, there are other considerations,” notes University of Massachusetts Press Director Bruce Wilcox, who is also president-elect of the Association of American University Presses.

But at just the time this industry is celebrating more than a century of providing the nation’s most challenging discourse, it is fighting for survival against a tide of emerging technologies and rapidly changing markets. America’s relatively youthful university publishers (the first U.S. university press was founded at Johns Hopkins University in 1878, four centuries *after* Oxford University Press printed its first book) continue to depend almost exclusively on the goodwill of host institutions and the purchasing budgets of university libraries. As the budgets of colleges and universities and their libraries dwindle, the small world of academic publishing is getting smaller.

The challenges facing the industry are particularly compelling for New England, home to three of the nation’s largest and most important university publishers — the Harvard, Yale and MIT presses — and a host of other prestigious academic

publishing operations.

Many of today’s university presses were launched only in the past 20 years, and the industry has expanded its role beyond the pre-World War II custom of publishing the work of local faculty to competing vigorously with each other — and, in some cases, with commercial houses — for the best authors. Rarely, however, do university presses reap the profits common to their commercial counterparts. Indeed, most of the books university presses publish demand no more than an initial print run of several hundred copies. The university publishers’ trade group estimates that university presses account for almost 20 percent of the books published in the United States, but enjoy only 2 percent of the total profits from book publishing. To understand the industry, observes Peter C. Grenquist, executive director of the trade group, “I think you have to start with the supposition that scholarly publishing is inherently unprofitable.”

Virtually every one of the approximately 100 university presses operating in the United States today receives some level of financial assistance from its host university, according to Grenquist. Budget subsidies paid by universities to their presses average 10 percent of operating expenses but can go as high as

University presses account for almost 20 percent of the books published in the United States, but enjoy only 2 percent of the total profits from book publishing.

50 percent, not counting free or reduced-cost space and services. (Some presses maintain financial independence, including: Harvard University Press with its \$14.5 million in U.S. net sales annually, Yale University Press, which sees \$14 million in worldwide net sales annually and MIT Press, which reports \$17 million in combined book and journal sales.)

But the fact is many of the books traditionally published by university presses were never intended to make money. The presses occupy a sensitive perch between the scholarly ideals of commitment to topic and mode of research on one side and the profit demands of a fierce marketplace on the other. Over the past decade, academic publishing's balancing act between the two has become increasingly tenuous, as tighter higher education budgets have made financial reliance on host universities chancy.

Publishing officials also say they've seen a shift in the purchasing patterns of academic libraries away from book buying to cover the growing costs of scientific journal subscriptions. This trend is particularly dangerous for academic publishers, since the industry relies primarily on academic libraries to buy their books. According to the Association of Research Libraries (ARL), the number of new monographs (scholarly books on a single topic) purchased by its 120 member libraries between 1986 and 1991 declined by 15 percent. The average number of new monographs purchased slipped over the same period from 30 per faculty member to 22. Some of this reduction in new on-site resources at libraries was offset by a major expansion of interlibrary loan — the system under which libraries share materials to cut down on duplicative purchasing. Of course, that doesn't help the presses much.

While journal purchasing has become the fastest growing budget item for libraries, the cost of book purchasing has also grown considerably. ARL members paid \$15.7 million more for journals in 1992 than in 1991, but bought an average of approximately 60,000 fewer journals — or about 600 fewer subscriptions per library. ARL libraries bought 100,000 fewer monographs in 1992 than in 1991 but paid over \$300,000 more for them. Says ARL spokeswoman Ann Okerson, "Libraries have been paying a pretty heavy premium for paper."

With the dropoff in library purchasing, sales of scholarly monographs have fallen, *per title*, over the past 10 to 15 years. The only reason sales at university presses have increased is that more academics are writing books and getting them published.

When libraries began to cut back on purchases, university presses, especially the smaller ones, began to explore new markets. Northeastern University Press, for instance, has shifted its portfolio away from strictly academic treatises to books that will attract a broader readership, according to Associate Director Jill Bahcall. "We can't really depend on the scholarly monograph," says Bahcall. "That's where we've seen our sales erode."

"All publishers certainly believe there will always be a role for printed materials."

The press, which was founded in 1977 and does \$800,000 in annual net sales, is trying to emphasize more popular books — so-called "trade" titles — *without* abandoning higher standards of research and style. Northeastern University Press

is now trying to include 10 such trade titles among the 35 books it produces annually. One of the most successful books published by Northeastern in 1992 was a biography of opera singer Maria Callas which sold about 3,000 copies — small in contrast to the sales of megastar biographies published by commercial houses, but a stunning success by the yardstick of small academic publishers.

Trade titles are increasingly common at university presses, according to Grenquist, who notes that the consolidation of the commercial publishing industry in the 1980s opened a gap in the market that university presses — reeling from their own market problems — were eager to fill.

Publishing trade titles instead of the esoteric monograph can, however, raise marketing dilemmas for university presses, according to Wilcox. Scholarly monograph sales are predictable and easily managed. Trade titles require more intense marketing, favorable reviews — and competition. For example, when a commercial publishing agent recently offered a contract to Harvard psychology professor Carol Gilligan, her former publisher, Harvard University Press, didn't bother with a counter offer because the price was so far out of its range,

according to Harvard University Press Director Bill Sisler.

University presses also face the problem of *returns* from commercial booksellers.

Take, for example, the case of University Press of New England (UPNE), the Hanover, N.H.-based consortium of 11 New England higher education institutions joined together to more economically pursue scholarly publishing. UPNE's return rate — the share of books that are unsold and sent back to the publisher — skyrocketed to 20 percent of gross sales in 1991, double the average rate, according to UPNE Associate Director for Operations Tom Johnson. Returns fell back closer to the normal rate in 1992, but rose again in 1993. Johnson says this volatility is a direct result of UPNE's increasing presence in the more risky trade and textbook markets.

The ongoing struggle of another New England university press demonstrates the obstacles in today's market, as well as the enduring benefits of on-campus publishing houses. In the fall of 1992, administrators at the University of Maine, faced with university-wide budget cutbacks, considered eliminating the university's tiny academic press in Orono. Founded 20 years ago, the press published only three or four titles annually by the early 1990s. After

"In the mid- to late 1970s, microfiche was going to be the big thing. And the ones who got into it got burned."

much debate, the university decided instead to suspend operations for one year. In January, administrators agreed to revitalize the press, and use it to bolster recently identified academic areas of interest such as the studies of Native American and Franco-American communities in Maine, according to Judd Sheridan, UMaine's recently appointed vice president for academic affairs. "I think that a university press lends another dimension to an institution. It says something about an institution's image," says Sheridan.

The question of how *expensive* it is to maintain a university press' imprimatur may be overshadowed by another looming issue: How will advances in information technology change the face of university press operations?

Talk to most university press editors and sales managers today and you won't sense panic about the advancing "information superhighway." But some of the more radical proposals touted by pioneers of the electronic information age — floating unpublished

manuscripts on the Internet for the benefit of all scholars, for example — are indeed threatening to the publishing community.

Many university press editors, however, say their role as gatekeepers before a continual flood of materials, sorting the good from the bad, will remain essential in the age of advanced information technologies. They contend that electronic formats that neglect this task will never win over writers or readers in the academic community.

If publishers and writers have fretted over the intrusion of widespread photocopying on their copyrights (and profits), the threat of open, unregulated computer networks is mindboggling. "A lot of libraries in particular would like the revolution overnight," notes UPNE's Johnson. "They would like to see journal materials available electronically. They're talking now *not* about ownership, but access. The technical problems are not great — the real problem is copyright."

Still, any anxiety over unbounded technology has not kept university publishers from exploring their own high-tech options. Several presses have recently produced massive reference materials on electronic formats. In 1992, Yale University Press, for instance, published *Perseus*, a reference source on ancient Greece, on CD-ROM and video disc. Associate Director Tina C. Weiner says other such electronic format projects are in

the works, largely funded by foundations outside the university. She says Yale University Press wants to be "well-positioned" in this emerging field but adds, "I'm not one of these people who believe that everything is going to turn into electronic format."

MIT Press, which publishes scientific and technical journals and monographs in areas such as computer science, neuroscience, cognitive science and economics, has also published in CD-ROM, but "not in a very strategic way," according to Associate Director for Operations Michael Leonard. And although the press is currently considering hiring an "electronic publishing editor," Leonard says questions about the future form and standards of this new market remain unanswered. "There is as yet little revenue to be derived from electronic publishing," he says. "All publishers certainly believe there will always be a role for printed materials."

Publishers of scholarly, non-reference works in the humanities are probably least concerned about losing market share to new electronic technologies. "There's no point in going electronic unless you can add value," explains Harvard's Bill Sisler. "A monograph on Chaucer isn't really going to work. The product has to drive the format as much as the format drives the product." Sisler draws an analogy to another, onetime

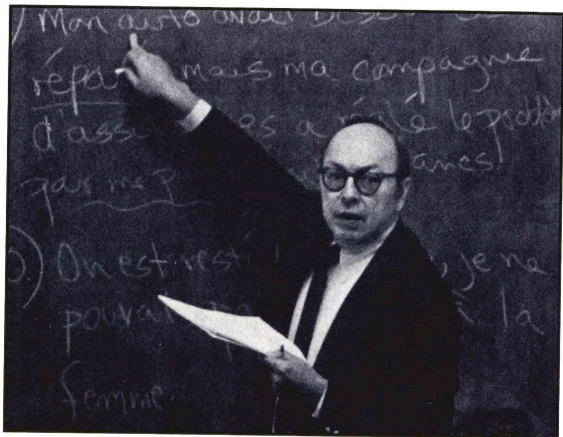
"emerging technology" now confined to the basements of most library operations. "In the mid- to late 1970s, microfiche was going to be the big thing," he observes. "And the ones who got into it got burned."

For now, academic publishers seem most concerned about immediate sales figures. What little sales growth has occurred over the past few years has come only after rather complicated juggling of portfolios and, increasingly, at the expense of some high-quality, but narrowly focused, scholarly manuscripts.

Weiner's forecast for the industry is glum. "We don't think this is a particularly good time for book publishing."

Wilcox takes a brighter view, stressing that university publishers are a resilient lot. Even in the midst of constant evaluations of higher education's role and viability, university presses benefit from their close association with the academy, Wilcox reasons. University presses bolster the institutions themselves, he says, by being places "where people care about the exchange of ideas, where ideas matter and where a book is an important way in which a university represents itself."

Julie Lanza is the associate editor of CONNECTION.



Rewarding Faculty Who Teach

SUSAN A. HOLTON

"You are my raisins," she said. "The French have a term, *raison d'être*, the reason for being, and you are my reason for being a professor."

Twenty years ago, Mary Jean Thomas, my professor, advisor and mentor at Case Western University, addressed the graduating class. She made it clear that the most important aspect of her academic life was teaching. Unfortunately, the same could not be said for the majority of her colleagues, neither 20 years ago nor today.

In academic institutions throughout the United States, faculty and administrators are debating the

merits of teaching and research and the academic reward structure that clearly favors research. The research versus teaching debate has revolved primarily around tenure and promotion decisions and other rewards for faculty. While many institutions praise good teaching in their rhetoric, they reserve most rewards for faculty who produce research and have it published. Parker Palmer, senior associate at the American Association for Higher Education, recent-

ly noted the "demoralizing need to publish even when one has nothing new to say."

Even among already-tenured faculty, there have been more incentives to perform research than to teach effectively. The rewards in academia have gone to those whose research has brought funds to the institution, not to those who emphasize working face to face with undergraduates.

If academia is to correct the imbalance between teaching and research, institutions must find meaningful rewards for those who already excel in teaching.

This is already occurring in various ways on many campuses. For example, some institutions now honor an outstanding teacher with an annual award. With this recognition may come the opportunity to address convocations and serve at other ceremonial occasions. At Bridgewater State College, for example, the recipient of the DiNardo Teaching Award addresses the freshman class during orientation.

Bentley College each year provides an Innovation in Teaching award for a faculty member who contributes to student learning by either introducing a new subject area into the curriculum or a new way of teaching an existing subject.

New England institutions also offer other kinds of rewards for teaching. Some provide grant money for faculty to revamp curricula. Others provide funds for faculty to travel to conferences focusing on teaching.

Perhaps the most effective way to elevate teaching is to develop a sense of community among faculty members who are interested in teaching excellence.

According to Palmer, tough economic times on many campuses have helped create some sense of community. "When institutions are fat and happy," he notes, "community tends not to happen, because there's more than enough to go around and people can retreat into 'privatism' and still get their slice of the pie. Then there's a curve of declining resources in institutions during which people start discovering each other and their need for each other."

At colleges and universities around New England, faculty development programs offer programs and services to help faculty become more effective teachers — and to supply the frequently missing academic community. The programs are often the only opportunities on campus for faculty from different disciplines to discuss common issues.

For example, Northeastern University's Office for the Support of Effective Teaching sponsors workshops where faculty mem-

bers discuss ways to improve instruction, ranging from use of CD-ROM in the classroom to videotaping teaching. "One of the most important goals of our center is to encourage faculty to talk about teaching with each other so that it becomes a communal rather than a solitary activity," says Carol Owen, the director of the office.

Bridgewater State College's Center for the Advancement of Research and Teaching provides support through weekly "brown-bag" lunches, where faculty meet and discuss topics ranging from new technologies to gender and learning.

The University of Rhode Island's Instructional Development Program sponsors course planning workshops each summer, allowing faculty members from all disciplines to work on instructional design, teaching methods, testing and grading.

The Lilly Teaching Fellows Program at the University of Massachusetts at Amherst helps promising junior faculty establish their teaching careers. Through the university's Center for Teaching, Lilly Fellows design or revise courses, assess their teaching, attend seminars on teaching and learning and work with senior faculty.

New England also has a regional faculty development network. The Massachusetts Faculty Development Consortium (MFDC)

works to enhance the professional development of faculty and administrators not only in the Bay State, but throughout New England. The consortium publishes a newsletter, featuring a regular column in which faculty share ideas on how, for example, to engage students in large lecture classes or how to develop mentoring programs. The MFDC also holds an annual conference which permits faculty to network and build a New England academic community.

Faculty must be rewarded more publicly for excellent teaching. While journals and newspapers will feature a faculty researcher's latest discovery in genetics, for example, excellent teachers ply their trade outside the limelight.

Each day, dedicated faculty members around New England explore the balance between research and teaching. Many undoubtedly think of the research they have done, research that few people will ever read, and come back to focus on the lasting impact their teaching may have on the students in their classes — on their "raisins."

Susan A. Holton is a professor of communication at Bridgewater State College and the founder and coordinator of the Massachusetts Faculty Development Consortium.

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Higher Education's Leaner Future

The following is adapted from remarks delivered in the fall by Adam Yarmolinsky before faculty and administrators at the University of Connecticut. Yarmolinsky is the first Regents Professor of Public Policy in the University of Maryland System. He previously served as provost and vice president of academic affairs at the University of Maryland-Baltimore County and as the first Ralph Waldo Emerson Professor at the University of Massachusetts. Yarmolinsky, a lawyer, also served as an advisor on defense and disarmament issues in the Kennedy, Johnson and Carter administrations.

I can't agree that we are in a fiscal crisis. A crisis is by definition short-lived — a temporary phenomenon. The patient either survives or dies. I believe it is becoming generally accepted that the fiscal problems of American research universities, and indeed of American colleges and universities generally, are here to stay. I should probably include universities throughout the world. We are all going to have to get along on short rations for the foreseeable future.

The problem is particularly difficult because higher education is one of those activities where efficiency can only be increased at the margins. Education simply can't keep up with the regular increases in efficiency that have occurred in the industrial sector since the Industrial Revolution and in the service sector since the computer revolution. The same limitation applies to other activities that are central to the pursuit of happiness, including the arts, the deliberative process of government and the counseling aspects of health care. In fact, the illustration most frequently offered for this proposition is that it takes the same number of person-hours to perform a Mozart symphony today as it did when Mozart was alive.

We may be headed for a time when undergraduate instruction will consist of taped lectures by eminent scholars, supplemented by intensive small group tutorials, but I find it hard to believe such a system — whether or not it improves the quality of instruction — will produce savings in instructional costs.

Higher education's long-term fiscal problems are further exacerbated by the traditional division of responsibilities between faculty and administration, in which the faculty are responsible for programs, but the administration is responsible for the budget. That division may work in a period of expanding opportunities and expanding budgets (though even then it invited a certain grandiosity in planning). But in a period of stable or shrinking budgets, it is a recipe for confusion or disaster.

What then can you as a faculty do to maintain academic excellence in a leaner future? To begin with, you need to accept two propositions. You need to do more than accept them, you need to embrace them.

My first proposition: This is your problem as faculty. It is not just a problem for your department or for your school, but for the whole institution. You have a personal responsibility to maintain standards of excellence in your discipline and in your department, but you also have a personal responsibility to maintain those standards throughout the university and to permit — even encourage — other departments to maintain their standards of excellence. You can't leave it to the administration or the trustees. The problem isn't going to go away. Further, you need to remember what Ogden Nash said about money. "There are lots of things that money won't buy. But it's funny. Have you ever tried to buy them without money?"

The second proposition is that you can't approve a new initiative without deciding what you are willing to give up in order to fund it — unless you can find a truly independent new source of funding.

I begin here with the "unless" clause. You need to be resourceful about new resources, and no one else can do it for you. In the brave new world of nontraditional students, employer-financed education and sponsored research, there are new sources of independent funding for new activities. But this is not a search you can turn over to continuing education staff if you expect to maintain quality and standards of excellence. That staff can help, like any other kind of expert consultant, but you can't let them take charge.

Let me return to the main point that you can't add something new without giving up something old. This self-denying ordinance has two advantages, not perhaps immediately obvious but appropriate in hard times.

First, it discourages lightmindedness in the selection of new programs. Taking on something new becomes undeniably a serious decision when it involves giving up something in which you or your colleagues are already investing substantial time, energy and reputation.

On the other hand, because there are always going to be some new academic initiatives that you must undertake to keep up with the times, you will need to regularly examine everything that you are doing now in order to discover what can be dropped with the least difficulty.

Now some of you may say we can't sit in judgment in this way on matters that affect the career paths of our peers. I could point out that you do sit in judgment regularly on the careers of your non-tenured peers. But I would rather ask to whom would you like to delegate these decisions. You might choose a small group of senior faculty. Good luck to them. You might say that the administration should make the really hard decisions. But that seems to be an evasion of responsibility. Nor do you need think of these decisions as apocalyptic. Surgery is always painful; but cutting

back on programs need not mean losing tenured faculty, provided there is adequate advance planning.

Or look at the proposition from the other end. I take it none of us would wish the University of Connecticut to use the same curriculum and departmental organization that prevailed at Harvard College before President Eliot's reforms in the late 19th century. Change is inevitable. Now more than ever, it needs to be managed and planned for.

Grasping the nettle leads next to the question of criteria for evaluation. The model for program planning and evaluation developed by University of Connecticut Provost Thomas J. Tighe is quite impressive. ... I was particularly impressed with the criteria for the degree of centrality to a university, as well as to the land-grant mission, and to state economic and social needs. ...

I was impressed also by the argument of the eminent economist George Stigler in the Fall 1993 issue of *Daedalus* devoted to the problems of the research university. Stigler argues that one of the purposes of academic planning should be to foster competition among institutions, rather than seeing all duplication as presumptively wasteful. In the same context, however, Stigler declares that "if universities do not move towards *some* greater degree of specialization, we will be condemned to general mediocrity." And, he adds, "this movement towards specialization must be ultimately guided by the faculty; no other party to the research university — the trustees, an individual administrator or any governmental agency — can be counted on to make the needed informed judgments of disciplinary strengths."

The two halves of Stigler's formula fit well together. Universities should not hesitate to compete with each other in their areas of excellence. But they cannot hope to compete successfully in every area. And you, as the faculty, must decide where you should concentrate your resources, because you know best what resources you need to achieve or maintain academic excellence, and you are the best judges of that excellence. You may choose to consult colleagues outside your institution, but you will consult them as peers.

At the same time, you have a special responsibility as faculty to identify those parts of the university without which it is not whole. And you can't duck the question by simply saying that every department and every discipline is essential. This would be so in a better world, but not in the world we are living in today and can expect to live in for the foreseeable future. Examples of hard choices already made are not lacking. Columbia University has closed its departments of Geography and Linguistics and its School of Library Science. Other universities have closed or are closing departments as diverse as Sociology and Ethnomusicology.

It would be presumptuous of me, knowing only as much as I do about the University of Connecticut, to suggest that you need to close any departments even by the process of attrition. I do suggest that you have to face that as a possibility before it becomes a necessity.

In preparing for such a painful decision, your planning process needs to determine at least somewhat in advance when you have gone as far as you can safely go — in reducing the number of sections of major courses, in increasing the proportion of part-time faculty, in adjusting teaching loads — before the cumulative effects of your actions will have eroded significantly the quality of academic performance in your institution.

So far as possible, you need to separate the question of whether surgery is required from the decision of what surgery to undertake. ... When you reach that point in the decision-making process, you will discover, as Columbia University Provost Jonathan Cole puts it, describing the processes at his university: "The decision was not one that called for weighing dollars against academic purposes, but one which confronted academic priorities in weighing the merits of competing academic needs." I may be showing my own bias when I suggest you need to be particularly solicitous of the humane disciplines whose contribution to the good society is more fundamental but less quantifiable.

One potential conflict highlighted by the shortage of dollars is the conflict between teaching and research. Again, in an ideal world, the two activities should be mutually reinforcing. Here, I believe the first obligation is to maintain the quality of undergraduate programs. Unless we can do that, we will always be on the defensive in trying to protect our mission as research institutions. As the late president of Yale University A. Bartlett Giamatti observed, "All the research we want to do, all the obligations we must carry as faculty are in some sense nurtured by and are versions of that first calling, which is to teach our students. We want always to do more, but we can never do less."

We earn distinction as research institutions by virtue of the quality of our research, but we earn the right to compete for distinction in research by not neglecting the education of our undergraduates. ... And as some of the most innovative work is being done by scholars at the boundaries between disciplines, so some of the most innovative work is being done by scholar-teachers at the boundaries between teaching and research.

Another boundary area that requires more intensive exploration — even in the face of limited resources — is the boundary between high school and college. Conversation is the cheapest kind of academic activity, and there needs to be more conversation between educators on both sides of the school-college divide in order to attack problems that impinge on cost and quality.

At the other end of the age spectrum, the idea of lifelong education is rapidly becoming a reality, and the university cannot afford to let those multiplying needs be met only by the community college.

What I am prescribing then for the research university is a combination of selectivity, ingenuity, confrontation of difficult choices and exploration of new horizons.

The Year 2010

The following is adapted from remarks delivered by Sherry H. Penney, chancellor of the University of Massachusetts at Boston, at the February 1994 meeting of the five-campus UMass Board of Trustees. Penney's comments are based on an earlier address she gave before the Northeast Association for Institutional Research.

Colleges and universities must move forcefully to become more responsive to the changing conditions of society and the needs of all students. Yet current trends lead me to a pessimistic assessment of what the future holds for higher education. Here, in brief, are my views of what the year 2010 might be like. ...

U.S. elementary and secondary education may fall farther behind the excellent systems in Japan and the European Community. We will foster a visually sophisticated, TV-addicted population whose members, nonetheless will be considered more and more illiterate, particularly in science and technology. The continuing decline in K-12 education will pose enormous burdens for higher education in terms of remediation and support.

Public higher education increasingly will have to look to private and corporate sources for financial support if it is to remain affordable and accessible to the economically disadvantaged. Only a handful of states will be willing to underwrite their public institutions as completely as they once did.

Student bodies will be far different from today's in makeup and in terms of intellectual demands. Although more students than ever will desire a college education, fewer will be able to attend college because of the shortage of financial aid funds. By 2010, Congress may well have passed legislation requiring national college entrance exams as a way to monitor K-12 education in the states and to limit access to higher education to the best and the brightest.

Colleges and universities will have adopted new structures. Non-academic departments will be "privatized," with athletics, health services, physical plant maintenance and other support areas staffed by "outsiders." Many campuses will be extremely lean — no athletics, no health services, no academic safety nets for students. Even the most prestigious institutions will offer less. Many colleges by then will have made the difficult choice of cutting back on faculty research and scholarship to concentrate meager resources on teaching and training.

Academic departments will face rigorous examination by trustees and others to determine their teaching and research productivity. State legislatures may restrict the autonomy of their public higher education systems and subject colleges and universities to much more legislative oversight. Politicians will demand excessive accountability. I fear that even the theory and practice of tenure will

erode because taxpayers will believe it is too expensive in an era of scarce resources to give lifetime employment contracts to "state workers."

If I tend to be pessimistic in my view of higher education in the year 2010, you must realize that I work in a state that has been hard hit by the recession, where public education at all levels is starved for money and public support. My university has dealt with 12 budget reductions and reversions in the past five-and-a-half years, so I tend, at times, to see the future through a glass darkly. ...

Here is what I would like to see happen:

1) We need to re-examine our curriculum. In no sense am I suggesting we throw out the liberal arts. But clearly, our curriculum must reflect the diverse society in which we will live. Our courses must have more emphasis on global awareness and technology. The old idea of a "core" must be totally reconsidered and probably replaced by something radically different from what we now have.

2) We must re-examine how we teach. I think we will see much less lecturing where the professor stands up and fills the student's head with knowledge, and much more collaborative learning, where professors and students together explore and learn about a subject. New time frames for courses, semesters and degree completion will be in place. I won't recommend the abolition of departments, but I do think we need to find ways to break down departmental barriers. A faculty member at my university has suggested that every professor could have a departmental base, but also another intellectual base in the university. In other words, I might be a history professor, but I would also have a joint appointment in teacher education. Another history professor might have a joint appointment in Black studies. The aim is to get our faculty organized in new ways while we revamp the curriculum.

3) At my ideal institution, there would be much better student follow-up studies. For urban institutions like mine, it is particularly difficult to find out what students are doing one year or five years after graduation. Clearly we need better feedback on what students do with their education.

4) I hope that our institutions in the future will return to an era of stability — that they will continue to have autonomy combined with accountability.

5) Today, we are operating in an anti-intellectual atmosphere, in which institutions throughout the United States are being clobbered. Americans seem to take pleasure in watching the ivory tower embroiled in battles over indirect costs and athletic scholarships. I hope this stage will pass and that our citizens will recognize the value of a university.

6) We must break down the rigid divisions between administrators and faculty. Today, if you leave the faculty to become an administrator, it is very difficult to return to your department because you are so far removed from your teaching and research base. We need to find ways for administrators to continue to play a faculty role.

7) Our structures should better reflect our student bodies. I hope that there will be more women and members of minority groups among tenured faculty, department chairs, deans, administrators, and certainly more among governing board members. Slowly, we have made progress here, but when women still account for only about 12 percent of all U.S. college presidents — and when the percentage of minority presidents is even lower — we have a major problem that must be fixed.

Because of intense budget pressures, we don't have the kind of time we once had to debate curriculum and structures before instituting changes. I propose that just a few institutions act as guinea pigs in attempting major restructuring and radical change, and then share with the rest of us the information they have uncovered. ... We would be better off with radical restructuring than the kind of piecemeal reform we now do. Because when we get through with the piecemeal reforms that take 10 or 20 years to implement, it is time to start all over again.

National Renewal

The following is adapted from an essay by Stephen W. Bosworth, president of the United States-Japan Foundation. The essay appeared in the appendix to "An American Imperative: Higher Expectations for Higher Education," a report issued in late 1993 by the Wingspread Group on Higher Education. The report was sponsored by The Johnson Foundation Inc., The William and Flora Hewlett Foundation, Lilly Endowment Inc. and The Pew Charitable Trusts.

While our founding fathers argued that all men are created equal, they did not contend that all men (and women) are equal in terms of potential, and they expected that American national leadership would be drawn from a relatively small reservoir of talent. The particularly American distinction was that the early leaders of the country believed in the existence of a "natural aristocracy" based on talent and virtue, as opposed to what were seen as the "artificial aristocracies" of Europe based on birth and inheritance. From the very beginning of the United States, this faith in a natural aristocracy led to an emphasis on the broad diffusion of knowledge through public education. ... Yet, for much of our national existence, public education was pretty much confined to elementary and secondary schools.

It was not until after World War II that higher education became truly accessible to large numbers of Americans. ... The GI Bill provided access to higher education for hundreds of thousands of returning veterans, leveraging them, their children and their grandchildren up into a rapidly expanding American middle class. ...

Over the past 20 years, however, the system has come under increasing strain. Beginning in the early 1970s, growth in family income flattened out for most Americans. Today, median family income is no higher than in 1973. In fact, only a dramatic increase in the employment of women has prevented a substantial decline in median family income. At the same time, all levels of government began to experience severe budgetary problems as revenues grew less rapidly and the political process was less and less able to allocate public funds in a rational fashion against some agreed set of societal goals.

As a consequence, public institutions of higher education began to increase tuition to cover the gap between rising costs and declining support from state legislatures. Looked at in isolation, such increases may seem small. However, when one remembers that roughly 80 percent of all students now enrolled in higher education attend schools with an annual tuition of \$2,000 or less, it is clear that increases which seem small in absolute terms, in fact, constitute a rising barrier to higher education for large numbers of students.

The strain on the elite private institutions is no less severe. One of the hallmarks of these institutions through much of the post-World War II period has been a policy of need-blind admissions. Of the 4 percent of total college students who are in these schools, approximately half receive some form of financial assistance. But stagnant family income makes it difficult for all but the most richly endowed of private schools to continue to admit the best applicants regardless of their ability to pay. These institutions are in a vicious circle as they have to increase tuition to cover the rising cost of financial aid and thereby place more applicants in the zone where financial aid is required.

The overall effect of all this is that access to higher education, one of the basic cements of American society for the past several decades, is beginning to be severely restricted. ... Unfortunately, the weakening of higher education as an institution of national unification comes at a time when the society is undergoing the most profound change in ethnic composition in nearly a century. Just when we need a strong system of higher education to help forge a set of national goals and values, the system is in crisis. Just when we need a broadly accessible system of higher education as a counterweight to an increasingly skewed distribution of national income, access to higher education threatens to become far more restricted. ...

None of our efforts at national renewal will succeed if our system of higher education deteriorates in quality and shrinks in terms of accessibility. It must teach more things, more effectively, to more people, and at a cost which the society can afford. Society as a whole will have to continue to struggle to balance equity with efficiency. In the end, this will mean more money: more money from taxpayers for state institutions and more scholarship funds from public and private sources.

WORCESTER, MASS. —

The College of the Holy Cross was awarded a \$250,000 challenge grant from the Louis Calder Foundation of New York City to help establish a \$750,000 scholarship endowment fund. Interest on the endowment will be used to provide financial aid for promising students from New York City whose families' incomes are less than \$25,000. Holy Cross must raise \$500,000 in matching funds by September 1996.

COLCHESTER, VT. —

Saint Michael's College was awarded a five-year, \$50,000 grant from the Agnes M. Lindsay Trust of Manchester, N.H., to provide financial support for needy students from rural New England.

DURHAM, N.H. —

Mechanical engineering students and faculty from the University of New Hampshire began working with Eastern Air Devices of Dover, N.H., to help the manufacturer of precision electric motors detect slight but potentially distorting changes in the rotational velocity of motors used, for example, to scan images or bar codes. The research is supported by Eastern and the state's Industrial Research Center, a partnership of UNH, Dartmouth College and the state of New Hampshire designed to encourage research and technology transfer in support of Granite State businesses.

LOWELL, MASS. —

The University of Massachusetts at Lowell, Worcester Polytechnic Institute and the Massachusetts Biotechnology Research Institute were awarded \$2.8 million over three years to establish a Massachusetts Bioengineering Center aimed at retraining defense industry engineers and manufacturing specialists for jobs in

biotechnology and biomedical manufacturing. The funding includes \$1 million from the federal Technology Reinvestment Project and \$1.8 million from industry. The new center will begin enrolling students in certificate programs in summer 1994. WPI is involved in two other consortia funded through the Technology Reinvestment Project, one to create a new manufacturing engineering curriculum for undergraduates, and another to help defense-dependent companies convert to commercial production.

MEDFORD, MASS. —

Tufts University announced it would launch a 32-week retraining program, beginning in fall 1994, for electrical engineers and systems designers whose jobs are threatened by defense cuts. Part of the federal Technology Reinvestment Project, the program will train the defense workers in the design and manufacture of "mixed signal" Very Large System Integrated circuits, which may be used in high-definition television and other consumer products. Tufts officials said the university requested \$570,000 in federal funds over three years for the project; the university and industrial partners will pick up the rest of the estimated \$3.7 million cost.

STORRS, CONN. —

The University of Connecticut received a patent on biologist Hans Laufer's method of introducing a reproductive hormone into feed in order to grow large, tasty shrimp in commercial hatcheries.

NORTH ADAMS, MASS. —

The North Adams State College-based Consortium for the Improvement of Math and Science Teaching was awarded two grants totaling more than \$100,000 under the Dwight D. Eisenhower

Mathematics and Science Education Program to continue in-service training and professional development programs for K-12 math and science teachers in Berkshire and Franklin counties.

PROVIDENCE, R.I. —

Brown University received a five-year, \$600,000 grant from the L. G. Balfour Foundation to provide mentors and other guidance and academic enrichment for minority students at Providence-area high schools. The program is designed to prepare minority students for college study, particularly in math and science, and provide social and academic support through the second year of college. The foundation — named for the founder of an Attleboro, Mass., manufacturer of college rings and other jewelry — also awarded a four-year, \$300,000 grant to Roger Williams University to support minority student retention efforts at the university and a mentoring program for minority students at a high school in nearby Newport, R.I. The foundation awarded a three-year, \$600,000 grant to a program launched by the University of Massachusetts at Amherst and the Springfield, Mass., school system to prepare minority students for college.

PORTLAND, MAINE —

The University of Southern Maine announced it would begin admitting students to a new undergraduate degree program in environmental science and policy, beginning in fall 1994. The program — planned by six different USM departments — will link social science and hard science to train students for jobs in environmental management, water protection, community planning and environmental impact assessment. At the graduate level, USM introduced a master's degree program in manufacturing management.

NORTH DARTMOUTH, MASS. —

The University of Massachusetts at Dartmouth won a \$97,500 contract from the U.S. Navy to offer a master's degree program in electrical engineering at the Naval Undersea Warfare Center in Newport, R.I.

FRANKLIN, MASS. —

Dean Junior College began offering a three-credit business course taught aboard a Massachusetts Bay Transportation Authority commuter train traveling from Franklin to Boston.

NEW LONDON, N.H. —

Colby-Sawyer College was awarded \$105,220 by the National Institutes of Health for a three-year undergraduate study of the development of nerve pathways. The study could help scientists find ways to correct nervous system problems before birth and repair damaged nerve tissue.

SPRINGFIELD, MASS. —

Springfield College began offering YMCA of USA staff members credit toward bachelor's degrees for their work experience and in-service training. Under an agreement signed by Springfield College and the YMCA, the college will also use satellite centers to offer degree courses to full-time YMCA staff members. The goal is to prepare YMCA staff members — many of them women and minorities — for careers in human services.

WEST HARTFORD, CONN. —

The Hartford Art School at the University of Hartford received a \$1 million gift from Helen Kriebel Fusscas to be used for scholarships. Fusscas is a trustee of the school and director of the Vernon K. Kriebel Foundation.

BOSTON, MASS. —

Suffolk University entered a collaborative agreement with the Stilwell School of International Studies in Chongqing, China, in which Chinese students will be admitted to Suffolk after successfully completing two years at Stilwell. Suffolk has similar agreements with schools in Madrid and Moscow.

NEW HAVEN, CONN. —

Yale University and New Haven businesses and social service groups launched a pilot program allowing people to buy vouchers redeemable for food and personal items and hand them out to panhandlers on city streets. The plan — modeled after a successful Berkeley, Calif., program — began with more than 30 area merchants selling vouchers for 25 cents apiece.

WORCESTER, MASS. —

The College of the Holy Cross received \$550,000 from the Howard Hughes Medical Institute to enhance science education in Worcester public schools and at the college. Part of the grant will be used to expand a program in which Worcester teachers receive advanced science training at the college, while Holy Cross graduates take their places in the classroom.

DURHAM, N.H. —

Two decades after its establishment, the School for Lifelong Learning changed its name to the College for Lifelong Learning. The college, a separate institution in New Hampshire's public university system, is dedicated to educating adults.

LOWELL, MASS. —

A researcher with the University of Massachusetts at Lowell's Work Environment Program was awarded a two-year, \$260,000 grant by the National Institute for

Occupational Safety and Health to continue exploring links between cancer and machining fluids. Ellen Eisen's earlier research indicated certain cancers of the digestive tract may be related to exposure to the fluids used in industrial processes that involve grinding or machining metal.

BURLINGTON, VT. —

Champlain College introduced a bachelor's degree program in professional studies, to begin in fall 1994. The program integrates a traditional liberal arts emphasis on communication, critical thinking and ethics with career-oriented education, according to college officials.

STORRS, CONN. —

The University of Connecticut Law School was awarded a three-year \$650,000 grant from the U.S. Department of Education to continue its clinical programs in disability law and civil rights. The law students and faculty who take part in the programs represent low-income clients in a variety of disputes, including discrimination, unemployment compensation and claims under the Americans with Disabilities Act. The grant will also support two new initiatives: A mediation division will train students in alternative dispute resolution, and a new poverty law division will train students to represent low-income clients in disputes over government benefits.

CAMBRIDGE, MASS. —

Harvard Law School graduates at the Boston law firm of Ropes & Gray contributed more than \$2 million to establish the Ropes & Gray Professorship. The gift is part of the Campaign for Harvard Law School, which is aimed at raising \$150 million over five years. Harvard is a Ropes & Gray client. Meanwhile, the Boston law

firm of Hale and Dorr and its partners who are Harvard graduates contributed \$2 million to support Harvard Law's legal services clinic in Boston's Jamaica Plain section.

WATERBURY, CONN. —

Naugatuck Valley Community-Technical College reported record-high enrollment of 6,008 credit students for fall 1993, up 358 students over the previous fall's enrollment. President Richard L. Sanders attributed the increase to legislative funding add-backs that permitted the college to hire professors and add sections for high-demand courses.

DURHAM, N.H. —

The University of New Hampshire introduced a bachelor's degree program in tourism. The program — developed cooperatively by the state's tourism industry, UNH faculty and staff and a panel of experts from other universities — will focus on tourism planning at the community level. UNH officials noted that tourism accounts for 14 percent of New Hampshire's economy.

PROVIDENCE, R.I. —

Brown University School of Medicine was awarded \$124,000 by the Charles E. Culpeper Foundation to help develop a new curriculum for the physician of the 21st century. Part of the grant will provide stipends for faculty and students to revamp courses and design new curricula, reflecting the social, cultural and economic — as well as biological — factors that lead to disease.

STORRS, CONN. —

The University of Connecticut was awarded \$250,000 by the U.S. Department of Education for an interdisciplinary program aimed at preparing engineering students for the global marketplace by includ-

ing more foreign language instruction in coursework and providing up to six months of practical experience abroad. The program will initially focus on German language instruction.

DURHAM, N.H. —

The University of New Hampshire's Training in Academic Skills Center was awarded a four-year, \$750,000 grant from the U.S. Department of Education to provide academic support for students from low-income backgrounds and students with disabilities. The assistance includes a summer preparatory program, reading, writing, computer and learning skills instruction, tutorials and general educational counseling.

HAVERHILL, MASS. —

Northern Essex Community College introduced an 11-month certificate program in biotechnology to provide students with the basic technical skills required by biotech firms.

WEST HARTFORD, CONN. —

The Hartford College for Women at the University of Hartford was awarded \$72,000 by the U.S. Department of Education for programs to encourage women to pursue careers in math, engineering, technology and science.

KEENE, N.H. —

Keene State College was awarded a three-year, \$75,000 federal grant under the Carl D. Perkins Vocational and Applied Technology Education Act of 1990, as part of a statewide initiative to establish a network of Tech Prep programs involving New Hampshire high schools, colleges and technical schools. Tech Prep programs focus on basic math, science and English skills as they relate to technical subjects. The programs are designed to prepare the roughly 50 percent of high

school students not enrolled in college-preparatory programs for the world of work.

AMHERST, MASS. —

Five Colleges Inc., the western Massachusetts consortium of Amherst, Hampshire, Mount Holyoke and Smith colleges and the University of Massachusetts at Amherst, was awarded a three-year, \$300,000 grant from the Pew Charitable Trusts to develop new interdisciplinary courses and improve introductory-level teaching. The initiative will result in some courses being team taught by faculty from more than one institution or being offered on more than one campus. The grant will also support efforts to create a computerized course catalog, giving students up-to-date information on courses being offered by the five institutions.

RANDOLPH CENTER, VT. —

Officials at Vermont Technical College and the University of Vermont signed an articulation agreement making it easier for students at the college to transfer to UVM's engineering programs. Under the agreement, students who complete a series of courses at the college and maintain a 3.0 cumulative grade point average may transfer their credits to the university.

WALTHAM, MASS. —

The National Science Foundation awarded \$1 million to Brandeis University for research into supercomputing, with special emphasis on computer languages, artificial intelligence and data compression. The grant will permit Brandeis to buy a super parallel computer capable of multiplying or dividing one billion numbers per second.

FAIRFIELD, CONN. —

Fairfield University received a \$1.5 million gift from the family

of Carl and Dorothy Bennett of Greenwich, Conn., to establish a chair in Judaic Studies.

WARWICK, R.I. —

The Community College of Rhode Island became the first community college to affiliate with the Citizens Scholarship Foundation of America, which coordinates 1,000 local scholarship groups across the United States. The CCRI Dollars for Scholars chapter will award scholarships to students who transfer to four-year institutions upon graduation from the community college. In the first year, the scholarships will be given to students in the college's Access to Opportunity Program, which helps low-income and first-generation college students.

CHICOPEE, MASS. —

Elms College received \$96,288 from the National Institutes of Health for research on amphibian tissue reaction to various hormone treatments. The research could help scientists better understand hormonal interactions in humans.

STORRS, CONN. —

The U.S. Information Agency awarded \$99,956 to the University of Connecticut to study public reaction in the United States, Canada and Mexico to the North American Free Trade Agreement. UConn faculty will work with faculty from the University of Calgary in Canada and the Instituto Tecnológico Autónomo de México.

CAMBRIDGE, MASS. —

Harvard University received a three-year, \$3.5 million grant from the government of South Korea to establish a chair in Korean literature. The grant is the largest ever awarded by the South Korean government to a foreign university.

BENNINGTON, VT. —

Bennington College announced it would use 900 acres of land near Mount Equinox for research and teaching. The owners of the Equinox Hotel donated the development rights on the land to the Equinox Preservation Trust, which includes Bennington, as well as the Vermont Land Trust, Vermont Institute of Natural Science, Burr and Burton Seminary and the Nature Conservancy.

WALTHAM, MASS. —

The widow of Nobel Peace Prize winner Andrei Sakharov donated the Russian scientist's archives to Brandeis University. Sakharov's scientific research, writings on human rights and personal papers will be housed at a planned Sakharov Center on the Brandeis campus and in Moscow. Brandeis received a \$250,000 grant from the Robert D. and Katherine T. MacArthur Foundation to administer the archives in both locations.

DURHAM, N.H. —

The University of New Hampshire was awarded \$76,000 by the U.S. Department of Commerce to install satellite links needed to expand its cooperative extension program. The grant will help pay for a satellite uplink system on the Durham campus and a downlink at UNH's Coos County Cooperative Extension office in Lancaster. The links will permit UNH to broadcast educational programs to any location in the United States, eliminating the need to transmit programs through Boston via microwave.

CAMBRIDGE, MASS. —

Harvard University's Graduate School of Design introduced a master's degree program, combining the policy concerns of urban planners with the aesthetic concerns of designers. Harvard officials said the master's program in

urban planning — believed to be the first of its kind in the United States — reflects a need to rethink planning in light of increasing regulation and concern about the impact of development.

BURLINGTON, VT. —

Trinity College of Vermont received a five-year, \$5 million grant from the U.S. Department of Education to continue operation of the Northeast Regional Resource Center, which promotes quality special education for the six New England states, New York and New Jersey. The center, one of seven nationwide, focuses on issues ranging from special education rights and entitlements to information and technology.

FALL RIVER, MASS. —

Bristol Community College received \$39,859 from the National Science Foundation toward a 15-station Macintosh computer laboratory and software, which will be used to strengthen math and science courses for engineering students.

PROVIDENCE, R.I. —

Brown University received a \$5 million anonymous gift toward the creation of the National Institute for School Reform on campus to assess progress in improving the nation's schools. The institute will work closely with the Coalition of Essential Schools, a national school reform group started in 1984 by Brown Professor Theodore Sizer, who will serve as founding director of the new institute.

MEDFORD, MASS. —

The U.S. Congress approved \$2.6 million for the design and initial construction of a building to house the Tufts University Center for Hunger, Poverty and Nutrition Policy. The center, established in 1990 at the university's School of Nutrition, aims to

shape government responses to hunger in America.

BRUNSWICK, MAINE —

Bowdoin College received \$5,000 from the Kane Lodge Foundation of New York to preserve and copy almost 300 glass photographic negatives of Arctic expeditions between 1913 and 1917. The negatives, shot by explorer Donald B. MacMillan, who graduated from Bowdoin in 1898, are held in the college's Peary-MacMillan Arctic Museum.

BOSTON, MASS. —

Boston College's School of Nursing received \$525,000 from the Henry R. Luce Foundation to establish a professorship in Nursing Ethics.

NEW HAVEN, CONN. —

The Yale-New Haven Teachers Institute at Yale University began publishing *On Common Ground*, a publication examining collaborative efforts between higher education and elementary and secondary schools.

KEENE, N.H. —

Antioch New England Graduate School was awarded a two-year, \$100,000 grant from an anonymous contributor for its Critical Skills Program, which trains elementary and secondary school teachers.

WORCESTER, MASS. —

Worcester Polytechnic Institute launched the Entrepreneurs Collaborative to prepare students for starting business ventures on their own or within established companies. WPI officials said the program, focusing on scientific and technological entrepreneurship, was introduced partly in response to reduced recruitment by large companies.

MIDDLETOWN, CONN. —

The Project to Increase Mastery of Mathematics and Science at Wesleyan University announced that the number of PIMMS Fellows has topped 500 since the program began a decade ago. The fellows — math and science teachers and college faculty who complete two summer professional development workshops at Wesleyan — reach nearly 16,000 teachers each year with workshops and in-service training activities.

BOSTON, MASS. —

Berklee College of Music established an international coalition of music colleges focused on improving instruction in contemporary music worldwide. The network includes charter member schools in Spain, Israel and Greece. The schools eventually will collaborate on workshops, curricula development and student exchange programs. Thirty-three percent of Berklee students are from outside the United States.

WELLESLEY, MASS. —

Dun & Bradstreet Corp. announced the creation of a four-year, full-tuition scholarship at Babson College through the National Foundation for Teaching Entrepreneurship, which introduces inner-city students to business careers.

HANOVER, N.H. —

Dartmouth College and Stanford University launched a joint initiative to increase college graduation rates among Native Americans across the country. The two institutions will help form a consortium of 30 to 40 Native American programs from around the country. The two-year pilot project will be funded by a \$110,000 grant from Intel Corp. of California. Both Stanford and Dartmouth have Native American enrollment and graduation rates that far exceed national averages.

BOSTON, MASS. —

Boston University announced plans to operate WHNT-TV (Channel 21) in Concord, N.H., pending Federal Communications Commission approval. Earlier in 1993, BU bought WABU-TV (Channel 68) in Boston from the Christian Science Church, and WCVX-TV (Channel 58) in Barnstable, Mass., from an independent owner. BU officials said they plan to produce local shows, while providing hands-on experience for BU communications students. The TV stations someday may also broadcast BU classes across the region, through the use of interactive programming technology.

WEST HARTFORD, CONN. —

The University of Hartford's business education program in Krakow, Poland, was awarded \$320,000 in grants from the Andrew W. Mellon Foundation and the U.S. Information Agency. The Krakow program — administered by the University of Hartford — draws on faculty from Boston College, Columbia University, the University of Hartford and the University of Massachusetts at Amherst.

CAMBRIDGE, MASS. —

Harvard University received \$2.5 million from the estate of Harry Starr, an alumnus and longtime president of the Lucius N. Littauer Foundation of New York, to establish a visiting fellows program in Jewish studies.

STORRS, CONN. —

The University of Connecticut announced that it will use \$12 million from federal, state and private sources to establish the Engineering Academy of Southern New England, to be led by UConn in collaboration with the University of Massachusetts and the University of Rhode Island. The academy will infuse

manufacturing concepts into regular coursework.

BOSTON, MASS. —

Suffolk University introduced new programs in medical biophysics and radiation biology in collaboration with Massachusetts General Hospital. The two new programs are taught jointly by Suffolk faculty and doctors at Mass. General.

WORCESTER, MASS. —

Worcester Polytechnic Institute received a three-year \$296,544 grant from the Alfred P. Sloan Foundation to study the powder metallurgy industry. The study is expected to have applications for other industries such as nonferrous rolling and drawing, plastic materials and resins.

PROVIDENCE, R.I. —

Johnson & Wales University received a \$135,000 federal grant to expand cooperative education programs in the university's College of Culinary Arts, College of Business and Hospitality College. The renewable grant could bring \$686,000 to the university over the next five years.

AMHERST, MASS. —

The University of Massachusetts at Amherst instituted a campuswide smoking ban, which bars smoking inside most campus buildings and within 20 feet of building entrances or air supply intakes.

BOSTON, MASS. —

Wentworth Institute of Technology was awarded \$89,000 under the National Science Foundation's Undergraduate Faculty Enhancement Program. Working in collaboration with Bunker Hill, North Shore and Middlesex community colleges, Wentworth will use the grant to conduct a two-week seminar in June 1994 in fiber optics for engineering faculty nationwide.

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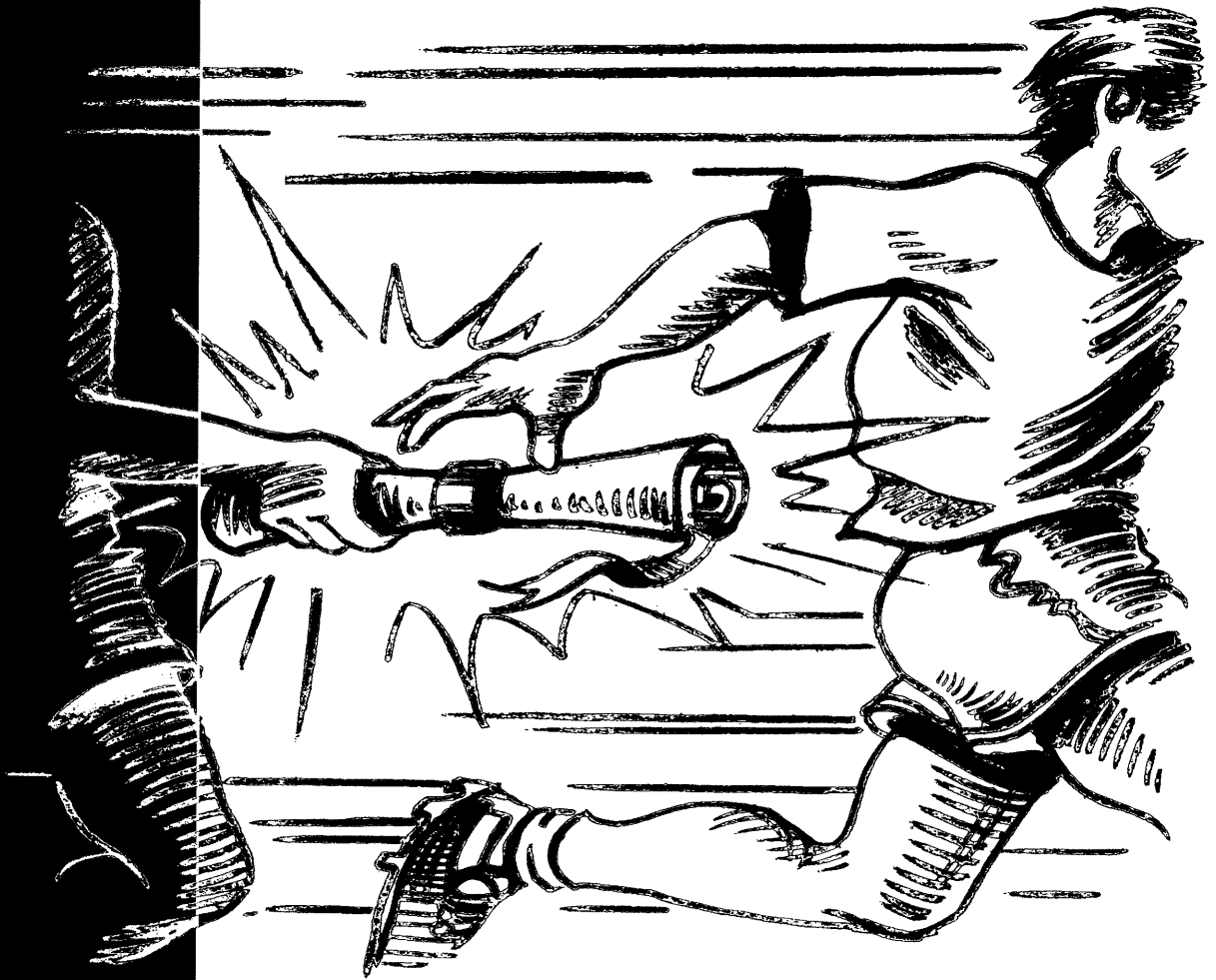
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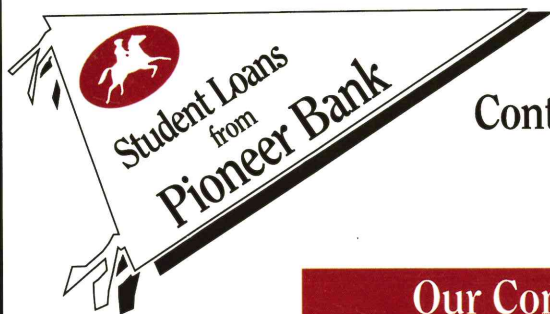
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At Pioneer Bank, we remain firm in our goal to provide parents and students the loan programs they can depend on. Each year, we help thousands across the country reach their potential through our federally subsidized and private student loan programs. Financial aid officers are referring more and more students to us and for this we thank them.

Our Service

Pioneer Bank's knowledgeable staff members are ready to serve parents, students and financial aid officers with any inquiries regarding the loan process. Our service goes beyond our programs. We even provide financial aid officers help with entrance and exit interviews. And, we offer our assistance with the new Common Application. We know that quality service is important to you and your students. Pioneer Bank has never separated a student's loans with more than one servicer due to a sale in the secondary market. This continuity in service makes the entire process simpler and easier leaving students more time to concentrate on their studies.

Our Strength

Established in 1877, Pioneer Bank is a leader in education financing and has been recognized as one of the largest lenders in Massachusetts. Pioneer Bank is proud of its achievements. We continue our involvement on a local and national level, providing parents and students up-to-date information at various information sessions, financial aid hotlines and workshops.

*Our Commitment, Our Service and Our Strength.
Working Hard for You*

Call Dave Kelly, Student Loan Officer, to establish a program for your school.



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