NEW ENGLAND'S WORKFORCE
A Shrinking Labor Pool Threatens Regional Economic Growth

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INTRODUCING THE FIRST NOW ACCOUNT THAT LIVES UP TO ITS NAME.

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Ten years ago, no one would have guessed that New England’s greatest problem at the close of the 1980s would be too many unfilled jobs. Yet this is the case. The region is experiencing a severe labor shortage, in many occupations and at every skill level. As Connection contributing writer John O. Harney points out: “Throughout New England, rock-bottom unemployment rates have wound the labor market as tight as it can go.” Biotechnology is just one example: the “Help Wanted” section of the Boston Sunday Globe approximates a directory of New England’s biotech firms, as Harney reports.

New England higher education institutions helped foster the economic success that created the call for skilled labor, and they are addressing the situation by gearing new and established programs to meet workforce demand. Just a few of many notable examples throughout the region are spotlighted in this issue of Connection. The region’s colleges and universities have been particularly responsive in the area of health care, bolstering the supply of skilled medical professionals.

Some of New England’s business and education leaders feel that engineering schools should transform their methods in order to produce more of the creative independent thinkers who can keep America competitive in tough international markets. Both industry and the individual engineer suffer when higher education turns out narrow specialists. Connection reports on several New England institutions with innovative engineering programs that embrace the humanities and lend an international perspective. Connection’s “Workforce” issue also examines Germany’s practical and efficient pathway from school to work for the technically oriented student, a method that draws on that nation’s traditional craft-guild system. Legislation to develop a system of this type, tailored to the United States’ heterogeneous society and workforce, has been drawn up by U.S. Sen. Claiborne Pell, D-R.I., as Connection correspondent Michael J. Bennett reports in his Washington column (“Our Changing Workforce: Crisis or Opportunity?”).

Given the region’s high level of involvement in international trade, New Englanders must be made aware of other countries’ cultures, languages and business practices. To help realize this goal, the New England Board of Higher Education is carrying out a major project designed to alert the region’s legislators to the high cost of international illiteracy. The board’s six state-house briefings, part of NEBHE’s Regional Project on the Global Economy and Higher Education in New England, have been partially underwritten by AT&T.

NEBHE officials travelled to Washington in March with an emphatic message for New England’s congressional delegation: keep biotech production at home! New England cannot afford to pass up the jobs and income created by its growing biotechnical and biomedical industries. Federal and state policymakers can ensure that production of biotech products is financially feasible, so that the region and nation do not lose ground in this area. The briefing was cosponsored by Sen. Edward M. Kennedy, D-Mass., and Rep. Claudine Schneider, R-R.I.

The “Workforce” issue of Connection resumes an examination of legal education and practice in New England that was the focus of our Winter issue. Connection Associate Editor Ellen Anderson profiles the region’s 13 ABA-accredited law schools; and Samuel Hand, professor of history at the University of Vermont and chairman of Vermont’s Mandatory Continuing Legal Education Board, describes implementing CLE in the Green Mountain State. Also, NEBHE Senior Fellow Richard G. King outlines a “trade deficit” that has serious implications for the future: the large number of foreign students enrolled here, relative to the fairly small number of Americans studying abroad.
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SPECIAL NOTE: Effective January 1, 1988, The Short Term Fund changed from quarterly crediting of earnings to monthly crediting.
NEW MINORITY OFFICE AT YALE SCHOOL OF MEDICINE

Plans for a new Office for Minority Affairs at the Yale University School of Medicine, focusing on the academic issues of minorities, have been announced by Dr. Leon E. Rosenberg, dean of the school. The director of the new office will help recruit minorities to the student body and faculty; develop support systems for minority students and faculty; increase the school’s awareness and sensitivity regarding minority needs in medical education and practice; and implement outreach programs to help the city of New Haven meet its educational and health-care goals for minorities.

LUcretia CROCKET Teachers Academy at UMass-Boston

was a Massachusetts educational leader who helped establish educational programs for emancipated Blacks after the Civil War. Crocket also organized a slate of women who were elected to the Boston School Committee at a time when women did not have the right to vote or to hold office.

BRYANT COLLEGE NAMED WORLD TRADE CENTER

Bryant College of Smithfield, R.I. has been named "World Trade Center Rhode Island" by the World Trade Centers Association, Inc. Bryant is the first private college and the only business college to receive this designation. The college hosts the Rhode Island Small Business Management Center and the Rhode Island Export Assistance Center. The Center for Management Development at Bryant offers a variety of programs for corporate leaders. Bryant's library includes an extensive collection of material on international business.

UMAINE HELPS CHINA DEVELOP NATIONAL PARK SYSTEM

The People's Republic of China has been working with University of Maine faculty for the past two years to develop a national park system. Similar forest types and climate conditions, as well as the level of expertise of the UMaine Forest Management faculty, brought the Chinese Ministry of Forestry to Maine for assistance. Since 1981, the two organizations have worked together to develop joint forestry-research projects to benefit researchers in both countries.

SMITH COLLEGE/GREATER HARTFORD COMMUNITY COLLEGE SUMMER PROGRAM

Smith College, in collaboration with Greater Hartford Community College in Connecticut, has planned a summer program for 25 women students, at least half of whom will be minorities. The five-week program will demonstrate the value of continuing an education beyond the two-year level and completing a degree at a liberal-arts institution. During the program's second year, Smith plans to include students from Asnuntuck Community College in Enfield, Conn. and Tunxis Community College in Farmington.

YALE LAW SCHOOL ESTABLISHES LOAN FORGiveness PROGRAM

The Yale Law School has pioneered a loan forgiveness program designed to relieve the loan burden of Yale graduates working in the public sector at modest salaries. The Career Options Assistance Program at Yale requires a smaller contribution from the graduate, and offers extra financial assistance. Under COAP, Yale will assume repayment of the entire annual obligation of all educational loans for eligible graduates earning less than $28,000 per year. Those with higher incomes will be expected to contribute 25 percent of their salaries above $28,000 yearly toward repayment.

THAYER SCHOOL CAPITAL CAMPAIGN EXCEEDS GOAL

In its first independent capital campaign, the Thayer School of Engineering at Dartmouth College has raised $26.5 million, exceeding its $25 million goal. The result of a four-year drive, the funds will be used for construction of new facilities and equipment, increasing the school’s endowment, support of the operating budget and special programs. The Thayer School, the nation’s oldest professional school of engineering, had its first permanent residence at Dartmouth in 1939 when Cummings Hall opened. With the help of a $15-million federal grant, the school is currently doubling the size of the building.
ELMS COLLEGE HOSTS FRENCH/Spanish TEACHERS' PROGRAM

In July, Elms College of Chicopee, Mass. will host a program, "Total Immersion in the Francophone/Hispanic Worlds," for 50 French and Spanish teachers from public and private elementary schools in Massachusetts. The program has been funded by the Massachusetts Board of Regents. Presentations will feature the current literature, politics, socio-economic developments and cultural trends in the arts and lifestyles of those areas. Participants are required to live on campus, and must sign a pledge stating that they will speak only the target language for the duration of the program.

TRINITY LEADS WOMEN'S COLLEGES IN ENROLLMENT GROWTH

A new national survey released this spring by the Women's College Coalition revealed that Trinity College of Vermont led New England women's colleges in 1988 freshman enrollment growth. Trinity experienced a 25-percent increase in the fall 1988 freshman class. According to Patricia Connelly, dean of students and enrollment management, the increase came in both in-state and out-of-state applicants. "Interest was universal," Connelly said. "There was no significant pocket of applicants. We saw an increase across the board."

REPORT CALLS FOR MORE WOMEN AND MINORITIES IN SCIENCE

Colleges and universities need to educate more women and minority scientists and engineers, according to a draft report by the congressionally authorized Task Force on Women, Minorities and the Handicapped in Science and Technology. Without more female and minority professionals in these areas, the United States is likely to face a severe shortage of technically trained workers by the year 2010. Recommendations to colleges and universities include setting goals for recruitment and graduation rates of women and minority students in science and engineering.

STUDY SHOWS HOW BROWN CONTRIBUTES TO R.I. ECONOMY

A recent report, "The Brown University Economic Impact Study," details contributions the university makes to Rhode Island's economy. Compiled by a Brown professor and two students, the report says that Brown is the state's fifth-largest private employer, and accounted for some $190 million in expenditures during the 1987-88 academic year. The university is responsible for more than $8 million yearly in state and municipal tax revenues. Expenditures by the university, its 2,800 employees, 7,000 students and thousands of visitors, the report says, sustain 3,000 to 4,000 jobs in the Ocean State.

CENTER FOR MARINE SCIENCE AND TECHNOLOGY AT SMU

Southeastern Massachusetts University has established a Center for Marine Science and Technology to advance research in marine science. Approved by the board of trustees of the university earlier this spring, CMAST will serve as a center for marine-related research projects, including graduate and undergraduate research instruction. Departments currently involved in marine-related research and education at SMU (a key participant in the Massachusetts Centers for Excellence in marine sciences) include electrical and computer engineering, biology, chemistry, economics and business.

SUFFOLK UNIVERSITY, BUNKER HILL FORM TRANSFER AGREEMENT

Suffolk University of Boston and Bunker Hill Community College of Charlestown, Mass., have entered into a transfer articulation agreement to facilitate transfer of Bunker Hill students to Suffolk's School of Management. Suffolk President Daniel H. Perlman points out that the agreement "assures students that we will award full credit for courses they take at Bunker Hill Community College when they transfer to Suffolk University." Bunker Hill president Piedad Robertson praised the agreement, noting: "The example provided by this agreement demonstrated a willingness of two institutions to work together for the benefit of students."

TUFTS VET SCHOOL AND UMass AMHERST OFFER DUAL DEGREE

Beginning this fall, students may enroll in an accelerated dual-degree program at the University of Massachusetts at Amherst and Tufts University School of Veterinary Medicine that permits students to complete both the BS and DVM degrees in seven rather than eight years. For the first three years, accepted students will enroll in the pre-veterinary program offered by the Department of Veterinary and Animal Science in the College of Food and Natural Resources at UMass. For the following four years, students will pursue a doctoral program at Tufts.
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Mapping the Future of Our Workforce

JOHN C. HOY

I received my earliest exposure to international economic topics during Miss Ryan’s sixth-grade geography lessons. A series of maps depicted a steer not far from Buenos Aires, a pile of coal near the Saar Basin and industrial smokestacks near Osaka. Economic maps of New England were dotted with cows, shoes, chickens and clocks—and we memorized. By the time silicon chips and telecommunications cables would more aptly adorn some of those maps, Miss Ryan had retired, World War II had changed the face of Europe, geography had become a short section in “social studies,” product maps were out and the United States was well on its way to becoming the world’s leading debtor nation.

Today, ours is one of the few developed countries where students routinely graduate from high school without geographic literacy or competence in a second language. An estimated 40 percent of 1987 Boston high-school seniors could not name the six New England states. A recent survey found that while foreign language requirements for graduation from independent four-year colleges and universities increased from 25 percent in academic year 1983-84 to an estimated 30 percent in 1988-89, such requirements at public four-year institutions inched from 9 percent to just 10 percent in those years.

The decline in geography and foreign-language study is more bad news for New England employers, whose reliance on a competent workforce is already threatened by demographic roadblocks and widespread deficiencies in basic skills.

From 1988 to 1994, the number of New England high-school graduates is projected to decrease by 23 percent, compared with an anticipated national decline of 11 percent. This dwindling pool of college students, and workers to follow, will enter an increasingly technological and internationally competitive workplace comprised of many occupations that do not even exist today. These workers will need competence in traditional disciplines, but also skills in problem-solving and negotiating, qualitative and creative thinking, and, perhaps most importantly, international savvy.

New England’s economy is increasingly tied to that of other nations. Export-related employment as a percentage of all New England civilian jobs rose 10 percent between 1984 and 1986, to account for 5.5 percent of all the region’s civilian jobs.

As a growing number of New England companies cross national boundaries in search of markets, component parts and joint-venture partners, they will need managers who understand the strategies of Korean industrialists, Brazilian bankers or EEC executives in Brussels; they will need production workers who can match the preferences of foreign customers and the quality and productivity standards of international competitors. Meeting global competition will, in fact, determine whether many New Englanders keep or lose their jobs.

International education, with an economic perspective, should begin in the early grades, through good old-fashioned economic geography—the maps with the steers and smokestacks. But the revival of product maps alone will not produce an internationally savvy workforce. Four-year institutions, two-year colleges and vocational schools must also play a primary role.

Businesses require college graduates who combine “area knowledge” with economic knowledge, particularly employees who know the citizens and customs of Asia. Our nation’s negative trade balance with Asian countries coincides with weak academic and corporate attention to the region and its cultures.

The nearly 350,000 foreign students studying for credit at U.S. institutions of higher education (compared with fewer than 50,000 Americans studying for credit abroad) have the potential to serve as exceptional sources of cultural knowledge for college students and faculty. Students in our schools and the general public. But this potential goes untapped.

Nearly a decade ago, the New England Board of Higher Education published Business and Academia: Partners in New England’s Economic Renewal [1981] and New England’s Vital Resource: The Labor Force [1982]. The central theme of both books was that New England’s economic vitality relies on an expanded supply of well-educated, skilled people. Those were days of high unemployment, and the possibility of economic growth leading to lowest-in-the-nation unemployment levels and unfilled jobs throughout the region seemed very remote to most people in New England. In 1989, more and more New Englanders are joining the call for a more competent workforce—a little late, but still in time to act.

The region cannot afford to wait another decade to focus on international education. Businesses and government should invest now in overseas business internships and other targeted student-exchange programs. In the 1990s, they will reap the returns, in the form of a competent, competitive workforce.

New England’s colleges and universities must take a strategic view of their effectiveness in preparing internationally aware citizens. Campuses should pay academic attention to the dynamic changes that have already positioned New England in a premier place in the global economy. Is New England’s economic transformation worthy of academic inquiry? It would seem so. Miss Ryan’s product map of New England was also dotted with symbols of textile mills, granite quarries and shipyards.

John C. Hoy is president of NEBHE and publisher of Connection.
LABOR SHORTAGE

New England's

JOHN O. HARNEY

In Nashua, N.H., some fast-food restaurants pay $7 an hour, plus babysitting money. The public school system courts teachers across the country with a glossy booklet extolling the virtues of teaching in New Hampshire. The retailers complain: With unemployment standing around 3 percent, they can't be too stern with unproductive workers because another job is always a short walk away.

- Outside Providence, R.I., about 2,000 prospective employees jam a job fair—but they're not the typical attendees. Says one chief executive officer: "Every one of those 2,000 people has a job. They're all just looking for better ones."

- In Burlington, Vt., where the unemployment rate has hovered around 2 percent, hotels bus in workers plucked from communities with higher unemployment, St. Alban's and Plattsburgh, N.Y.

- In Massachusetts, about 70 Cape Cod businesses begin their second summer using special U.S. Department of Labor programs that allow them to recruit foreign nationals. These workers travel from countries such as Ireland and Jamaica for seasonal jobs that young people in the region won't take—even at the prevailing wage. Ski areas in northern New England use the programs during the winter.

Despite talk of an impending economic slowdown and a dashed "miracle," New

PHOTO ABOVE:
AT&T maintenance technician Mark Mazierski is dwarfed by ceiling-high stacks of storage bins at the company's Merrimack Valley Works in North Andover, Mass.—AT&T's largest U.S. facility. A computerised storage and retrieval system at the plant keeps track of more than 70,000 items used in the production of high-tech communications equipment, in some 20,000 parts bins.

George J. Riley photo, courtesy of AT&T.
Engineering

For 65 years, the electrical and mechanical engineering programs at the Bridgeport Engineering Institute, an independent evening college, have served the needs of local businesses in Connecticut. One of the newer programs, leading to a BS in manufacturing engineering, was developed in direct response to local industry requests and continues to be assisted by a council of manufacturing managers and engineers. The institute is currently engaged in a study of local industry needs in the area of information-systems engineering and related computer studies, materials engineering and electro-optics.

New England's was 3.1 percent, according to the U.S. Department of Labor Bureau of Labor Statistics.

Four New England states posted the lowest rates in the nation. New Hampshire's 2.4 percent was the trimmest, followed by Vermont's 2.8 percent, Connecticut's 3 percent and Rhode Island's 3.1 percent. Massachusetts recorded 3.3 percent [seventh in the nation] and Maine, 3.8 percent [11th in the nation].

Each New England state saw unadjusted unemployment rates nudge up for the month of January 1989. But the region still manages to post a 3.7-percent average, compared with the nation's 6 percent, according to the BLS.

The shortage will not end soon. New England's job machine is expected to keep turning out positions, albeit more slowly than in recent years, while the regional population growth will not be sluggish—increasing by about 19 percent by the year 2010, compared with 22 percent nationally. Much of the population increase will stem from a projected 31-percent rise in the number of New Englanders age 65 and older—a labor pool that businesses are just now beginning to tap.

The "baby bust" generation, born between 1965 and 1979, is simply too small to replace baby boomers in the workforce. Nationally, the working-age population is growing by less than 1 percent a year. The number of 16-to-24-year-olds will drop by about half a million yearly until 1995, when the 1980s baby boomlet will begin to have an effect.

New England job growth already outpaces labor-force growth. In Maine, employment grew by 2.7 percent during 1988, while the labor force grew 2 percent—thus, the 3.8-percent unemployment rate, the state's lowest in 35 years.

Some of the nation's highest housing prices ensure that net migration into New England will remain low. In the past three years, average home prices in the Boston area rose 37 percent, to $184,000; home prices in Hartford rose 70 percent, to $168,000, and in Providence, they doubled to $131,900. Boston-area tenants pay an estimated 21 percent of their household income on rent, compared with the U.S. average of 19 percent.

Throughout New England, rock-bottom unemployment rates have wound the labor market as tight as it can go.

For many New England employers, the labor shortage is like a bad dream. Consider Astro-Med Inc., a Warwick, R.I. manufacturer of high-speed printers. The company does clean work and offers competitive wages and benefits that include a profit-sharing plan paying employees cash every quarter based on company performance. It's the kind of compensation package that once made workers get to work early and stay late. But worker restlessness is a nagging side effect of full employment, and Astro-Med now suffers a roughly 25-percent turnover rate among its blue-collar hourly wage-earners.

"Many people now are like kids at the candy store, running from goody to goody and always hoping to strike it rich," says Astro-Med CEO Albert Ondis. "You
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Manufacturing

An unprecedented collaboration between industry and the Massachusetts Institute of Technology has resulted in a major educational and research program designed to help the United States recapture world leadership in manufacturing. Nine corporations have invested $30 million in the Leaders for Manufacturing Program, whose aim is to develop a model curriculum for educating a new generation of manufacturing leaders. Students will earn simultaneous master’s degrees from MIT’s School of Engineering and the Sloan School of Management through an intensive two-year graduate program. Program funding will cover students’ expenses and tuition as well as funds for faculty time and research projects.

MIT’s proposal for the program states: “Foreign competitors are seizing control of areas such as consumer electronic products, machine tools, robots and mining equipment” as well as “steel, copper...autos and semiconductors.” In response, the university will address the needs of our threatened industry by “making manufacturing research and education a long-term, top priority.”

Rhode Island College plans to energize the state’s manufacturing industries with the high-tech and educational resources provided by its Center for Industrial Technology. The center’s goals are to prepare qualified industrial employees and managers; provide the equipment and technology to create and improve manufactured products; and establish a cooperative link between the college and the business community that will benefit high-tech industries in the state. For its first semester, the center is offering courses including computer applications, drafting, electronics, energy sources and their uses, graphics, materials testing and materials processing. The $3-million center has been endorsed by Rhode Island Gov. Edward D. DiPrete’s “Workforce 2000” project, which was set up to find new ways to meet Rhode Island’s future employment needs.

Director Nathan Church plans to develop the center as a research facility for the state, in an effort to bolster Rhode Island’s ability to produce, market and sell sophisticated new products. When interviewed by the Providence Journal, Church explained: “The decade of the 1980s has shown us that in the United States there is a relative weakness to Japan in the area of manufacturing technology. It goes back to methods such as quality control, supervisory control.” Providing instruction in three areas—general technical supervision, electronics technology and graphic arts technology—the program teaches hands-on management of production processes.

could double your wages, and people would still have this wanderlust.”

In fact, Ondis did raise wages about 10 percent last year. Now the former president of the Technology Council of Rhode Island says companies must begin looking for ways to mechanize more operations, conserve labor and invest less in training because the returns are smaller.

The only catch is that today’s workforce needs more training than ever. To upgrade the skills of current workers and draw on previously ignored pools of workers, such as disadvantaged inner-city residents, U.S. companies will almost certainly have to add to the $30 billion they spend annually on direct training programs, according to Curtis Plott, executive vice president of the American Society for Training and Development. (The tab for corporate training may top $200 billion when on-the-job training costs are added.)

Direct-training programs reach less than 10 percent of the workforce—typically managers and technical personnel, according to ASTD. But changes in American industry mean that critical business decisions are made further and further down the line toward the point of production. Says Plott: “You’re going to have to spend substantially more if the problem is upgrading employees at the lower levels of the hierarchy.”

Tourism

The University of Maine will establish a School of Hotel/Restaurant/Tourism Administration to meet the need for employees in Maine’s second largest area of employment. The industry is experiencing great difficulty in attracting personnel, from hourly wage earners to top-level management. The new school will offer associate and bachelor’s degree programs emphasizing management skills. Culinary arts skills are currently taught through Maine’s system of vocational-technical institutes. Students may enroll in the new school starting this fall.

Economic implications

The economic implications of the labor shortage are daunting. Without major gains in productivity, economic growth slows and revenue needed for public services dwindles. Wages rise and so do prices. Companies raid one another for workers—or worse, pack up and leave the region.

One major fear is the possible return of 1970s-style inflation, marked by big wage increases and rising prices. Low unemployment is already pumping up historically below-average New England wages. The debate over raising the federal minimum wage of $3.35 an hour to $4.55 by 1991 means little in this region; a dishwasher in Burlington, Vt., can easily make $6 an hour.

In 1987, while the average wage for U.S. workers rose 4.5 percent, Connecticut wages climbed 8 percent, the BLS reports. Massachusetts wages rose 7.5 percent;
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Maine's, 6.9 percent; Rhode Island's 6.3 percent; New Hampshire's, 6.1 percent; and Vermont's, 5 percent.

Economists say New England is a relatively cheap place for companies to buy skilled labor because the educational system turns out an abundant supply. But unskilled labor is expensive in the region. "I'm sure there are parts of the country where minimum wage is observed. But not here," says Boston placement consultant Steve Schiff.

Nationally, the labor shortage will pressure companies to raise wage and salary costs by 5 percent in 1989, up from the previous year's 4 percent, leading economists say. Prices are also expected to rise 5 percent, compared with the current annual rate of 4.2 percent.

There are further complications. While jobs go begging, a large pool of unskilled and poorly educated New Englanders can't find work. Maine's September 1988 monthly unemployment rate was 2.2 percent. But, within Maine, Washington County recorded 8.8 percent.

Many minorities also remain outside the job boom. In February 1989, the U.S. unemployment rate was 4.3 percent for whites, 11.9 percent for Blacks and 6.8 percent for Hispanics. In the first quarter of 1989, the unemployment rate among Massachusetts Blacks rose to 12 percent, up from 8.2 percent in the first quarter of 1988. Joblessness among Bay State Hispanics also inched up. Some experts attribute the increases to disproportionate Black and Hispanic representation in the manufacturing sector, which is losing jobs in Massachusetts.

Minority participation in the labor force also is lagging, due in part to the nation's sorry record on high school completion among Blacks and Hispanics. Of Americans with four or more years of college, 88 percent are working or looking for work; the figure for people with high-school diplomas is 77 percent, and for dropouts, 61 percent, according to the BLS.

Today almost 40 percent of Hispanics drop out of high school, compared with 17 percent of Black students and 14 percent of whites. That must change: Hispanics are expected to account for about 22 percent of labor-force growth from now until the year 2000. The New England Board of Higher Education Task Force on Minority Student Enrollment and Retention in New England noted that Blacks and Hispanics represent 6.2 percent of the region's population, but only 4.8 percent of college enrollments.

Another twist: about 57 percent of Boston's workforce is in the service sector, the highest proportion in any major U.S. city, according to the Boston Redevelopment Authority. But job creation in the city's service sector is expected to slow down due to automation, and the BRA says biotechnology and medical-related manufacturing may pick up the slack.

If New England's economy shifts again from service to manufacturing, the labor force may remain a step behind. "People tend to jump into an industry based upon how [the industry] is doing now. But by the time enough people make that decision and go through college or whatever the training is and get into the labor force, it's already after the cycle," says Bob Leavy, managing partner at the Boston office of Grant Thornton, an accounting firm that tracks manufacturing activity.

Biotechnology firms already are experiencing a shortage of workers with skills in process development and quality control, according to Jim Sherblom, chairman and chief executive officer of Transgenic Sciences in Worcester, Mass., and former president of the Massachusetts Biotechnology Council.

Several New England manufacturing cities historically plagued by high joblessness posted unemployment rates well below the unadjusted 6-percent national level in January 1989, according to the U.S. Department of Labor Bureau of Labor Statistics. (The national rate itself dipped to 5 percent in March, but data on metropolitan areas was not available.)

In January, Manchester, N.H., posted 2.6 percent, and Nashua, N.H., 2.9 percent. Springfield, Mass., recorded 3.8 percent; Lowell, Mass., 3.9 percent; Lawrence-Haverhill, Mass., 4.4 percent; Pawtucket-Woonsocket, R.I., 4.4 percent; Bridgeport-Milford, Conn., 4.7 percent; and Waterbury, Conn., 4.8 percent.

Burlington, Vt. and Stamford, Conn., recorded the lowest January unemployment rates of all the nation's metropolitan areas, at 2.2 percent. Portland, Maine, tied for second with Lincoln, Neb., at 2.3 percent.

The Manchester-Nashua, N.H., area is the hottest of all U.S. metropolitan areas, according to a 1989 Inc. magazine report that defined nearly 200 metro areas and ranked them based on growth in jobs, business start-ups and the percentage of new companies with high employment-growth rates.

Portsmouth-Dover, N.H., led New England metropolitan areas in the job-generation category, with 32.4-percent growth in private non-agricultural public-sector employment from January 1984 to July 1988, according to Inc.

Other New England metropolitan areas with notable job growth during that period include: Manchester-Nashua, 27.1 percent; Burlington-Montpelier, Vt., 23.1 percent; Portland, 23 percent; Worcester, Mass., 19.1 percent; Hartford, Conn., 16 percent; Providence, R.I., 15.9 percent; and Pittsfield, Mass., 13.9 percent.

Former mill towns are now leaders in employment, job creation
The main problem for biotech is that New England has virtually no pharmaceutical or food-processing industries, which train blue-collar workers for the same kind of tasks performed by biotech workers, Sherblom says. To make matters worse, state-funded biotechnology training programs in Massachusetts face the budget knife, and with few exceptions, vocational programs in New England have not targeted biotech.

Who will move?

New England’s labor supply could be beefed up considerably if more Americans left places like McAllen, Texas, where the unemployment rate is over 16 percent, for places like Portland, Maine, where the rate is around 2 percent. But that’s not happening. Some of the blame falls on stories of harsh winters, but most fingers point toward the cost of housing.

Take the Astro-Med field sales manager who was offered a promotion and $25,000 salary increase to move to Rhode Island. “He came with his wife to look at housing, and they couldn’t believe it. The kind of house they had in Chicago, which they paid about $175,000 for, they absolutely could not touch here for under $400,000,” says Ondis, Astro-Med’s CEO.

Ingersoll-Rand, the machinery manufacturer, recently considered a deal that would have closed a plant in Minneapolis and relocated dozens of professional workers to Nashua, N.H. Many of the Minnesotans decided their own double-digit state tax rate beat the home prices quoted in the Nashua newspaper. “Their biggest reaction was: ‘We cannot go out there and afford the homes,’” says John Clancy, vice president for human resources at Ingersoll-Rand in Nashua and former chairman of the New Hampshire Association of Commerce and Industry.

Clancy now tells relocated workers to figure on $210,000 or more for a “reasonably good” home in the Nashua area. “How can you get an hourly person...
who’s making $12 or $13 an hour to move in here?” he asks.

Housing costs may not tell the whole story. “The other possibility might be that people still don’t see New England as a region with long-term growth. They really think California or Texas are still going to grow in the long run,” says Richard Freeman, a labor economist and director of labor studies for the National Bureau of Economic Research.

In terms of attracting workers, each New England state also suffers from its neighbors’ low unemployment. Says Barry Bluestone, a labor economist at the University of Massachusetts at Boston: “It isn’t as though we’re bordering states with labor surpluses, with people willing to get into the car and drive 50 or 60 miles for work.”

If workers are not flocking to New England for jobs, will companies flock to the workers? Says Freeman: “Rather than move out, companies may think again about where they would put a new plant.”

That theory is backed up by more evidence all the time. Fleet/Norstar Financial Group of Providence, R.I., consolidated several processing centers and moved them to Albany, N.Y., because the financial services company believed Albany would provide more workers. A Connecticut electronics company, unable to hire workers in southern New England, moved to Syracuse, N.Y., where the unemployment rate approached 7 percent.

Bluestone, who helped prepare the draft of Blueprint 2000 in Massachusetts, says companies will be willing to live with the New England labor shortage if the region’s workers become more productive.

With the economy’s shift towards services and high tech, workers with “older” skills, like machinists and welders, are in short supply. Here, a machinist at Morse Tool Inc., a manufacturer of cutting tools in New Bedford, Mass.

Andy Suwaie photo, courtesy of the Massachusetts Industrial Services Program.

“The problem we have to grapple with is how do you get enough labor to produce output companies want to produce,” he says. “That either means you throw more labor at it at the old rate of output per worker, or with the same or very slowly growing labor force, get more output per worker.”

How do we increase productivity? “You have to be on the cutting-edge of technology; you have to make capital investments; and you have to make those changes in labor-management relations systems which will enhance productivity—closer working relation-

"Help Wanted" for New England’s biotech industry

If you want to see a directory of New England biotechnology companies, just open the “Help Wanted” section of the Boston Sunday Globe. The region’s labor shortage has been particularly tough on biotech, and “process operator” appears to be the hardest position for the firms to fill.

Process operators are blue-collar workers who generally don’t need college educations, but do need high-school-level math skills and the ability to keep working areas clean and biotech processes running properly.

Finding high school graduates who fit that description has been next to impossible, so some biotech companies are hiring college-educated people for the jobs. “We hire degree people and just accept the turnover,” says Barbara Covel, director of human resources at Genetics Institute in Cambridge, Mass.

Genetics Institute also has taken the once-unheard-of step of recruiting blue-collar workers from outside the region. The company has tried to import workers from New Jersey, home of major pharmaceutical firms that train production workers for similar tasks; and from Bismark, N.D., where a 16-month college program is geared toward process operators. As for those trained in North Dakota, the Cambridge group lost every one to high housing prices and culture shock.

American attitudes also hamper biotech companies’ efforts to recruit workers for repetitive but crucial tasks, according to Jim Sherblom, chairman and chief executive officer of Transgenic Sciences in Worcester, Mass., and former president of the Massachusetts Biotechnology Council.

“Someone coming out of Oxford or Cambridge with a B.S. expects the first 10 years of their work experience to be doing directed, repetitive tasks—reducing to practice something that someone else created,” says Sherblom. “Someone coming out of our universities expects that as soon as they get out of school with a B.S., they’re supposed to be able to create something.”

Says Sherblom: “You tend to get people who have the right skill sets, but not the right approach to work, so they become unhappy and leave after two years.”
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ships, better understanding of labor and management perspectives, more education of the labor force and more training," Bluestone says.

New skills needed
Education and training will not be a matter of choice for most employers. Almost half of the respondents to a 1988 survey by the American Society for Personnel Administration said job applicants lack writing skills; 42 percent noted a lack of verbal communications skills; and 30 percent noted a lack of math skills.

In addition, changes in U.S. business—such as shortened product cycles, a new responsiveness to markets and the need to deliver high-quality products and customer service—mean reading, writing and arithmetic are just the beginning of a long list of skills demanded by employers, according to an ASTD report to the Department of Labor. The report says employers want workers who are adept at such areas as solving problems, thinking creatively, setting goals and learning to learn.

Learning to learn? The ASTD has estimated that 75 percent of people in the workforce today will need retraining by the year 2000, and many of today’s new entrants to the workforce will have to be retrained three or four times during their lives. Says Plott: “If you’re going to be trained and retrained in the workforce, there is a process for learning how to learn.”

In the schools and in the workplace, new attention also must be paid to international knowledge. Employment related to manufactured exports accounted for nearly 351,000 New England jobs in 1986, representing 5.5 percent of all the region’s civilian jobs, compared with 4.1 percent nationally, according to the U.S. Census Bureau.

In addition, new labor pools need more basic training. Immigrants are finding ample work in the region’s restaurants, hotels and hospitals. But as more of them are attracted to the area, state-funded training and English-as-a-second-language programs become strained.

The Institute for Educational Leadership, a nonprofit educational group, projects that eight of 10 new entrants to the workforce until the year 2000 will be women, minorities and immigrants, many of whom will be poorly educated.

Says Plott of ASTD: “Those people that we’ve typically underinvested in from a human-resource standpoint will be those in need of training.”

Study ranks New England states by manufacturing climate

N ew Hampshire—even with its lowest-in-the-nation unemployment rate—is the best industrialized state in the country in which to build a factory, according to a 1988 state-by-state study of manufacturing climates by the accounting firm Grant Thornton.

Grant Thornton’s survey reflects 21 factors assigned relative weights by national manufacturing associations, representing about 90,000 manufacturing concerns. “Current wages” is the most heavily weighted factor, followed by “available workforce.” The sixth most important factor, according to the manufacturers, is “changes in hourly wages.”

The “available workforce” factor reflects a state’s supply of trained people, but not the tight labor market. “In New England, the states tend to rate very high in terms of having those kinds of people in the workforce—people with technical training and the like,” says Bob Leavy, managing partner at the Boston office of Grant Thornton.

But the region’s tight labor markets are reflected in factors regarding wages. “There, the states ranked poorly in relative terms... the increase in average compensation was very high, which clearly was an indication of the shrinking labor force as compared to the growing industry,” says Leavy.

The bad news for New Hampshire, according to Leavy, is that nothing lasts forever. He points to Massachusetts as proof. The Bay State used to have relatively less expensive labor than many other parts of the country. But as unemployment dipped, wages shot up, Leavy explains.

Grant Thornton ranked Massachusetts 16th among all states in average factory wages. But in changes in wages, Massachusetts scored the worst of all 48 contiguous states.

“All the good times were bringing in a certain amount of competition for labor, and over a period, that obviously impacts where you’re going.” says Leavy.

“Certain things in an environment can allow you to be better than the average even over a very long period of time, but not very much better than the average.”

Massachusetts still managed to rank 6th among industrial states in the 1988 survey, which also takes into account state and local fiscal policies and quality of life. The remaining New England states ranked as follows: Vermont, 12th; Rhode Island, 15th; Connecticut, 16th; and Maine, 22nd, among the “high-density” states.

Why do the New England states score so high in trained people? Leavy says it’s the strong presence of higher education, and “the fact that many of the people that we attract from other areas find the area an enjoyable one to live in... Because this area still has the fine reputation for those entrepreneurial growth companies—high-tech companies, state-of-the-art companies—a lot of people may be attracted here.”

22 NEW ENGLAND BOARD OF HIGHER EDUCATION
There's another wrinkle. Some not-so-new skills are in short supply. Ingersoll-Rand is facing a serious shortage of experienced machinists and welders. Among the manufacturer's obstacles: "If you're educated, you try to get your own kids educated. More and more parents will put their kids through four years of college, and those kids don't become machinists or welders," says Clancy.

In 1988, 46 percent of U.S. workers ages 25 to 64 had some college experience, up from 37 percent in 1978, according to the BLS.

Clancy says two-year vocational institutes in New Hampshire have been a welcome source of qualified manufacturing workers. But business leaders are nearly unanimous in their call for more apprenticeships and vocational education to prepare productive manufacturing workers.

**Attracting workers**

The ASPA survey found that 44 percent of personnel administrators nationwide had difficulty recruiting salespeople; 54 percent had difficulty recruiting professionals; and 66 percent had difficulty recruiting technical workers.

Still, the problems are especially severe in one corner of the United States. In the Northeast, 50 percent of ASPA respondents reported "great difficulty," and 28 percent, "moderate difficulty," filling unskilled jobs. In the South-Central region, three-quarters of respondents said they had little or no difficulty. As for technical positions, 62 percent of respondents from the Northeast reported "great difficulty," compared with 37 percent in the Southeast.

New England employers are trying to make jobs more attractive by raising pay and offering flexible hours, four-day work weeks, remedial education, train-

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**Better teachers**

At Dartmouth College in Hanover, N.H., a tuition-free semester for students fulfilling their teacher-certification requirements helps encourage more students to pursue the teaching profession. "This program has enabled a large number of academically competent people to go into teaching who might not otherwise have been able to," says Dartmouth Education Department Chair Faith Dunne, who created the program four years ago.

The teacher education program at the College of the Atlantic in Bar Harbor, Maine, is a highly participatory program that prepares students for public-school teaching, and other careers within the context of human ecology. Students assist in planning and conducting classes and are expected to identify and achieve their own educational objectives. The college recently received an $80,000 grant from the Fund for the Improvement of Postsecondary Education to strengthen teacher education.

To meet industry's growing demand for qualified business educators, Thomas College in Waterville, Maine, launched a four-year degree program in business-teacher education last fall. In addition to coursework in computer information systems, accounting and management, education theory and methods, the program includes a paid six-week business practicum during the third year of study.

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**A patchwork of U.S. training policies**

Under Swedish public and private programs, up to 3 percent of the country's workers are enrolled in retraining programs at any given time. The much less ambitious patchwork of U.S. training policies has helped prepare some disadvantaged Americans for work, but has done little to improve the skills of current workers.

The centerpiece of national training policy—the 1982 federal Job Training Partnership Act—established Private Industry Councils and provides federal funding to prepare economically disadvantaged and dislocated workers for long-term employment. But a 1988 survey by the American Society for Personnel Administration reveals that while 26 percent of respondents increased use of the JTPA to train workers, less than half thought the strategy was even somewhat successful.

A major problem with the JTPA is that people generally aren't paid during at least part of their training period. "You have people who are willing to start in the (training) program, but aren't willing to not get paid for eight weeks," says John Clancy, vice president for human resources at Ingersoll-Rand in Nashua, N.H., which is training some welders under the JTPA.

Some national programs have been successful in New England. For example, Vermont's Department of Employment and Training reports heavy use of the federal Targeted Jobs Tax Credit program, which grants businesses a federal tax credit when they hire eligible disadvantaged residents.

In the face of heightened international competition, plans are in the works to fill the gaps in U.S. training policy. Many employers have rallied behind a proposal sponsored by U.S. Rep. Nancy Johnson of Connecticut to provide tax incentives for companies to train workers. At the state level, some lawmakers have proposed paying for training programs with surplus unemployment insurance funds built up during periods of low unemployment.
ing and even outright gifts and extra holidays. Vermont officials have launched a road show encouraging employers to offer child-care benefits to attract women. While experts contend that employer-sponsored dependent care will be the strongest magnet for many workers, the ASPA survey reveals that only 12 percent of respondents provide the benefit.

Employers also are using non-traditional workers, including temporary employees, students, handicapped workers and retirees. Some businesses even want lawmakers to weaken child labor laws to free up more young workers.

Employers say retirees are good workers with great loyalty to their jobs. But there are problems: because pension provisions may reduce retirement benefits based on income, many retirees have a disincentive to work long hours; employers are wary of training retirees because their careers are generally short; and, says one high-tech executive: “Retirees are relatively independent. If they decide to take a few days off, they’ll take a few days off. The commitment is not as great because of their circumstances.”

The U.S. Census Bureau, which is having trouble finding New England interviewers for the 1990 census at a national pay rate of $6 an hour, will allow retirees who collect Social Security benefits to work exactly the amount of hours they can without jeopardizing their benefits.

### Higher education and the workforce

**Technological literacy**

At a time when business, industry and daily life are becoming increasingly technological, some liberal arts colleges have responded by including more technological-studies courses in their curricula. In 1990, Wellesley College will incorporate most of the courses now available under its experimental Technology Studies Program. “The education of young people must encourage them to become informed users of the powerful tools at their disposal,” says Wellesley President Nannerl O. Keohane. Established in 1983 with a grant from the Alfred P. Sloan Foundation, the technology program offers courses on subjects such as critical decisions and medical technology and television technology and social impact.

“We have to be creative,” says Steve Driestoll, a Census recruiter in Boston. “In areas of low unemployment, it’s extremely difficult compared to 1980. When unemployment is higher, we have people waiting in line to get our jobs.”

More women also are expected to join the national workforce both because of demand for workers, and because more than a decade of stalled purchasing power has prompted many married women to take jobs. Already, an estimated 70 percent of working-age women are in the workforce. More than half of women with children under age 6 are working, and two-thirds of women ages 25 to 44 with children under 18 are employed. Again, employers will have to be creative; a widely publicized study contends that women, as primary caregivers, have a higher turnover rate than men and cost more to employ.

While women will represent the majority of new entrants to the labor force until the year 2000, with new career paths cleared, many of them will move away from traditional fields like nursing, a profession in which health-care cost-cutting already has sparked a severe shortage.

Hospitals in Massachusetts in late 1988 estimated an 11 percent nursing vacancy rate, prompting some to search overseas for help. Less attractive nursing posts at nursing homes and state hospitals have much higher vacancy rates. And nursing school admissions in Massachusetts dropped 38 percent between 1983 and 1988.

Anne Hargreaves, executive director of the Massachusetts Nurses Association, says she sees renewed interest in nursing because of an increase in salaries and publicity about the shortage. But a new problem has arisen. “At one time, it was the cream of the crop that entered the profession. Recently, it hasn’t been the smartest and the brightest opting for the profession of nursing,” says Hargreaves.

In addition, as hospitals cut costs, they delegate more patient care responsibility to lower-paid nursing aides. “Nursing homes are having a terrible time finding [aides] because they pay such lousy salaries. People can make a dollar more an hour working at McDonald’s,” says Hargreaves.

Hargreaves adds that few nurses are trained to work in geriatrics. But the U.S. elderly population is growing fast, and New England is among the nation’s “oldest” regions. People age 65 and over represent 14 percent of all New England residents.

### Higher education’s role

The decline in the number of American 16-year-olds is bad news, not just for employers of file clerks and soda jerks, but also for colleges and universities. Demographic trends threaten to conspire with public budget-tightening to compromise higher education’s role in solving the labor shortage.
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For five years beginning in 1989, the nation will produce the fewest high school graduates in almost a quarter of a century. New England's 264 colleges and universities are expected to experience a more severe demographic downturn than others.

As a reduced pool of students progresses through undergraduate programs culminating in bachelor's degrees between 1993 and 1998, New England college graduates of traditional college age will be in short supply just when their skills and up-to-date knowledge will be in greatest demand.

Higher education also plays a vital role in training Americans who are already working. About 21 percent of the $30 billion companies spend on direct training programs goes to colleges and universities. ASPA members, when asked open-ended questions about what business could do to alleviate the worker shortage, generally pointed to education: for example, helping educators design curricula and assisting schools through training grants and access to equipment, as well as work-study and internship programs.

Employers also say they want higher education to provide more in-house education programs for workers, and help wage war on illiteracy.

Campus-based programs already hold great promise for upgrading the skills of the current and future workforce. The University of Maine System has implemented a telecommunications system, providing access to interactive courses, including degree programs and vocational studies, via telephone lines that link public campuses and high schools in the state. It could be a boon for rural areas of Maine that have recession-level unemployment—above 8 percent.

In Vermont, IBM is working with Vermont Technical College and St. Michael's College to improve the skills of production workers who generally have high-school diplomas, but, in an age of laser discs, will need more advanced training. "It's really a model for other employers who are concerned about upgrading the workforce," says Kathi Hoyt, Vermont's commissioner of employment and training.

As the labor shortage worsens, businesses will initiate more collaboration with higher education on programs to expand and improve the workforce. With education budget cuts looming, colleges and universities will also seek, for example, more corporate sponsorship of student loans that would be forgiven for students who go on to work for the sponsor; donation of state-of-the-art equipment; and skilled individuals to provide compensated part-time instruction in relevant subjects.

John O. Harney is a contributing writer for Connection.

**Health care**

Through the Advanced Placement Program in nursing at Quincy Junior College, Quincy, Mass., licensed practical nurses can take a one-year degree program in registered nursing without replicating previous courses. The Massachusetts College of Pharmacy and Allied Health Sciences in Boston is developing BS programs in those technologies, as well as a part-time degree program in allied health sciences. The programs are designed to address severe labor shortages in both nuclear medicine and radiation-therapy technology. The demand for radiological technologists is projected to grow by 65 percent between 1986 and 2000, according to the Bureau of Labor Statistics.

When local hospitals, desperate for qualified help, asked Champlain College of Burlington, Vt., to train students in radiography, the college responded by developing the nation's first 21-month radiography program. Clinical experience at local hospitals is required.

America's first doctoral program in nursing with a concentration in nursing ethics is now offered at Boston College, Chestnut Hill, Mass. The three-year program is designed to address questions arising due to the rapid scientific and technological advances in medicine during the past decade. The master's degree program in nursing-service administration at Sacred Heart University in Fairfield is Connecticut's only academic program for nursing administrators specializing in either community/long-term care or acute care. Enrollees are licensed, registered nurses with bachelor's degrees, earn credits in business and nursing courses that teach managerial expertise and advanced nursing skills.

To alleviate shortages in Rhode Island's health-care professions, the Community College of Rhode Island has expanded its nursing program to include part-time, evening and weekend programs at area hospitals. In response to a request from the Rhode Island Dental Association, CCRI recently established an associate degree program in dental hygiene. CCRI is also offering courses at nine nursing homes throughout the state to upgrade employees' skills and improve patient services.

Simmons College responded to a need for health-care providers with both clinical and managerial skills by creating a Graduate School for Health Studies. The new school combines Simmons' established graduate programs in health-care administration and nursing with its new MS in physical therapy program. "The goal of the Graduate School for Health Studies is to educate people in the health-care system who are sensitive to human needs in terms of access and quality, and who also understand the organizational, institutional and policy constraints that are increasingly dominating the health-care environment," says Simmons College President William J. O'Hoiles. "In addition, the school will create opportunities for collaborative research endeavors, new programs and affiliations with other organizations and institutions."

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To Produce Leaders, Expand Engineering Education

ALAN DALY

Are colleges and universities producing the kind of engineers who will help American industries thrive in fiercely competitive international markets? Should they be striving to produce well-rounded thinkers or astute technicians, leaders or “yes-men” and women who merely follow orders to protect their status in the corporation? Should the liberal arts be given greater prominence in engineering curricula?

Not everyone would agree that major changes in engineering education are necessary — but a few prominent business leaders argue in their favor. Bernard Gordon, president of Analogic, a New England-based high-tech company, has written and spoken widely on what he considers serious inadequacies in undergraduate engineering education.

In an article appearing in Mass High Tech, Gordon expressed the opinion that American business is paying a serious price — in lower productivity and a dwindling share of international markets — for higher education’s failure to educate engineering leaders.

Gordon makes a convincing case for creating educational programs that will produce “not narrow specialists or titled technicians capable of copying existing technologies, but leaders — individuals with the breadth of vision, intellectual depth and competence to invent and apply the advanced technologies that will be the basis of our future prosperity and societal progress.”

Educating innovators

Not only American industry but the engineers themselves are paying the price for curricula that emphasize technical competence over leadership and vision. With the exception of professional sports, perhaps no profession has a higher burnout rate than engineering. Furthermore, age discrimination against engineers is rampant in corporate America. “Older” engineers (aged 40 and up) face such occupational hazards as forced early retirement, extended time between raises, demotions and less-challenging work assignments. The finest technical education in the world cannot help engineers face these kinds of challenges.

Colleges and universities cannot remove the specter of age discrimination from the engineering profession, but they can help produce engineers who are more likely to survive and contribute until they choose to retire. The first step towards accomplishing that goal is recognizing that engineering is a profession and not a trade. A professional must be broadly educated, and must possess a knowledge of all the basic disciplines — literature, economics and the study of human behavior, to name a few — in addition to science and math.

While it is true that scientists and engineers typically study the same subjects — often in the same classrooms — the similarities end there. Engineers are taught to be pragmatic about knowledge, that it is the end result that counts: better and more cost-efficient computer architectures, electronic components, roads and bridges, and so on. No one will deny that society has not benefited from these advances. But are there cases where a broader approach to technical knowledge is necessary?

In a recent article in Technology Review, John P. McKelvey, a professor of physics at Clemson University, argues that the pragmatism of today’s technology — that is, the quest for immediately relevant
knowledge — has diminished the kind of risk-taking that will serve society and the economy in the long run. One point McKelvey makes is that engineers should, at least some of the time, think like pure scientists and take the kind of risks associated with purely scientific enterprise:

"We need to recall — and foster when we can — the special circumstances from which came such signal advances as the telescope, the incandescent lamp, and the vacuum tube," he writes. "Perhaps we should insist that our planners devote resources to a few ‘obviously’ unsound projects and ‘clearly’ unprofitable lines of thought, or that they encourage individual investigators as well as organized groups, however ‘wasteful’ that may seem."

Successful New England programs

Engineering schools have been painfully slow to integrate more humanities and behavioral sciences into their curricula. Their rationale for not doing so is partly justified: There simply isn’t time for them in a concentrated four-year undergraduate program.

Nevertheless, several New England colleges and universities have successfully found ways to integrate the humanities into their undergraduate engineering programs — even if it means adding a fifth year.

For example, a program at the Worcester Polytechnic Institute, in Worcester, Mass., has been operating for more than 15 years. This “WPI Plan” requires undergraduate engineering students to take five courses drawn from humanities disciplines such as art, music, English, drama, literature and philosophy. In addition, each student must complete three major projects, one of which focuses on a humanities or a behavioral science subject.

“What we’ve done is, essentially, to organize the humanities requirements into a highly focused minor,” says William Grogan, WPI dean of undergraduate studies.

To further emphasize the engineer’s role in the human sphere, each student must complete a project focusing on the relationship between a particular aspect of science or technology and society. Also required is a project focusing on the degree candidate’s major field of study.

The Thayer School of Engineering at Dartmouth College has added a fifth year to its undergraduate program in order to give the curriculum a strong liberal-arts content. Students must complete their humanities, social science, foreign language and core engineering requirements during their first four years. They do not begin taking the elective courses that comprise their major until their junior or senior years.

ULowell’s other five-year engineering program, “Track Two,” allows students to spread their core technical requirements over the first two years and to complete a minor program in the humanities, pure sciences or social sciences. The university is currently in the process of merging its College of Liberal Arts and College of Pure and Applied Science. Scheduled for completion in September 1989, the merger will make it easier for the university to integrate liberal arts and applied science courses into undergraduate engineering curricula.

“The program is different from everybody else’s, partly because we are an engineering department in a liberal arts college,” says Francis Kennedy, chairman of the engineering sciences department. “All of our engineering students have the same undergraduate liberal arts requirements as everybody else at Dartmouth. They are candidates for a Bachelor of Arts degree, with a major in engineering. They have to take an extra year of courses to complete the engineering requirements.... Of course, we must convince them that the extra year is necessary, and that it is more important to receive a broad education than it is to specialize quickly. We tell them that breadth will serve them in the long run.” This is especially true for those who hope to become engineering managers.

ULowell offers dual degree

Since 1983, the University of Lowell has offered a five-year A.B./B.S. program that leads to a liberal arts/engineering degree. Unlike Dartmouth’s five-year program, this one immerses freshmen students in technical and scientific courses, then spreads the humanities requirements throughout the remaining four years.

However, according to Aldo Crugnola, dean of the College of Engineering, a relatively small number of students have enrolled in the program so far. “It’s difficult because many students want to graduate as fast as they can,” Crugnola says. “It’s going to take a while before we can impress the value of a broader program upon them. They need to be convinced that a better-balanced education will be very valuable — even money-wise — four years down the road.”

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MIT requires its undergraduate engineering students to complete a minimum of eight term subjects in the humanities, arts and social sciences. By the end of their third year, students must elect a “HASS” field of concentration from more than 25 available disciplines. These include such humanities staples as literature, theatre and philosophy, as well as more esoteric studies such as labor in industrial society, and visual art and design.

MIT recently introduced a one-year Integrated Studies Program for freshmen, which provides hands-on experience in various technologies to incoming students. At the same time, these students learn how other societies deal with the very same technologies — both from a technological and cultural perspective. For example, students might examine how religious beliefs are
influenced by technology and vice versa. To supplement readings and classroom discussions, ISP students visit sites in the greater Boston area where these technologies are being applied.

"The program gives students a sensitivity to science and especially engineering, because they are directly involved physically and because they discuss how different people and cultures deal with the process of technology," says Program Director Arthur Steinberg, a professor of archaeology at MIT. "That kind of knowledge will become important when they are practicing engineers."

First-year ISP student Issy Goldwasser believes the lessons he learned last fall semester will serve him both as a professional engineer and as a human being. "Americans as a rule don't really know that much about other cultures — let alone how they use technology," he says. "This kind of knowledge is important because it teaches you to view a technological problem from many sides."

Knowledge of other cultures
An often-cited shortcoming in many engineering schools is the lack of attention paid to foreign languages and international studies. In this era of global economics, U.S. corporations can ill afford to be handicapped by a lack of personnel versed in foreign cultures. Even small companies, faced with the uncertain prospect of a unified EEC in 1992 — potentially another Japan — know they must act now to penetrate foreign markets.

Crash courses in foreign languages for executives will not solve the problem. What is needed are undergraduate engineering programs with an interdisciplinary approach to understanding the language, culture and business practices of foreign countries.

One such program, sponsored by the federal Fund for the Improvement of Post-Secondary Education, is currently being implemented at the University of Rhode Island. This five-year program for engineering majors awards two undergraduate degrees — a B.S. in engineering and a B.A. in German. In addition to immersing themselves in German language and culture, students spend their fourth year working in Germany for a German corporation.

Hermann Viets, dean of the College of Engineering at URI, explains the rationale behind the program. "It's very common to have engineers coming here from other countries and being bilingual, having already learned English as a second language," he says. "On the other hand, it's very unusual to have a person educated here who possesses that capability. Our companies are finally recognizing that it is extremely important to have engineers with those kinds of skills going in both directions."

Sophomore Lisa Fagnant, an industrial engineering major and participant in the International Engineering Program, says that she had no qualms about extending her undergraduate stay by one year. "Being an engineer always has and always will mean committing yourself to extra work," she says. "After all, what's the difference whether I graduate when I'm 22 or 23? I've got a whole career ahead of me. The way I look at it is that there will be a big demand for American engineers who are fluent in a foreign language and culture. This is a good way to get the edge on the competition."

But the bottom line remains that engineering education is not likely to change until those changes are sanctioned by U.S. corporations. And despite the rhetoric of business leaders, corporate hiring policies continue to undervalue liberal education — particularly in the case of engineers.

"Assuming it is indeed desirable to add more liberal arts and internationally-flavored courses to engineering curricula, it first needs to be determined if industry will pay for it," Viets says. "It's impossible to even consider adding those kinds of courses without adding time onto the typical undergraduate program. Industry must send a clear message that graduates of enhanced engineering programs will be offered better starting positions with a better chance of advancement. If that happened, you would see changes overnight."

Alan Daly, a freelance writer from Cambridge, Mass., was formerly senior editor at Mass High Tech.
A New Pathway from School to Work

ERNEST A. LYNTON

The United States stands out among all industrialized nations in its emphasis on access to higher education. No other country comes even close to the percentage of high-school graduates who go on—directly or with some delay—to a college or university. About one-half of all such graduates do so. But at the same time, this country has paid little attention to the other half: those who terminate their formal education at the end of secondary school and those who don’t make it even that far.

There was a time when there were plenty of jobs in heavy industry, in mass production, in construction and in transportation that paid good wages for work requiring brawn and manual skills, but which made few demands on the “three Rs.” Even within the categories of white-collar employment there were many jobs young people could fill with no more than a high-school diploma. In many places, that’s also all it took to be a police officer or a fireman, to become a clerical worker or to sell in a store or on the road. These fields as well as a number of others not only provided entry level employment but also job security and something of a career.

However, much of this has changed in recent years. Most employment available to young people with no more than a high school education—such as work in the fast food industry—consists of dead-end, minimum-wage jobs. Employment in manufacturing has decreased, and at the same time modern technology has markedly changed the skills needed even at the entry level on the automated shop floor and in the computerized office. Smart machines need smart workers. The microchip revolution has accelerated and intensified the process that occurs whenever the human role shifts from performing direct manual work to controlling the machines that do the work. It is more difficult to handle the cherry-picker or bulldozer than the pick and shovel, or the PC as opposed to the typewriter. And with the advent of robotics and word processing, and of the increasing use of sophisticated retrieval and manipulation of information even at first-line jobs, not only are there higher demands on “knowing how” but also a growing need for “knowing why.” Almost a century and a half ago, the well-known educator Mark Hopkins spoke of the need for individuals who “combine in one person the hands that do the working and the head that does the thinking.” That need has become central to our modern economy.

Increasingly, a traditional high-school education falls short of providing that combination of skilled hands and a thinking brain. We do not provide opportunities in this kind of dual development for that other half of our young people, those who do not immediately go on to post-secondary education. Of course, we can and should try to encourage a larger percentage to do so. But we are facing a serious dilemma. The young people with the greatest potential for combining manual skills with conceptual understanding are those, from all sectors of society, with a practical, hands-on bent. Many of them are profoundly discouraged by having to continue full-time schooling year after year. They lose all motivation for hard work due to the lack of meaningful outlets for their capabilities.

Holding a part-time job may provide financial rewards and prevent some individuals from dropping out, but as long as their work is totally unrelated to what they learn in school, these young people will not realize their full potential even if they do graduate.
Correlating working and learning

The challenge is to find an alternative pathway from about the 10th grade level of secondary school to college that combines and correlates working and learning in an explicit and stimulating fashion, that takes full advantage of the practical orientation of young people, and, in fact, uses this interest to stimulate them to learn more theoretical concepts and principles. Such a pathway needs to combine employment with opportunities to pursue formal education in a single coordinated program. Once the necessary basic skills have been acquired, the classroom work should be directly related to the kind of work that is being carried out so as to provide a broad understanding of underlying principles and techniques. In combination with a common core of basic skills and general education, the curriculum of such a new pathway should be specific to a generic area of employment, such as financial services, computer technology, health-related fields or the like.

Modern technology has markedly changed the skills needed even at the entry level on the automated shop floor and in the computerized office.

At this time, the approximately 1.8 million trainees in the Dual System are about equally divided between occupations in industry and commerce, and various trades. About 150,000 firms participate in the dual system in industry and commerce, and the training ratio in this sector is seven trainees per 100 employees. By law, responsibility for the supervision and quality assurance of in-plant training in the industrial and commercial programs is vested in the Chambers of Industry and Commerce. They must carry this out by means of a tripartite committee representing employers, unions and the government. The cost of in-plant training is carried mostly by the participating companies, and includes a regular stipend for the participants. They are essentially employees of the firm. Instruction in the vocational schools as well as many coordinating and developmental activities are funded by the federal and state governments.

It is interesting to note that in recent years, a growing proportion of young people graduating from college-preparatory high schools ("gymnasium" or its equivalent) choose to enter the Dual System, especially in white-collar areas such as financial services, rather than to avail themselves of their right to enroll in a university or polytechnic institution. Furthermore, a growing emphasis is being placed on providing individuals who have completed dual-system programs with opportunities to continue their education at the post-secondary level.

Adapting a German system to the U.S.

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ages, and is deeply embedded in the country's social and educational framework. It cannot be transplanted in its entirety into a substantially different culture. But it should be possible to develop, in this country, an alternate pathway from school to work that contains a number of key elements of the Dual System:

- emphasis on active learning through close interweaving of work and education;
- ongoing collaboration between the principal constituencies in designing and overseeing the training program;
- extension of the pathway across the arbitrary boundary between secondary and post-secondary education, providing not only the level of knowhow and know-why needed in the age of "smart machines" but also a good base for further education and continuing upward mobility;
- insistence that participants are employees following education and training on a part-time basis, rather than students with a part-time job;
- a contractual relationship that places explicit responsibilities on both the participants and on their employers.

A new pathway from school to work suitable for the United States can be developed, and the time is ripe to do so.

Increasingly, the United States faces the spectre of a large number of young people permanently unemployed, or employable only at the most menial level because they lack the skills necessary for anything else. At the same time, given the facts of demography, business and industry are facing a crisis of more and more jobs that cannot be filled because there are not enough young people with adequate educations. By any count, exploring an effective new pathway from school to work is better than its calamitous alternative.

Ernest A. Lynton is Commonwealth Professor of the University of Massachusetts at Boston, and Senior Associate at the John W. McCormack Institute of Public Affairs of the University of Massachusetts at Boston.
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Our Changing Workforce: Crisis or Opportunity?

MICHAEL J. BENNETT

Only 15 percent of entrants to the labor force will be native white males by the year 2000. The current percentage is 47 percent.

The numbers of Blacks, Hispanics and Asians in the workforce will double to 29 percent of the workforce in 2000. Two out of every three job entrants will be women, and 61 percent of all women of working age will have jobs by 2000.

Such figures, compiled by the U.S. Bureau of Labor Statistics, show how much America has changed in the past 30 years—and may spell an end to what has been called the American Century. At the very least, the demographics prefigure major changes in the workforce, and, by extension, in the educational system.

For example, the number of Hispanics, now 12.5 percent of the total population, soared 34 percent, from 14.5 million in 1980 to 19.4 million in 1987—a leap of almost five million.

An estimated 600,000 immigrants—legal and illegal and including unprecedented numbers of Asians and Pacific Islanders—are pouring into this country every year. Immigrants, who were 8.9 million or seven percent of a workforce of 115.4 million in 1985, will constitute 21 percent of a workforce expanded by 25 million to 140.4 million in 2000.

But even with all those new workers, worker productivity will have to double annually from 0.7 to 1.5 percent—a rate last achieved in the 1960s—just to keep pace. The Hudson Institute, a 30-year-old conservative think tank that assesses future directions of technology, commented in its study, Workforce 2000: "Throughout the 1970s and 1980s, the United States managed to sustain a rising standard of living by increasing the number of people at work and borrowing from abroad and from the future."

"These props under the nation's economy will reach their limits by the end of the century," the institute warned. "There will be relatively fewer people who will enter the workforce during the 1990s, and the burden of consumer, government and international debt cannot be expanded indefinitely."

The work of the institute and its director of research, the late futurist Herman Kahn (who became famous as the prototype for the character Dr. Strangelove in the movie of the same name) cannot be easily ignored. Kahn's theory that no country could win a nuclear war—the "Mutual Assured Destruction" or "MAD" Theory—laid the theoretical foundation for nuclear arms talks. The institute's demographic predictions for 2000, if acted on, might help avoid an economic catastrophe of similar dimensions.

But people—particularly educators—need to get a fix on where the nation has been before they can understand where it is headed.

America was described a quarter of a century ago, in a phrase popular at the time, as a "White Anglo-Saxon Protestant Nation composed for the most part of people who are none of the above." When Former President John F. Kennedy took office, there was a clearly dominant, prevailing culture with which most Americans identified. The melting pot may have been more of a stewpot, but Kennedy was a shining example of the assimilationist ideal.

The resulting cultural myopia affected even the U.S. Census, the country's most hardheaded source of statistics and reliable guide to trends. Sen. Daniel P. Moynihan, D-N.Y., whose book, Beyond the Melting Pot, first raised many of the social issues that have dominated the last three decades, has pointed out that the U.S. Census contained "antiquated ideas and surprising lacunae" as late as 1960. "Although Brown v. Board of Education had
been decided five years earlier, a table showed enrollments in 'white schools' and 'Black schools,' he wrote. 'And while considerable information was supplied on the distribution of income, there was as yet no measure of poverty per se or of the number of people in it. Data were included for the 'country of birth of foreign white stock,' but none of the ethnic heritage of native-born Americans, and none at all on the Hispanic population.'

Nonwhites will make up 26 percent of the population by 2000, and Spanish is the language of instruction in many schools, public as well as private.

These figures cannot be ignored—and the key to understanding and dealing with them lies in education. Former President Ronald Reagan did take note of the problems the figures represent in a little-noted passage from his 1987 State of the Union Address: 'The quest for excellence into the 21st century begins in the schoolroom, but we must go next to the workplace. More than 20 million new jobs will be created before the next century unfolds and by then our economy should be able to provide a job for everyone who wants to work. We must enable our workers to adapt to the rapidly changing nature of the workplace.'

That change is documented by figures showing that 58 percent of all current jobs now require a high-school education or less. By contrast, 65.5 percent of all new jobs by 2000 will require some postsecondary training.

The overarching question is whether the United States will lurch aimlessly or plunge deliberately into the "International Century," in which no one country—or economy—will dominate. Some possible answers are beginning to emerge from Washington think tanks like the Hudson Institute. And politicians are sensing opportunities for turning the problems into votes.

'There is a new shadow on the economic horizon," said Sen. Edward M. Kennedy, chairman of the Labor and Human Resources Committee, in a lecture delivered at Yale University in March. 'For the first time since World War II, America is about to enter a period of prolonged worker shortage. The Labor Department projects a major gap in the year 2000 between the numbers in the workforce and the amount of work to be done. The unemployment rate could be as low as one percent—a statistical if not a practical possibility.

'The only way to close that gap is to widen the doors of opportunity. We have no choice but to abolish poverty—or we won't have enough workers to run the economy. In short, we can no longer afford the cycle of welfare dependency.'

To Kennedy, that's not only desirable social policy, but good politics, the kind Democrats need if they are to take away the Presidency from George Bush in 1992. 'Whether we agreed with him or not," Kennedy said in the lecture, 'Ronald Reagan was a successful candidate and a successful President, above all else because he stood for a set of ideas. He stated them in 1980—and it turned out he meant them—and he wrote most of them, not only into public law, but into the national consciousness.'

Kennedy believes he has another set of ideas, equally compelling because they can and will work, as a third alternative to 'throwing money at problems and throwing up our hands in helpless indifference.' All revolve around the workforce: raising the minimum wage enough to be competitive with welfare; publicly paid health insurance only for the unemployed, with all private employers obligated to cover their workers; televised training programs in science and mathematics; early education for every pre-school child in the United States; a public service corps, etc.

Just as people won't go to a 7-11 that serves coffee "old and cold," Kennedy said, 'people don't want to spend a dime for another cold cup of bad federal brew... It is time to start solving problems, as distinct from merely spending money on them.'

Education would be an essential element in this 'public enterprise," especially for minority members. For although the percentage of nonwhites in the workforce will double over the next 10 years, that will not be enough to keep pace with the need. As the Hudson Institute warns: 'While this large share of a slowly growing workforce might be expected to improve the opportunities for these workers, the concentration of Blacks in centrally declining cities and slowly growing (unskilled) occupations makes this sanguine outlook doubtful.'

According to Equity and Pluralism: Full Participation of Blacks and Hispanics in New England Higher Education, a recent report by the New England Board of Higher Education, the nation 'has not met the 1960s imperative of eradicating racism; we are not meeting the 1980s imperative of full economic opportunity; and we will pay.' The issue is no longer one of charity, but of equity and an enlarged sense of enlightened self interest. Our companies cannot face competitors in Tokyo and Seoul if our colleges turn their backs on Blacks in New Haven and Boston.'

Sen. Claiborne Pell, D.R.I., has anticipated this problem with a 'prep-voc bill" to amend or replace the Vocational Education Act, which is up for reauthorization this year. The bill would provide $100 million in initial funds for extended academic education and vocational training for two years beyond high school at a community college.

'The 20 fastest-growing occupations in the country call for education beyond high school but less
than a college degree," says Ann Young, an aide to Sen. Pell. "These are the digital jobs in the service sector, not those that call for hand labor."

Pell's bill is patterned on a program started by Dale Parnell, president of the American Association of Community and Junior Colleges, at the Community College of Rhode Island. "The technological literacy of our students," Fell said, "will increase the ability of these students to obtain meaningful employment in high growth industries [as] part of the economic prosperity and growth of the future rather than being limited to low-paying jobs or jobs in dying industries."

Other industrialized nations, such as West Germany, have traditionally embraced similar vocational education and training programs.

The need for such training will be particularly acute in the Northeast, where total population is expected to drop off six percentage points by 2000—and the available labor pool will be drastically reduced. By contrast, the West is expected to grow by 45 percent and the South by 31 percent. The Midwest should remain about the same.

Whether the Kennedy-Pell strategy will prevail depends, first of all, on the support of their colleagues in the Democratic party. That may call for a bitter struggle with elements of the party now dominated by Jesse Jackson, as Kennedy has apparently shifted to a more centrist position. That challenge has already been articulated in the only prepared paper delivered at the Democratic Leadership Council's annual meeting in Philadelphia in March.

"The changes we need cannot come from policy commissions or mid-term conventions or party functionaries," wrote William Galston of the University of Maryland, Walter Mondale's issues director. "They can only come from leaders—candidates for the Presidential nomination—with the courage to challenge entrenched orthodoxies.... This will mean debate, controversy, even conflict... But that is far better than a barren and spurious unity.... We Democrats must at long last set aside the politics of evasion..... it is the only way to rebuild a Presidential majority for our party."

In charting that course, Sen. Kennedy has a strong precedent, already drawn upon in the Yale speech, in the words of his brother, John, spoken on the Yale campus almost three decades ago.

"As every past generation has had to disenthrall itself from an inheritance of truisms and stereotypes, so in our own time we must move on from the reassuring repetition of stale phrases on a new, difficult, but essential confrontation with reality." 

Michael J. Bennett, Washington correspondent for Connection, attended the 1972 Democratic convention as a Congressional Fellow of the American Political Science Association.
AT&T Sponsors NEBHE Legislative Briefings on International Awareness

ELLIN ANDERSON

America can't beat its competitors if it cannot find them.

That is the message the New England Board of Higher Education is bringing to policymakers in the region's six states, through a series of briefings partially underwritten by AT&T. The briefings, which have been given to date in Maine, Connecticut and Rhode Island, are part of NEBHE's Regional Project on the Global Economy and Higher Education in New England.

NEBHE has taken the position that in a global economy, competitiveness depends upon international awareness—a dimension that most citizens of the region and nation lack. Studies conducted by a variety of research organizations have revealed that too many Americans of all ages are geographically illiterate, ignorant of other cultures, and lack proficiency in languages other than their own, as compared to their foreign peers.

For example, a National Geographic Society survey measuring geographic literacy among adults of the United States and eight other Western nations revealed that young Americans (ages 18 to 24) knew the least about geography of any age group in any nation surveyed. One half of the American adults of all age groups could not identify South Africa on a world map; one half could not identify even one South American country; and one in seven could not locate the United States.

At the NEBHE briefing held in Rhode Island, Senate Majority Leader David R. Carlin, a professor of sociology at the Community College of Rhode Island, described his own experiences as an instructor: "My students are not bad kids, they're not even dumb kids, but they are remarkably uninformed. It really is astonishing, the kind of basic knowledge that they don't have... There is something in our culture right now against placing an adequate value on things of the intellect in general, and awareness of the larger world in particular."

NEBHE's four-part project

According to NEBHE Senior Fellow Melvin H. Bernstein, it is up to higher education to promote international awareness, in a concerted regional effort. "Changes brought by the global economy compel higher education to adapt their curricula, research and training of students so that graduates will be able to handle the multifaceted dimensions of the global economy," he says. "We'd like to see a regional approach to the collection and centralization of data and information bearing on the international economy—a pooling of resources in New England. The information is there, but it's not being coordinated."

NEBHE's Regional Project on the Global Economy has four components: the six legislative briefings; an analysis of the internationalization of New England's Economy; a regional survey entitled "The Future of New England," which reviewed attitudes of corporate, government and university leaders on what higher education should do to prepare the region for competing in a global economy; and a study of international activity on more than 40 campuses.

The briefings are based on two years of NEBHE staff research on the roles New England's institutions of higher education can be expected to play in the international economy. In the course of this research, NEBHE
has identified four key issues that must be addressed if the region is to succeed in the global economy:

- **International Awareness.** Opportunities for creating international awareness among New England college students, through foreign-language study, study-abroad programs and overseas internships, are not as readily available as they should be if the economy is to maintain economic competitiveness. While the international dimension has been integrated into most business-school curricula, international studies in the liberal arts usually lack an economic perspective.

- **Business-Higher Education Coordination.** Leaders of New England businesses increasingly focus on international issues. But their approaches and goals are not coordinated with those of higher education, resulting in a duplication of efforts. Faculty, students and businesses are being deprived of the benefits they could offer one another in terms of internships, continuing education and data sharing.

- **Timely Data.** Throughout America, state and regional policymaking is hampered by a lack of timely U.S. data on state-by-state trade, as well as comparative information on educational achievement and other factors related to competitiveness. No central sources exist for students, teachers or corporate and government leaders to turn to for an overview.

- **Technology Transfer.** New England’s research is a major competitive asset for the nation. Transferring knowledge generated by research to the world marketplace will be critical to the nation’s trade future, and to the careers of many of today’s undergraduates. Yet neither students nor businesses and policymakers have a coordinated source of information regarding the application of new knowledge across cultures.

Maine most progressive in international trade

At the briefings, three of which have been given to date, NEBHE presented recommendations that included creating or expanding dual-degree programs to allow business and engineering students to study foreign languages and participate in relevant study-abroad programs; offering intensive summer programs in foreign languages and international affairs for high-school students and teachers; and reinstating language requirements for entering freshmen and graduating seniors.

Maine, while the most progressive New England state in the area of initiatives designed to enhance international trade, must do more to coordinate efforts by campuses with those of state agencies and economic development groups, noted NEBHE President John C. Hoy at the briefing held in Augusta. Hoy urged the lawmakers to work with businesses and higher-education institutions to create a statewide technology transfer council, whose purpose would be to coordinate the development activities of research parks and help provide seed money or venture capital for new companies.

Bernstein pointed out that the United States-Canada Free Trade Agreement has the potential to bring significant benefits to Maine businesses and workers. "Maine is geographically positioned to take advantage of expanded trade as long as industry in the state is fully educated about the specific benefits they stand to gain from strategically expanding their exports," he said.

NEBHE Director of Research Services Judy Beachler pointed out that while export-related employment accounted for 21,000 Maine jobs in 1986, exporting is limited by a lack of knowledge of foreign cultures and markets. "A lack of international awareness is one of the most significant hurdles economic development leaders face in encouraging export trade among New England businesses," she said.

House Chair Nathaniel J. Crowley, a vice chairman of NEBHE, commented on the legislators' "very positive reaction" to the briefing. "We were given new information that will definitely help the state of Maine as we go forward in expanding our international trade endeavors," he said.

Connecticut's burden of leadership

In Hartford, NEBHE officials told Connecticut legislators that their state's future competitiveness in international markets depends on improvements in basic education and international awareness, as well as accelerated technology transfer between university research centers and businesses.

According to U.S. Commerce Department data for 1986, Connecticut ranked first among all states in export-related employment as a percentage of total civilian employment (6.5 percent), as it did in both 1984 and 1980. The state has also been lauded for its pioneering programs in economic development, international trade and state initiatives for technology transfer.

"Connecticut's problem is the burden of national leadership," said NEBHE President Hoy. "The state has the tough challenge of not becoming complacent about its leadership role in facing international competition."

"Because a disproportionate share of exports by New England companies are destined for Canada and Europe, the U.S.-Canada Free Trade Agreement and planned 1992 integration of the economies of Western Europe present special challenges and opportunities to New England," said Rep. William Gines, a vice chairman of NEBHE. "Connecticut students should also be preparing to understand the planned integration of Common Market countries in 1992."

Sen. Kevin B. Sullivan, co-chairman of the Legislature's Education Committee, commented: "There has been success in Connecticut but we have to be cognizant of the fact that we have an economy that is integrally connected to the global economy."

Rhode Islanders told: encourage start-ups

"Rhode Island has been progressive in forging partnerships between business and higher education, but more must be done to support start-up companies," Hoy told legislators in Providence.

Sen. Carlin noted that Rhode Island ranks last among the New England states in adult literacy, also pointing out that high-school graduation rates in the state have declined during the 1980s. "If we are to be competitive, our workforce must have basic math and computer skills and scientific knowledge at least equal to that of our major competitors," he said. Rhode Island's export-related employment in 1986 was 15 percent lower than the 1980 level.
Rep. Ray Fogerty warned: "As many U.S. markets mature, international markets are beginning to grow. Our industries must adapt to this change if the regional economy is to continue expanding. Clearly, Rhode Island must expand its initiatives to enhance export trade."

NEBHE also urged Rhode Island businesses and the state to fund overseas business internship programs in regions other than Western Europe. According to the Institute of International Education's 1986-87 Open Doors survey, only 5.4 percent of U.S. students studying abroad today are studying in Asia.

NEBHE plans to conduct legislative briefings in Massachusetts, New Hampshire and Vermont during the spring and summer.

AT&T is in step with global economy

AT&T's willingness to support NEBHE's project reflects the company's status on the forefront of the international economy, as well as its strong record of support for higher education.

"In many respects," Hoy says, "AT&T exemplifies the knowledge-based, globally oriented frontier of worldwide telecommunications that will shape international economic, political and cultural affairs as we approach the 21st century."

At the Connecticut briefing, David Bogue, AT&T branch manager for Connecticut, commented: "Like other employers, we have keen interest in ensuring that our colleges and universities produce graduates who enter the workforce with the skills necessary to compete internationally. Competing globally is no longer an option; it's a necessity."

NEBHE's project has also received support from the Bank of Boston, the Bank of New England, the Boston Company, the Boston Globe, the Henley Group and Peat Marwick Main & Co.

Recently the National Governors' Association called on state governments to expand and improve international education programs. The association's report, "America in Transition: The International Frontier," released at its winter meeting in Washington, D.C., recommends that states invest in international education, provide students with the opportunity to learn foreign languages at an earlier age, and introduce foreign language and geopgraphy requirements into core curricula.

The governors urged colleges and universities to include an international component in all majors, and to require additional study of foreign languages and international initiatives as admissions and graduation requirements.

Higher education today faces many pressing problems: a funding squeeze in several New England states, rising college costs, minority access and the unpreparedness of high-school students, to name a few. Why should the international awareness issue command the attention of state policymakers?

One answer is that the ability to compete in international markets bears directly on American economic success and quality of life — factors that will determine whether the region and nation will have the resources and knowledge to address higher education's other dilemmas. □

Ellin Anderson is associate editor of Connection.

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Are Human Resource Specialists “Internationally Aware”? 

Corporate CEOs and business leaders have stated in many a public forum that they want to see more graduates with multilingual skills and knowledge of foreign cultures. But have those views filtered down to the individuals who actually do the hiring? To find out, Connection contacted human resource specialists and recruiters at several New England corporations.

Nick Figurelli, director of corporate management and professional development at Fulf Worldwide Systems (formerly Honeywell-Bull), in Billerica, Mass., said that he is not trying to recruit "internationally literate" or multilingual individuals. However, with a unified European Economic Community looming on the horizon, the multinational computer manufacturer will soon be looking for people with those kinds of skills.

"Multilingual individuals will be a lot more valuable to us in the near future," he said. "At this time, we're only interested in a few management-level people who have that kind of training. But soon we'll be recruiting engineers who can interface with our foreign partners, particularly in France and Japan."

David Nikka, director of human resources at Integrated Genetics, a Framingham-based biotechnology company with partners in Japan and Western Europe, said: "I do not go out looking for multilingual people, but if they do come along I consider it a real plus, especially if they have business development or management training.

"We do a lot of business in Japan and Europe," he continued. "Somebody who's spent a year over there studying the language and the patents laws would be very valuable to us. We actually have one individual working in our payroll department, of all places, who can speak five or six languages and is knowledgeable about foreign tax codes. This is useful knowledge because we hire a lot of foreign engineers and have to know how to pay them."

Nancy Bubeck, director of personnel at Genzyme Corp., a Boston-based biotechnology company, is interested in speaking with graduates of engineering and marketing programs who can speak French or German—provided they have some knowledge of the biotechnology industry.

"If we open another manufacturing site overseas, we'll definitely be looking for people who can cross cultural boundaries," she said.

Ann Iacobucci, a recruiter for Bostich Co., an East Greenwich, R.I.-based tool manufacturer, is not inclined to recruit engineers or marketing executives with bilingual skills for domestic positions. George Gomets, the company's vice president of international operations, prefers to staff Bostich's foreign facilities with indigenous people. "The basic business language is English," he said, "and most professionals in foreign countries can speak English. Also, foreign-born professionals are more likely to understand the local business laws regarding taxes, import/export restrictions and so on."

Hewlett-Packard Medical Products Group of Andover, Mass., also prefers to hire indigenous talent to staff its overseas operations. That is not always possible, however, since it's even more difficult to find engineers overseas than it is in the United States. "We provide 150 hours of foreign language instruction to our American-born engineers who are going overseas," said relocation specialist Pat Randall. "Of course, if we could find engineers—and, to a lesser extent, programmers, managers and technical writers—who already have those skills, we would be delighted."
Bob Couto, director of corporate communications at Ferrofluidics Corp., a Nashua, N.H.-based high-tech manufacturing company, is also interested in meeting bilingual professionals, particularly engineers. However, in light of the recent shortage of qualified engineers, the company is more concerned with finding people who have solid technical training and experience.

"It would certainly be a nice option to have," said Couto, "because, in the case of engineers, we're seeing more and more sharing of information between domestic and foreign employees. There are some very interesting techniques which our Japanese and German friends have pioneered and it would be nice to share in the spirit of innovation. Unfortunately, American companies are often driven by quarter-to-quarter performance, and that makes long-term strategizing hard to justify."

Undeniable interest

With 7,200 employees spread out over hundreds of worldwide manufacturing and distribution facilities, the Foxboro Company in Foxboro, Mass. has an undeniable interest in hiring engineers and marketing professionals with a knowledge of foreign languages and cultures. "A second language would not be a qualification, but it's an important asset to have," said human resources specialist John Lilly. "I think there is a compelling need for universities to provide students with those skills. From the vantage point of the gradu-
Survey Finds New England Colleges Lacking in Adult Literacy Training Programs

ADELE W. SPIER and DAVID J. ROSEN

Throughout New England, the need for trained educators to work with individuals who need training in basic skills is staggering. While workplace education programs struggle to find instructors, training programs for those who teach adult literacy and education are available in only 16 of New England's 267 higher-education institutions.

Higher education's meager response to a clear need on the part of the economy and society came to light through a 1988 survey sponsored by the New England Board of Higher Education and the Massachusetts Association for Adult and Continuing Education. The survey was sent to every public and independent higher-education institution in New England.

Responses were received from 189 out of 267 institutions, a 71-percent response rate. According to survey results, adult literacy training programs exist at Harvard University; the University of Massachusetts; Worcester State College; Roxbury Community College; Middlesex Community College; Bristol Community College; and Mt. Wachusett Community College. Endicott College, in Massachusetts; the University of Rhode Island and Salve Regina College, Rhode Island; the University of Connecticut; and Husson College in Maine. At least three institutions that offer programs did not respond to the survey: Boston University, the School for International Training in Brattleboro, VT., and the University of Southern Maine.

Adult literacy is neither an established field nor a priority in most of the region's higher education institutions. Moreover, 57 percent of colleges and universities in New England do not offer information or career development training in adult literacy/basic education. Only 58 institutions provide information, placement services and/or training.

Adult literacy/basic education is not a strong program offering for education majors in New England, with only eight four-year institutions providing it. However, courses in adult literacy/basic education are offered by various departments within the colleges.

At UMass/Boston, for example, courses are provided by three departments: the College of Education, the English Department and the College of Public and Community Service. Harvard offers courses in adult literacy through its Department of Reading and Language, as does the University of Bridgeport through its Department of Educational Leadership.

Attempts to broaden accredited programs to include adult literacy have met with marginal success. Because of a reorganization plan authorized by the Board of Regents, Worcester State College recently lost its ability to confer a master's degree in adult education, and Boston University has eliminated its intergenerational tutor model for students. Although master's degree programs offer credit for training in adult literacy/basic education, there is no master's degree program in adult literacy/basic education in Massachusetts.
Skimping on faculty
The number of full-time faculty devoted to a field of study often indicates its importance to an institution. Only three institutions offer courses or programs for credit with more than one full-time faculty member in the area of adult literacy/basic education: UMass-Amherst, the University of Rhode Island and Harvard University. Five institutions have one or more full-time faculty: UMass-Boston, the University of Rhode Island, Husson College and Harvard University. Even in these institutions, full-time faculty tend to give adult literacy and basic education their attention on a part-time basis, as they usually have additional teaching responsibilities.

But while professional development through credentialing languishes at four-year colleges and universities, career development is flourishing in the community colleges, through non-credit workshops and courses for teachers, administrators and counselors. Community colleges are collaborating with adult-learning centers to provide career development training, primarily for teachers who are currently working or seek to work in the field of adult literacy/basic education.

Opportunity for professional development has often followed federal and state funding initiatives in adult basic education and workplace education. In Massachusetts, where state funding for literacy programs is increasingly tied to economic development through workplace education, the need for trained professionals has grown in response to state-supported workplace education programs. More and more businesses are supporting workplace education programs, creating a market for part-time teachers.

Career development models
In response to a shortage of trained teachers to work in area programs and businesses, noncredit workshops are offered through the Division of Continuing and Community Education at Middlesex Community College in Bedford, Mass. Thanks to a state grant, workplace education programs to provide English-As-A-Second-Language and reading/math improvement skills to employees in area businesses have been given at several company sites. Several businesses are supporting additional programs without state funding. Other workshops in curriculum development have been added, and a successful response has kept them going.

The Adult Literacy Resource Institute in Boston offers free in-service staff training in the form of short courses, workshops, colloquia and “teacher sharing” to teachers, counselors, administrators, volunteers and students. Located at Roxbury Community College’s Center for Community and Workplace Education in downtown Boston, the Institute was created in 1983 through the City of Boston’s Adult Literacy Initiative. It is jointly sponsored by UMass-Boston and Roxbury Community College.

Career Opportunities in Adult Literacy on New England Campuses

The literacy survey found 13 New England institutions with training programs for adult literacy/basic education instructors. They are representative of all institutional types—state colleges, universities, community colleges and private colleges, and offer programs through a variety of departments.

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The Resource Institute provides a wide variety of training opportunities, including two-hour workshops and multi-week short courses. They are attended voluntarily by teachers, who take non-credit courses in basic reading, writing and math instruction, assessment methods and techniques, program development and proposal writing, personal and academic counseling, and budgeting and grant management. The institute also provides free technical assistance on the specific problems issues and needs facing individual directors, teachers, counselors, aides or volunteers.

The handful of existing programs cannot begin to meet the needs of an economy in which, by 1990, three out of four jobs will require additional educational or technical training beyond high school. Clearly, if they are to serve society’s needs, higher education institutions in New England should be doing more in this area. It is to be hoped that a follow-up survey in five years will indicate a greater commitment on the part of higher education to the development and professionalization of adult literacy and basic education.

Adele W. Spier is director of research and planning for the Private Industry Council of Hampden County, Massachusetts. David J. Rosen, ED.D. is director of the Adult Literacy Resource Institute.

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services provided to the patients by pharmacists, as the pharmacist takes over some of the responsibilities previously carried out by the physician. Any place that cares for patients must have a pharmacist as a consultant."

URI's five-year program prepares a student for community and institutional pharmacy practice. The first two years are dedicated to basic sciences, and allow the student to enroll in a number of electives outside the college of pharmacy. The professional program usually begins in the third year, focusing on basic clinical and pharmaceutical disciplines. The fifth year of the program includes an internship, during which students practice their skills in a professional environment.

In 1986, pharmacy schools graduated 5,800 students, down from 8,200 in 1977. Karl Nieforth, dean of the University of Connecticut College of Pharmacy attributes this fluctuation to a federal initiative instated in the early 1970s. In an effort to help boost enrollments in schools of medicine, the government gave incentives to colleges and universities based on the number of students enrolled in their programs.

"As a result of this program, a number of schools doubled their enrollment," comments Dean Nieforth. "This resulted in a regional surplus, and in the late 1970s and early 1980s there appeared to be an oversupply of pharmacists. When high schools see a surplus they tend to steer their students away from these fields."

"Pharmacy is a five-year degree program," Nieforth continues. "For this reason, it takes five years to fill the vacancies in times of shortage. It wasn't until the early-to-mid-1980s that people realized we had a true deficit."

As the shortage became more severe, the firms that relied most heavily on pharmacy graduates—retail chain stores, hospitals and private research institutions—had to work harder at recruiting a smaller pool of students.

"It's a seller's market," states Paul McDermott, presently working at the New England Medical Center. "I was amazed at the large number of positions available and the inflated salaries they were offering."

When Paul graduated from URI's College of Pharmacy in 1988, he chose to work in a hospital, even though the salary was almost $10,000 less than what some of the retail chain stores offered him.

"The clinical teaching hospital offers the opportunity for an excellent on-the-job education. While private industry can draw pharmacists into retail jobs with high salaries, a hospital offers more experience in dealing directly with the patients."

Rick Paris, manager of employment at the New England Medical Center agrees. "What we offer is an exciting program, one that offers professional exposure, an active research environment, an opportunity to practice major academics and a greater focus on the clinical aspects of pharmacy."

Recruiting high-school students
Aside from aggressive recruiting at the college level, the New England Medical Center is taking drastic steps to help prevent a critical shortage of pharmacists. Recently the hospital established a program that sends health-care professionals to area high schools, in an attempt to interest high-school students in a health-professions career.

"We can no longer wait for the professional schools to turn out graduates," insists Paris. "We must get into the high schools and tell the students of the diversity of careers available to them in the health profession."

Consumer Value Stores, one of the largest employers of pharmacists in New England, also has a high-school outreach program. For the past few years they have been sending registered pharmacists into high schools to tell students about the opportunities available in retail pharmacy.

Donna Downarowicz, the CVS Pharmacy Personnel Representative for Rhode Island, has changed her recruiting techniques over the past three years.

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NEBHE Tells Congress: Keep Biotech Production Here At Home

JOANN MOODY

In New England, the stage is set for biotechnology to create new jobs and income, as the computer industry matures and defense contracts level off. Massachusetts, for example, is seeing an explosion of biotech corporations, spun off from medical and academic institutions. These new enterprises are developing a wide variety of products for the marketplace, including skin tissue for burn victims; new psychotropic drugs for neurological disorders; and new fat substitutes, additives and sweeteners for the food industry.

But unless federal and state policymakers see to it that production of biomedical and biotechnical products is financially feasible, New England and the nation will lose critical momentum in these industries.

Officials of the New England Board of Higher Education travelled to Washington, D.C. in March to brief New England’s congressional delegation on the findings and recommendations of NEBHE’s report, Biomedical Research and Technology: Prognosis for International Economic Leadership. The briefing focused on federal policy changes that would serve to benefit biomedical firms, and was sponsored by Sen. Edward M. Kennedy, D-Mass., and Rep. Claudine Schneider, R-R.I.

Also present at the briefing was James M. Howell, senior vice president and chief economist at the Bank of Boston, who led the NEBHE study commission that produced the report. NEBHE President John C. Hoy served as panel moderator.

Congress can do more

James Sherblom, chairman and CEO of the Worcester, Mass. firm Transgenic Sciences, Inc., commented that the high cost of biotech production in the United States must be addressed immediately at the federal, state and local levels. "It is cheaper for my company to produce in Europe than it is in Massachusetts," he said. Sherblom also called on Congress to improve the import protection provided by U.S. patent laws, explaining that there is little protection now against patent infringement from abroad: "If someone here in the U.S. violates my company’s patent, I have the capability of securing a court injunction and blocking their sales until we resolve the matter in court and prove one way or another that they are violating my patent," he said. "But if a company in Holland or Japan violates my patent—even though they are clearly in violation of U.S. law when they import their ‘stolen’ product back into the U.S.—it takes up to two years for me to be able to stop that infringement, and by then I have lost the market."

Rep. Schneider pointed out that Japan’s powerful Ministry of International Trade and Industry has targeted biotechnology for extensive support and financing. She underscored the importance of speeding commercial applications arising from such research, given this challenge.

Sherblom thanked Kennedy for his leadership in gaining passage of the Pharmaceutical Export Amendments (Drug Export Act). Prior to passage of this law, U.S. biomedical and biotechnical firms were forbidden to sell any drug to another country that had approved use of the drug, if the drug had not yet been approved by the U.S. Food and Drug Administration. The recent "Orphan Drug" Act was also cited by Sherblom as effective in supporting the creation of lifesaving pharmaceuticals that do not have a broad market potential.

Support for R&D also at issue

At the briefing, Kennedy warned that if federal and state policymakers fail to strengthen biomedical/biotechnological research and development—through funding from the National Institutes of Health, the National Science Foundation and the Small Business Innovation Research Program, for example,—then the U.S. will lose critical momentum in related industries.

"One can’t read through the NEBHE report and not be mindful of what has happened to weaken the U.S. in terms of the computer and computer-related industries— we really have failed to understand the full import of investment in research and development," Kennedy said.

Dr. Charles Baker, professor of management at Northeastern University and former undersecretary of the U.S. Department of Health and Human Services, told members of Congress that cutting back on federal Medicare funding of New England’s academic health centers should be done cautiously and with appreciation for the centers' role in the regional and national economies. He reminded them that academic medical centers provide the research that generates new technologies and products, besides providing medical education and patient care.

The high cost of biotech production in the United States must be addressed immediately at the federal, state and local levels.

FDA Commissioner Frank Young complimented the NEBHE Commission for its foresight in studying the subject of biomedical R&D. He plans to advise other regions of the United States to perform similar studies. Young made the final point of the briefing: "Technology transfer in the U.S. suffers because of the insufficient number of post-doctoral training and research grants that can be offered to U.S. students. Meanwhile, researchers from abroad return home, taking their expertise and contacts with them. Providing additional post-doctoral positions for U.S. students will require the concerted efforts of government, business, and academia."

JoAnn Moody is associate vice president of NEBHE.
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New Haven’s Science Park
The park’s founding president reflects on a successful business incubator and the partnerships that made it work

HENRY CHAUNCY JR.

Ours is a culture that applauds the risk-taking entrepreneur, the individual who rises from obscurity to establish and grow a business. They have long been America’s cultural heroes. At the beginning of the industrial era, entrepreneurs were typified by the immigrant founders of railroads and steel mills. Today, they are the youthful founders of computer and biotechnology companies.

Romanticism aside, entrepreneurship has proven its societal value. Our newer and smaller businesses meet the growing demand for jobs in the wake of declining employment in our established corporations and industries. In many ways, it is the entrepreneur who preserves the level of international competitiveness that the United States now possesses.

Science Park is now an entrepreneurial community where ideas are generated, shaped and traded.

My interest in entrepreneurship and its value to economic development began about a decade ago. It was motivated by my concern over the economic well-being of my city: New Haven, Conn. At that time, plant closings in manufacturing were rampant. Unemployment and inflation were rising. Once an internationally acclaimed industrial center, this city had become known for its poverty and crime.

Planning economic success

Eight years ago representatives of the public sector, private corporations and Yale University joined to develop a scheme to allow New Haven to cultivate its own economic success. This group, of which I was a part, sought to create an environment that was hospitable for the entrepreneur. As a result of those discussions, New Haven’s Science Park was created.

Science Park has a fourfold objective as a business incubator. Its planners sought, first of all, to cost-efficiently provide basic services to the entrepreneur. These included low-priced office rentals, managerial assistance and secretarial and other office support services for Science Park’s tenants.

Secondly, we worked together a variety of outside services, working closely with the public authorities, who provided financial assistance. We began organizing a network of private venture capitalists as a source of risk capital for smaller start-up companies. And we established relationships with attorneys, accountants and consultants, who offered their specialized services to the emerging firms.

Third, we sought to motivate Yale University to cooperate with Science Park’s tenants. As a technology-based business incubator, Science Park has found Yale University to be an invaluable resource for advanced research equipment and libraries, the exchange of ideas, and informal ties between emerging businesses and the academic community.

Graduate students are available to help work out the technical difficulties in transforming an idea into a quality commercial product. Individual ties between faculty members and entrepreneurs help spark idea generation and product development. Through these interactions, individuals can devise practical applications for the scientific advances that otherwise might have sat on the researcher’s shelf for years to come.

Fourth, we sought to create an environment for entrepreneurs that would facilitate cooperative work among the park’s tenants. Entrepreneurs find strength in numbers. Science Park is now an entrepreneurial community where ideas are generated, shaped, traded and developed, coming to fruition as joint ventures, mergers and informal working agreements. In such an atmosphere, even a one-person firm has many minds and resources at his or her fingertips.

Over 100 small businesses now call Science Park home. While some have closed their doors, others have been bought by major corporations. Not all Science Park entrepreneurs are New-Haven bred: This business incubator now attracts tenants from throughout the United States and overseas.

Research units of established corporations are also welcome at Science Park. They serve as important role models for the entrepreneur, working side by side with him or her so that each can contribute to the other. The established firm offers an image of accomplishment and mature tech-
niques of management, while the entrepreneur demonstrates creativity and new ideas.

In total, Science Park’s mission was to revitalize a major part of the city’s core that had deteriorated and failed. It is true that this core might have revitalized itself over time, through gradual and unplanned development. But we believed that it was better not to leave such important developments simply to chance. The success of Silicon Valley, Route 128 and other emerging technology centers proves that human intervention in this process can better assure revitalization.

Improving workforce quality

Sadly, the unemployed and the underemployed in New Haven’s workforce lack many of the basic skills needed to fill technology-based jobs. While machinists, computer operators and others with more advanced skills are present in adequate numbers, many of the available workers lack basic literacy.

This basic-skills problem was anticipated when Science Park was established. The park’s second major mission is to help the people of New Haven achieve the skill levels necessary to meet the needs of emerging businesses. The park works closely with state, federal and local agencies to develop job training programs, and houses a number of these programs.

We now believe that Science Park’s entrepreneurs will help lead the economic transformation of New Haven. The city now possesses people who are hungry to innovate, achieve and succeed. Eventually, this once-desperate city could rise in the ranks to be a premier urban economy.

I must emphasize that this approach is not a prescription for success in every urban area. New Haven, Boston, Silicon Valley, London and other revitalized cities have critical advantages: most notably their proximity to major research institutions. Many metropolitan areas do not have similar advantages. Instead, they have long depended on the presence of manufacturing plants tied to large corporations, and have focused on supporting these plants. Their economies have not diversified, and they have only a limited ability to develop an exciting entrepreneurial climate that offers prospects for future growth. These cities depend upon the retention and relocation of manufacturers, and some will die as these corporations choose to close or move their plants.

Critical for cities in obtaining the employment and tax-base benefits that accompany production is the availability of skilled human resources: the lab technician, the computer operator, the quality-control expert. A U.S. Congressional study has revealed that high-tech companies make human capital a top priority in determining where they will establish manufacturing operations. Presumably, these corporations will abandon or shun any area that lacks this resource.

Individual ties between faculty members and entrepreneurs help spark idea generation and product development.

A successful urban area should recognize that its public education system is a critical element in maintaining a competitive economy. It is my belief that any political entity has an obligation to assure that its citizens receive the basic skills needed to lead productive lives in our increasingly complex society. There was a time when this obligation ended with providing secondary education, and making post-secondary education available to those who desired it. But the parameters of this obligation need to be widened.

In particular, our public education system needs to provide people with the lifelong education they will need to maintain marketability. I should emphasize that education must be viewed not only as a moral or social obligation, but also as an economic imperative.

Henry (“Sam”) Chauncey, Jr., founding president of Science Park Development Corp. and former secretary of Yale University, is now president and CEO of Gaylord Hospital in Wallingford, Conn. The author is grateful to Robert Leighton, at the time of writing a student at Yale’s School of Organization and Management, for his assistance in the preparation of this article.

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"TAPPING"
Telecommunications Potential

BOB HIRD

An unusual pilot project at the University of Southern Maine is drawing upon the resources of a large corporation to help small Maine businesses make the most of telecommunications.

Administered by USM's Small Business Development Center, the Telecommunications Assistance Program, or "TAP," benefits from the expertise of an executive loaned by the New England Telephone Co.: Dan Breton, an experienced manager. Breton, who joined SBDC in November, will help promote awareness of the vital role telecommunications play in the functioning of small businesses (defined as companies having fewer than 500 employees). He will also provide one-on-one counseling to individual firms and assist them in finding the right telecommunications systems for their particular needs.

Once a novelty, or the province of big business alone, the use of computers is now commonplace among firms of all sizes. The accessibility of information telecommunications provide has broken down the regional and national boundaries that once defined our markets. In order to succeed, businesses must be able to move and manage information with a full understanding of communications technology.

USM's Small Business Development Center was established in 1977 by the U.S. Small Business Administration. A component of the university's School of Business, Economics and Management, its purpose is to strengthen Maine's economy by providing management and technical assistance, including counseling, training and seminars.

SBDC is located at the state university's Portland campus, and also operates eight "subcenters" around the state. During 1988 alone, the centers offered counseling and other assistance to approximately 2,400 businesses throughout Maine. This government/business/education partnership has already captured the attention of similar groups in other states, who see TAP as a model with exciting potential.

To succeed, businesses must be able to move and manage information with a full understanding of communications technology.

Small business = big business
Small business is indeed big business in Maine: Ninety-nine percent of the state's commercial enterprise is made up of small businesses. Recognizing this, an Economic Development Strategy Task Force established by Gov. John R. McKernan in 1987 officially identified the small-business community as a primary component of a healthy state economy. The creation of TAP reflects a growing awareness in Maine of the importance of small businesses to the state's economy, and the critical role telecommunications plays in their success or failure.

The Economic Development Strategy Task Force and the Maine Department of Community and Economic Development recommended that a number of new and expanded initiatives be used to assist small businesses. Among their recommendations was heightening technical assistance in a variety of areas, including telecommunications. Along with the Department of Community and Economic Development and other groups, SBDC was asked to assist in designing and implementing a program to bring technical telecommunications assistance to small businesses.

SBDC believes that there are two reasons why Maine's small business community is not taking full advantage of current telecommunications technology. First, small businesses are simply unaware of the competitive edge effective telecommunications offer; secondly, they lack the impartial, accurate information needed to determine which applications and specific systems are best for them.

TAP will begin by researching and assessing the current level of telecommunications awareness among small businesses. A survey of telecommunications vendors and customers will be used to provide a general overview of the market from the perspective of the vendor and the smaller customer. The center will then conduct training programs, seminars and conferences designed to address the telecommunications issues facing small businesses, and will provide them with workable solutions.

The media and direct marketing will also be used to promote awareness, and a speakers bureau will be established to make qualified telecommunications speakers available to various organizations. Finally, trained SBDC counselors will screen clients and evaluate their current and potential telecommunications capabilities, adding a new dimension to the center's existing counseling services. Through these efforts, the center hopes to reach over 600 clients -- a big step in helping Maine's small businesses remain competitive.

Bob Hird is director of the Small Business Development Center at the University of Southern Maine.
New England is the Place to Study Law

Varied programs and settings offer something for everyone

New England has 13 ABA-approved law schools, located in each of the region’s six states except Rhode Island. Offering a variety of programs, they are an important intellectual resource for both the region and nation, and provide New England’s legal profession with a source of skilled graduates, vital information resources and continuing legal education. Because of the region’s wealth of institutions, natives of New England do not need to travel to other parts of the United States to study law. Many graduates remain here, adding their professional skills to the workforce.

In 1986, the law schools enrolled 10,702 first degree students and granted 3,196 J.D. or LL.B. degrees. The five schools with graduate programs, Boston University Law School, the University of Bridgeport School of Law, Harvard Law School, Vermont Law School and Yale Law School, granted 320 master’s degrees and 17 doctorates that year.

About 40 percent of New England’s law students attend school in their state of residence; 55 percent are from the region. While graduates fill 78.6 percent of all new legal jobs in the region, the law schools are able to export almost 45 percent to work in other U.S. regions or abroad.


Among college and university presidents, Derek C. Bok of Harvard (Harvard Law School), James O. Freedman of Dartmouth (Yale Law School), legal scholar Benno Schmidt of Yale (Yale Law School) and William T. O’Hara of Bryant College (Georgetown University Law Center) are only a few of those who are law-school graduates. It should surprise no one that large numbers of New Englanders each year opt for a legal education. Those who do not intend to practice law may apply the knowledge and analytical skills they have gained to many other areas of endeavor.

Assessing his school’s contributions to the region, Dean Guido Calabresi remarks: “Yale Law School graduates and faculty members have been presidents of the United States and foreign countries, justices and chief justices of the Supreme Court here and abroad, leaders in legal education and significant public figures in any number of fields.” They have included former U.S. Sen. Paul Tsongas; Cyrus Vance, secretary of state in the Carter Administration; Connecticut Chief Justice Ellen Peters, as well as “the heads of any number of major corporations,” Calabresi continues. “And this does not begin to mention leaders of the bar.”

The Orville H. Schell, Jr. Center for International Human Rights at Yale Law School is a recently created interdisciplinary program promoting human rights activities throughout the world. The center hosts symposia and an array of other activities and services for students, faculty and scholars interested in human rights. The Center for Studies in Law, Economics and Public Policy was designed to facilitate research by law and economics scholars at Yale. The center comprises three programs: the Program in Civil Liability, the Program in Law and Organization and the Program in Antitrust Policy. Student-Funded Fellowships were created by law students for students who choose summer in-
ternships in the public interest sector. The work of Yale's students and faculty in helping the homeless has received national attention, and serves as a model for programs at other law schools.

Alexis de Tocqueville observed that "the aristocracy of America occupies the judicial bench and bar."

Harvard Law School was established in 1817. During academic year 1988-89, Harvard enrolled 1,786 students from around the world; tuition was $12,300. Clinical legal education (typically, a credit-bearing, supervised course in which students work directly with clients and courts—the modern counterpart of the apprenticeship system that once trained lawyers) appeared at Harvard in the 1960s. Today, in the process of educating students, the New England law school's clinical programs serve an estimated 7,400 clients annually, who could not otherwise afford legal services, at a market value of about $19 million. Harvard, for example, runs Legal Services Centers for Jamaica Plain and Cambridge/Somerville.

Harvard boasts the world's largest and most complete academic law library, with more than 1,400,000 volumes. Special programs at Harvard include an East Asian Legal Studies Program; an International Tax Program; a Program on International Financial Systems; a Program on Islamic Legal Studies; a Harvard Medical Practice Study Group; and a Human Rights Program. The most popular dual-degree programs Harvard offers are a four-year program with the Harvard Business School, resulting in a JD/MBA degree; and a course of study at the Law School and Harvard's Kennedy School of Government leading to either a JD and Master of Public Policy or a JD and Master of Public Administration degree. The school has approximately 30,000 living alumni/alumnae. Robert C. Clark will succeed present Harvard Law School Dean James Vorenberg in July.

Boston: a culturally rich legal center

Four of New England's law schools are located in the city of Boston. There are many excellent opportunities through which law students in Boston may observe the workings of the legal profession. Boston is the site of the federal District Court for Massachusetts, a federal Bankruptcy Court and one of the nation's Circuit Courts of Appeal, as well as branches of the state District and Superior Courts, the Massachusetts Appeals Court and the Supreme Judicial Court.

"High-tech development upon a culturally rich framework makes Boston a unique cultural and educational haven," the Suffolk University Law School catalogue states.

"From public defender programs to consumer protection bureaus, the student desiring to do so can cultivate skill and knowledge while contributing to the process of a healthy metropolis." Established in 1906, Suffolk is located on Boston's historic Beacon Hill, near the Massachusetts State House. Both day (enrollment: 938 as of October 1988) and evening (enrollment: 721) programs are available; 1988-89 tuition for these programs was $9,200 and $6,900, respectively. A 10-week summer program is open to students who have completed one year at an ABA-accredited law school.

The school's Center for Continuing Professional Development, a continuing education center for the practicing lawyer, reflects Suffolk's belief that legal education is a lifelong process. Suffolk has one of the largest bodies of living law graduates in the nation, with more than 11,000 men and women in every aspect of the legal profession, the judiciary, government and governmental service.

New England School of Law, located in Boston's Back Bay, was founded in 1908 as the nation's first and only law school for women, and remained a women's school for 30 years. NESL offers three different programs of study geared to its varied student body: a three-year,
full-time Day Division Program (1988-89 tuition: $7,700); a four-year Evening Division Program for those who choose to work on a full or part-time basis ($5,400); and a Special Part-Time Program in which day and evening classes are scheduled according to the requirements of the individual.

During any given year, about 500 students are enrolled in the school’s Day Division, and 400 in the Evening Division. Student publications at NESL are the New England Law Review and the nationally recognized New England Journal on Criminal and Civil Confinement. A forum for ideas on correctional law, juvenile confinement and civil commitment, this publication was founded in 1973 as the New England Journal of Prison Law, the first publication of its kind in the nation.

Law-school graduates who do not intend to practice law may apply the skills they have gained to many other areas of endeavor.

In April, Professor and Acting Dean John F. O’Brien was appointed dean. An authority on the tax system, he is the first alumnus appointed dean in the school’s history, having arrived in 1985 after serving as senior attorney in the U.S. Treasury Department’s Office of Chief Counsel.

Northeastern University School of Law was operated as a night school from its founding in 1898 until 1938, when daytime classes were added. It closed in 1955, to reopen in 1968 as a full-time day school. Northeastern is noted for its program in cooperative education, which extends to the law school. The law school’s three-year cooperative legal education program is unique in the nation, and guarantees that each graduate will have one year of legal experience before entering the practice of law. Students work in every type of public and private-sector legal setting, with over 500 participating employers throughout the United States.

Tuition at Northeastern University School of Law for academic year 1988-89 was $11,745 for first-year students and $9,760 for upper-class students. In 1988-89, the school enrolled 485 full-time students.

According to Dean Daniel J. Givelber: "Students contributed approximately 14,510 hours to the Boston community alone during 1988, through such organizations as Greater Boston Legal Services, Boston Housing Court, Boston Public Schools, the Committee for Public Counsel Services and the Volunteer Lawyers Project... An average of 75 percent of each graduating class remain in New England to practice law, with a significant number choosing to work in the public interest and in government." The Fund for the Public Interest provides a loan-repayment program to offset the impact of debt on students who choose to work in public service.

Boston University School of Law is located in the center of the university campus, on the banks of the Charles River. It has been in uninterrupted session since 1872. Tuition for the past academic year was $12,800.

B.U.'s law school has an unusually large number of law publications. In addition to the Boston University Law Review, there are the American Journal of Law and Medicine, the Annual Review of Banking Law, the Boston University International Law Journal, the Boston University Journal of Tax Law, the Probate Law Journal and Commentaries.

One advantage of the school's relatively large size (1,280 students for academic year 1988-89, enrolled on a full-time basis only) is its extensive and varied curriculum; the constituent graduate schools of B.U. provide students with an unusually rich set of academic offerings. The school has established several centers to conduct specialized research and educational programs in certain areas of the law. These include the Center for Law and Technology, the Morin Banking Law Center, the Norman Neal Pike In-
stitute for the Handicapped, the Center for Law and Medicine, the Feder Center for Estate Planning and the Institute of Jewish Law.

**Boston College Law School** in Newton, Mass., founded in 1929, is the only New England law school with a Catholic affiliation. The school’s Jesuit philosophy inspires curricular teaching of ethics, and college literature cites “the Jesuit tradition of intellectual excellence, spiritual humanism and commitment to social service.” Founder and first regent of the law school, the Rev. John B. Creeden, S.J., saw this tradition as being “essential to training legal professionals who will practice with integrity and self-respect.” The school enrolled 796 in 1988-89, and tuition was $11,460.

Like all New England law schools, Boston College Law School makes clinical experience available to interested students. The Chinatown Project, for example, provides civil legal services to Boston’s Asian community. Other programs include the Urban Legal Laboratory, an “externship” program with placements in the greater Boston area, in private firms, government agencies, public-interest organizations and with judges; the student-run Boston College Legal Assistance Bureau; and the Attorney General Law Clinic, which provides placement in the Massachusetts Attorney General’s office.

**Western Mass. and Connecticut**

Western New England College of Springfield, Mass. was founded in 1917 as the western-Massachusetts branch of Northeastern University. A part-time law program was instituted two years later. In 1973, **Western New England School of Law** was established as a full-time program. The school enrolled 516 students in its three-year program during 1988-89, at a tuition of $7,920, and 257 in its evening program, at $5,775. Located in the Pioneer Valley, the school has the advantage of cultural and recreational resources provided by the area’s “Five Colleges”: Amherst, Hampshire, Mount Holyoke, Smith, and the University of Massachusetts. Western New England has the only academic law library in western Massachusetts.

Western New England’s curriculum places particular emphasis on strong writing skills: all upper level students must complete a Qualifying Writing course. The four clinical courses Western New England College offers include a Disability Law Clinic that provides legal services for developmentally disabled and mentally ill clients. The Student Bar Association has won several American Bar Association awards for excellence.

There are also exchange programs with the University of Puerto Rico and the University of Exeter in England.

The following dual degree programs are offered: JD/MSW with the University of Connecticut School of Social Work; JD/MBA with the University of Connecticut School of Business Administration; JD/MA in public policy studies with Trinity College; JD/Master of Library Science with Southern Connecticut State University; and JD/Master of Public Affairs with the University of Connecticut Graduate School. As a state institution, UConn Law School has a special commitment of service to the state and its legal institutions, which in turn provide unique resources.

**The University of Bridgeport School of Law**, a private institution in Bridgeport, Conn., was founded in 1978 when the Wethersfield School of Law merged with the University of Bridgeport. The school enrolled 761 in 1988-89, and tuition was $8,640. Regarding the character and philosophy of the institution, Associate Dean Robert J. Farrell comments, “The University of Bridgeport School of Law seeks to balance the demands of the ideal and the real, that is, to provide an intellectually demanding academic program that is consistent with the law school’s place as a graduate school in the university, but also to train students for the practice of law in a manner consistent with its accreditation as a professional school.”

The University of Bridgeport Law Center, of which the school is a component, provides a valuable service to the legal community through its Office of Continuing Legal Education, which provides seminars and workshops. The American Law Network’s televised continuing education programs are transmitted live to the center via satellite, where they are viewed by attorneys from throughout the state of Connecticut, and from Westchester County, N.Y.

**The Northern Tier states**

**Vermont Law School** of South Royalton, founded in 1972, enrolled 452 students in 1988-89; tuition was $9,180. Public Relations Director Roland Adams describes the school
as "a small institution in a small Vermont town—a sort of 'village within a village.' This unusual character helps the school pursue a primary goal: balancing academic rigor with the sense of community and strong ethical values for which Vermont is noted."

Vermont Law School Dean Douglas M. Costle was administrator of the U.S. Environmental Protection Agency during the Carter presidency. The Environmental Law Center at Vermont Law School is considered to be one of the best of its kind in the nation. Other centers and special programs include: the South Royalton Legal Clinic, for clients who cannot afford private counsel; the Semester-in-Practice Program, a field-work and mentor-matching program; and the General Practice Program, in which students function as associates in a law firm and instructors function as senior partners.

The General Practice program—the first program of its kind in the country—focuses on integrating theory with practical lawyering skills. This program gives a select group of upperclass students an opportunity to "specialize as generalists," says Dean Costle.

Asked whether there is still such a thing as the old-fashioned "country lawyer," Costle replies: "There is most definitely still a type of lawyer other than those in big firms, though most of them do not exactly fit the stereotype of the 'country lawyer'—and there are a lot more of them than most people probably think. They include solo practitioners and, increasingly, members of small to medium-sized firms, frequently in a rural setting or in a small or medium-sized town. For instance, there are an increasing number of such firms throughout northern New England, in cities like Manchester, Concord and Portland."

The Franklin Pierce Law Center in Concord, N.H., was founded in 1973. With a 1988-89 enrollment of 340, it is the nation's smallest independent law school. Tuition for 1988-89 was $8,335. At Franklin Pierce, instruction is geared to rapid changes in the legal profession, and the curriculum emphasizes active learning, with an unusually high percentage of students involved in actual cases through internships and clinical programs. The curriculum is less structured than at larger institutions, with emphasis on creativity, initiative and "personal responsibility for professional growth," according to the catalog.

The Franklin Pierce program in patent law, a response to workforce demand for patent lawyers, is one of the nation's strongest. Patent Practice and Procedure, a unique four-semester program, enhances classroom courses in the law. Students prepare patent applications as they become familiar with the work of a patent lawyer.

The University of Maine School of Law enrolled 208 full-time students last year, plus an additional three in a limited part-time program. The school's student-faculty ratio of 1:15 is among the lowest in the country.

Ninety-five percent of the school's graduates remain in New England to practice law, 80 percent of these in Maine. Dean L. Kinvin Wroth comments: "The school thus provides a human resource that is essential to the conduct of business and the delivery of individual legal services throughout the region...."

Northeastern University School of Law

is pleased to announce the establishment of

The Fund for the Public Interest

Generous contributions to this new endowment have enabled us to begin a program of loan deferral and forgiveness for our graduates who have chosen to practice law in the public interest.
Low tuition rates for Maine residents and a special rate for other New Englanders under the New England Board of Higher Education compact [Regional Student Program] make legal education accessible to qualified applicants.

Suffolk University Law School’s Center for Continuing Professional Development reflects the belief that legal education is a lifelong process.

UMaine Law School offers nationally esteemed programs in marine law and Canadian studies, as well as a joint degree program with the Public Policy and Management Program at the University of Southern Maine. The law school also has exchange programs with Dalhousie University Faculty of Law in Halifax, Nova Scotia; and with the Faculty of Law at University College of Galway, Ireland. Tuition at UMaine Law School for academic year 1988-89 was $3,750 for state residents and $7,500 for out-of-state residents.

The Cumberland Legal Aid Clinic, an office within the law school, serves indigent people in the Portland area. The clinic has won an award from the American College of Trial Lawyers for “excellence in teaching trial advocacy.”

Dean Wroth, who will step down from his post and return to full-time teaching and research in July 1990, is founder and immediate past president of the Maine Bar Foundation. This organization oversees and funds programs that deliver legal services to the needy in Maine.

New England’s law schools, like New England higher education in general, make more-than-significant contributions to New England’s economy and quality of life. As Vermont Law School Dean Costle comments: “The presence of well-regarded legal-education institutions helps make [the region] generally more attractive to businesses and organizations which employ lawyers or need quality legal services nearby.” In training “the aristocracy of America” through clinical programs, the law schools benefit those New Englanders who are less fortunate. A forthcoming New England Board of Higher Education study of legal education and practice in the region will examine the law schools’ role in greater detail. In particular, it will attempt to define the relationships between law-school training, the delivery of legal services and the needs and expectations of the public.
Implementing Mandatory CLE in Vermont

SAMUEL B. HAND

Mandatory continuing legal education was introduced to Vermont in May 1984. Since then, the state’s licensed attorneys have been required to complete 20 credit hours in legal education every two years, with at least two of those credits specifically addressed to legal ethics. A credit hour roughly corresponds to a clock hour, and credits are approved by a seven-person Board of Continuing Legal Education that administers the program with professional support. Attorneys are subject to penalties for noncompliance, and in extreme circumstances have been suspended by the Supreme Court.

The decision to require continuing legal education evolved from the recommendations of a Vermont Supreme Court-appointed Advisory Committee of Admissions and Continuing Legal Competence chaired by former Governor Philip H. Hoff. Created in 1982, after public disclosure that the Board of Bar Examiners had inadvertently reported incorrect entrance examination scores, the Committee’s charge carried an implicit responsibility to help restore professional and public confidence in the bar. In support of the widely held perception that the public weal was served by attorneys continuously striving to enhance their professional competence, it suggested mandating CLE to help meet that ideal.

If a single individual can be designated as seeing to its adoption, that individual was Gov. Hoff. Adoption, however, did not require extraordinary efforts. Committee deliberations led from a review of the varieties of continuing legal education programs to mandatory programs in particular. After considerable research and discussion, the concept was deemed practicable for Vermont. Public hearings were scheduled throughout the state, and from these public hearings, most of which I attended as a lay member of the advisory committee, it became apparent that substantial numbers of Vermont attorneys either embraced the idea, or more likely accepted it as one whose time had come.

Opposing arguments
Those opposing mandatory CLE generally expressed concern whether enough “worthwhile” courses would be available; whether it could be administered without an imperious bureaucracy; and whether it would be a disadvantage to solo practitioners. My own initial reluctance to support a mandatory system (because I felt it would be meangirerated to vote a requirement on lawyers that historians hadn’t imposed on themselves) was worn away at these hearings. Nonetheless, opponents expressed valid concerns with which the committee attempted to deal.

I doubt that anyone believed requiring CLE would lead to a sudden dramatic rise in performance levels. Furthermore, there have always been Vermont lawyers who take more CLE than the state requires. Indeed, one of the criticisms of the program was that it required too few hours. Anyone attending the legal education sessions at consecutive annual meetings of the Vermont Bar Association can earn all the CLE credits required during a reporting period.

Most practitioners earn their credits within Vermont, but there are no geographic restrictions. Conscientious attorneys, one argument ran, should not be motivated by attendance at professional seminars since seminars were frequently held in “exotic” settings, and organizers were willing to pay a proportionate cost. The committee accepted such arguments as less compelling than counterassertions that some licensed attorneys were either too busy or lacked suitable opportunities to participate, or that appropriate CLE courses were not always accessible. One “opponent” speculated that enlarging the course market by making CLE mandatory might stimulate more and better-quality offerings. In addition, accreditation rules were designed not to restrict courses to traditional law school or classroom settings.

Administratively, the program has functioned smoothly. During the board’s first meetings, under the chairmanship of retired Chief Justice Albert Barney, it established policy and operational procedures. Co-directors (employees of the court administrator’s office) were appointed, authority for day-to-day decisions was delegated to the co-directors, and accredited sponsors were voted upon. This list of approved providers is subject to periodic review by the board, and although the board also grants approval for individual courses, most credits are earned through offerings by approved providers. There has been no prevalent problem concerning CLE compliance, and most attorneys report their compliance in a timely manner.

There are approximately 1,500 attorneys licensed in the state who must comply with the rules for continuing legal education; approximately half are required to file their credits in odd-numbered and half in even-numbered years. No one newly admitted to the bar is added to this rotation until after three years. Judges have elected to establish an independent program.

Defining CLE
Credit can be earned by teaching or attending a continuing legal education course, but despite all efforts,
legal education activities defy precise codification. They must “have significant intellectual or practical content” with their “primary object [being] to increase the attendees’ professional competence as a lawyer.” But no great imagination is necessary to broadly interpret that definition as justifying credits for virtually any intellectual activity, and individual lawyers have not been reluctant to argue for that interpretation. Because nothing is more fundamental to the integrity of the program than a coherent and justifiable operating definition of CLE, most recent board meetings have largely been devoted to refining the principles that guide its accreditation decisions.

It is, however, the clear-cut decisions that the system imposes automatically that can be the most troublesome. CLE compliance is less demanding than even the simplest practice, and one task MCLE performs most is to identify individuals who fail to comply due to age and infirmity. Often yesterday’s heroes, these attorneys (some of whom acknowledge their limitations) may retain only one or no clients, but they wear their licenses as a badge of honor. Having practiced since before most current bar members were born, their wish is to be able to leave this life still in the saddle. Yet to license any attorney incompetent to practice law (irrespective of the source of incompetence) clearly violates the spirit of licensing requirements and obstructs the larger public interest. So far, circumstances have conspired so that MCLE has not had to strip anyone of his or her final dignity, but the possibility is a nagging concern.

**Does it work?**

In an important sense, we beg the question whether the program works. We can document that it can be administered cheaply and fairly, and that it imposes no undue burden upon attorneys. We know it has stimulated local bar associations in conjunction with the Vermont Bar Association and other organizations to provide broad ranges of low-cost seminars in their immediate areas. This especially allows solo practitioners, for whom it may be a particular hardship to travel longer distances, access to varied legal education courses. We can document other positive consequences as well. But whether the total effort serves society by providing Vermont citizens more competent legal services has not been and probably cannot be documented.

We have taken no poll, but it seems safe to assert that with varying degrees of enthusiasm, the legal community has taken a positive view of MCLE. That occasional protests have been registered about particular courses suggests that Vermont attorneys do anticipate “significant intellectual or practical content;” meanwhile, no one has publicly repudiated a personal responsibility for continuous professional growth. To paraphrase Harry S. Truman from a different context, requiring continuing legal education is simply making people do what they ought to be doing anyway.

Samuel B. Hand is a professor of history at the University of Vermont and currently Chairman of the Mandatory Continuing Legal Education Board.

---

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Montpelier, VT 05602
New England's "Trade Deficit" in International Education

RICHARD G. KING

Are New England's doors opening still wider to foreign students? Are they too open in some instances? Are we providing enough international experience for our own students? Are there parts of the world about which we know all too little? Do our students have substantially less direct experience with some areas of the world than theirs with us? Where do our foreign students come from and where do U.S. students go to study abroad? Are our students studying the same sorts of things abroad that foreigners are studying here? If not, what are the implications? Which New England states and which types of institutions are showing the greatest gains in foreign student enrollments?

The recent publication of Open Doors, 1987-1988 permits us to provide some answers to these questions and update by academic years our report on foreign student enrollment in New England appearing in the Summer 1986 issue of Connection. The earlier Connection article includes historical data some of which will be summarized here.

Open Doors is the annual report on International Education Exchange published by the Institute of International Education and edited by Marianthi Zikopoulous. Of special interest during the last three year period are two "one-time" publications by IIE: Boon or Bane?, a study of foreign graduate students in U.S. engineering programs, and Profiles, 1985-86, which provides a more detailed analysis of our foreign student population. Also of special note is Part IV of Open Doors, 1986-87, which for the first time since 1982-83 reports a survey of Americans studying abroad.

Changes in enrollments

Our earlier Connection article reported total enrollments of foreign students in each of the New England states and the United States in 1957-58, 1973-74, 1983-84 and 1984-85. The growth of such enrollments in the United States and in New England was nothing short of phenomenal. From 1957-58 to 1984-85 foreign students increased from 43,391 to 342,113, an increase of 688 percent, while in New England the increase was comparably great - from 3,847 to 23,488 or 511 percent. In 1957-58 New England, with 5.3 percent of the nation's resident population, enrolled 8.9 percent of the nation's foreign students. This latter percentage had dropped to 6.9 percent by 1984-85 but, as Table 1 of this article reports, it had risen back to 7.8 percent in 1987-88.

Several engines drove this dramatic increase of foreign students in the 1960s and 1970s. The increased international awareness of World War II servicemen began to have an impact both on college curricula and admissions, as the former GIs became teachers and administrators. The "decade of development" during the 1960s, when further large numbers of Americans became intensely interested in other parts of the world through experience in foreign aid and the Peace Corps pushed these changes further. And the domination of world markets by the American

<table>
<thead>
<tr>
<th>TABLE 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL NUMBER OF FOREIGN STUDENTS IN N.E. INSTITUTIONS OF HIGHER EDUCATION (Percentage of U.S. Total in Parenthesis)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1985-6 (%)</th>
<th>1986-7 (%)</th>
<th>1987-88 (%)</th>
<th>1986 % of Resident Pop.</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>343,777</td>
<td>349,609</td>
<td>356,187</td>
<td>100</td>
</tr>
<tr>
<td>CT</td>
<td>3,906</td>
<td>3,937</td>
<td>4,010</td>
<td>(1.1)</td>
</tr>
<tr>
<td>MA</td>
<td>17,652</td>
<td>18,227</td>
<td>18,946</td>
<td>(5.3)</td>
</tr>
<tr>
<td>RI</td>
<td>1,468</td>
<td>1,709</td>
<td>1,711</td>
<td>(4.5)</td>
</tr>
<tr>
<td>ME</td>
<td>377</td>
<td>452</td>
<td>615</td>
<td>(2.0)</td>
</tr>
<tr>
<td>NH</td>
<td>934</td>
<td>1,186</td>
<td>1,288</td>
<td>(4.0)</td>
</tr>
<tr>
<td>VT</td>
<td>614</td>
<td>710</td>
<td>1,132</td>
<td>(3.2)</td>
</tr>
<tr>
<td>N.E.</td>
<td>24,951</td>
<td>26,221</td>
<td>27,702</td>
<td>(7.8)</td>
</tr>
</tbody>
</table>


CONNECTION SPRING 1989 63
Student enrollments have flattened substantially, as Table 1 shows. The number of New England's foreign students has grown from 23,191 in 1983-84 to 27,702 in 1987-88, a gain of less than 20 percent over this four-year period, but still a substantial one as compared with the national increase of five percent (339,000 to 356,000) over the same period.

The institutions most responsible for New England's relatively large foreign student enrollments are the independent colleges and universities, particularly those of Massachusetts, as Table 2 clearly shows. While more than 50 percent of all New England students are enrolled in public colleges only 25 percent of foreign students are so enrolled. About 1.7 percent of public college enrollments are foreign students as compared with over 5 percent of independent college enrollments. Nonetheless, enrollments of foreign students in public institutions have increased from 5,845 to 6,917 in the last three years, a gain of over 18 percent. Not unexpectedly most (92.3 percent) of the foreign students enroll in 4-year institutions, but over the last three years foreign student enrollments in two-year colleges in N.E. have increased faster (25 percent) than those in four-year colleges (10 percent). Both these gains are substantially more than double the corresponding gains at the national level.

### TABLE 2

<table>
<thead>
<tr>
<th></th>
<th>1985-6</th>
<th></th>
<th>1986-7</th>
<th></th>
<th>1987-8</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pub.</td>
<td>(%)</td>
<td>Ind.</td>
<td>(%)</td>
<td>Pub.</td>
<td>(%)</td>
</tr>
<tr>
<td>U.S.</td>
<td>224,411 (65.3)</td>
<td>119,366 (34.7)</td>
<td>227,650 (65.1)</td>
<td>121,959 (34.9)</td>
<td>233,816 (65.6)</td>
<td>122,374 (34.4)</td>
</tr>
<tr>
<td>CT</td>
<td>1,090 (27.9)</td>
<td>2,816 (72.1)</td>
<td>1,177 (29.9)</td>
<td>2,760 (70.1)</td>
<td>1,282 (32.0)</td>
<td>2,728 (68.0)</td>
</tr>
<tr>
<td>MA</td>
<td>3,729 (21.1)</td>
<td>13,923 (78.9)</td>
<td>4,016 (22.0)</td>
<td>14,211 (78.0)</td>
<td>4,173 (22.0)</td>
<td>14,773 (78.0)</td>
</tr>
<tr>
<td>RI</td>
<td>483 (32.9)</td>
<td>985 (67.1)</td>
<td>509 (29.8)</td>
<td>1,200 (70.2)</td>
<td>531 (31.0)</td>
<td>1,180 (69.0)</td>
</tr>
<tr>
<td>ME</td>
<td>218 (57.8)</td>
<td>159 (42.2)</td>
<td>294 (65.0)</td>
<td>158 (35.0)</td>
<td>403 (65.5)</td>
<td>212 (34.5)</td>
</tr>
<tr>
<td>NH</td>
<td>183 (19.6)</td>
<td>751 (80.4)</td>
<td>345 (29.1)</td>
<td>841 (70.9)</td>
<td>373 (29.0)</td>
<td>915 (71.0)</td>
</tr>
<tr>
<td>VT</td>
<td>142 (23.1)</td>
<td>472 (76.9)</td>
<td>150 (21.1)</td>
<td>560 (78.9)</td>
<td>155 (13.7)</td>
<td>977 (86.3)</td>
</tr>
<tr>
<td>N.E.</td>
<td>5,845 (23.4)</td>
<td>19,106 (76.6)</td>
<td>6,491 (24.8)</td>
<td>19,730 (75.2)</td>
<td>6,917 (25.0)</td>
<td>20,785 (75.0)</td>
</tr>
</tbody>
</table>


NEBHE Analysis, November 1988

### TABLE 3

<table>
<thead>
<tr>
<th></th>
<th>1985-86</th>
<th></th>
<th>1986-87</th>
<th></th>
<th>1987-88</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 Yr.</td>
<td>(%)</td>
<td>4 Yr.</td>
<td>(%)</td>
<td>2 Yr.</td>
<td>(%)</td>
</tr>
<tr>
<td>U.S.</td>
<td>41,773 (12.2)</td>
<td>302,004 (87.8)</td>
<td>42,602 (12.2)</td>
<td>307,007 (87.8)</td>
<td>46,053 (12.9)</td>
<td>310,134 (87.1)</td>
</tr>
<tr>
<td>CT</td>
<td>232 (5.9)</td>
<td>3,674 (94.1)</td>
<td>234 (5.9)</td>
<td>3,703 (94.1)</td>
<td>309 (7.7)</td>
<td>3,701 (92.3)</td>
</tr>
<tr>
<td>MA</td>
<td>1,422 (8.1)</td>
<td>16,230 (91.9)</td>
<td>1,565 (8.8)</td>
<td>16,632 (91.2)</td>
<td>1,742 (9.1)</td>
<td>17,204 (90.8)</td>
</tr>
<tr>
<td>RI</td>
<td>12 (0.8)</td>
<td>1,456 (99.2)</td>
<td>7 (0.4)</td>
<td>1,702 (99.6)</td>
<td>6 (0.3)</td>
<td>1,705 (99.6)</td>
</tr>
<tr>
<td>ME</td>
<td>9 (2.4)</td>
<td>368 (97.6)</td>
<td>8 (1.8)</td>
<td>444 (98.2)</td>
<td>15 (2.4)</td>
<td>600 (97.5)</td>
</tr>
<tr>
<td>NH</td>
<td>11 (1.2)</td>
<td>923 (98.8)</td>
<td>14 (1.2)</td>
<td>1,172 (98.8)</td>
<td>39 (3.0)</td>
<td>1,249 (96.9)</td>
</tr>
<tr>
<td>VT</td>
<td>11 (1.8)</td>
<td>503 (98.2)</td>
<td>16 (2.3)</td>
<td>694 (97.7)</td>
<td>18 (1.5)</td>
<td>1,114 (98.4)</td>
</tr>
<tr>
<td>N.E.</td>
<td>1,697 (6.8)</td>
<td>23,254 (93.2)</td>
<td>1,674 (7.1)</td>
<td>24,347 (92.9)</td>
<td>2,129 (7.7)</td>
<td>25,573 (92.3)</td>
</tr>
</tbody>
</table>


NEBHE Analysis, November 1988

64 NEW ENGLAND BOARD OF HIGHER EDUCATION
enrollments in New England and the nation is the relatively small number of Americans studying abroad. The number of Americans studying for credit abroad, according to the IIE survey, Open Doors, 1986-87, was 48,483, compared to 349,609 foreign students studying abroad in the U.S. Equally striking is the fact that while 80 percent of the Americans were studying in Western Europe and only 5.4 percent were studying in South and East Asia, virtually half of the foreign students in the United States came (and over half now come) from South and East Asia (see Tables 4 and 5).

The origins of New England’s foreign students are detailed for each New England state in Table 4. These are not annually reported data but appear in the special IIE publication Profiles 1985-86, edited by Marianne Zikopoulous. As the top and bottom rows indicate, New England has proportionately more students from Europe and Canada and fewer from Asia than does the nation as a whole. This is, of course, not surprising nor is the especially strong draw of the three northern New England states on Canada.

Foreign students are more impressed with our practical tools for material success than with our cultural, artistic and philosophical insights.

Fields of study: the “balance of trade”
A further characteristic of the asymmetry of our foreign student exchange can be seen in the respective choice of field of study by American and foreign students. Those choices in 1986-87 are summarized in Table 6. Foreign students are apparently very much less interested in what American colleges can provide them in the social sciences, the arts and the humanities than in what is to be found in science, engineering and business management. The students, overwhelmingly from Third World countries, are apparently much more impressed with our practical tools for material success than with our cultural, artistic and philosophical insights. And, indeed, recent curricular shifts among Americans studying at home [from the humanities and social sciences toward undergraduate business courses] suggests that college has become, for many of us, primarily a vocational stepping stone.

Our educational “balance of payments,” then, shows a substantial deficit: 350,000 foreign student imports to 50,000 American student exports. The educational deficit, like our trade deficit, is particularly acute with Asia - 170,000 Asian imports against 2,600 American exports to Asia. Foreign students are learning an enormous amount about our science, engineering and business management. We are learning almost nothing about theirs. What relatively little we are learning through foreign study is primarily what is related to our own undergraduate curriculum, dominated as that is by Western history, philosophy and culture.

This is not to say that colleges and universities are not doing anything about this imbalance. They are. New England can boast of a number of innovative international educational programs at home and abroad, as a later report from NEBHE’s study of higher education and New England’s international economy will make clear. Suffice it to say here that at this point in history, the rest of the world probably understands us better than we understand it.

Foreign students in science and engineering
A by-product of the influx of foreign nationals in science and engineering, particularly at the graduate level (where over 50 percent of foreign science and engineering students now are), is the dilemma of whether we are admitting and supporting such students at the expense

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of U.S. applicants whose numbers, particularly among our own minority students, have been disappointingly low. In certain science and engineering fields, a majority of graduate students are now foreign nationals. Their interest in studying in the United States undoubtedly increases the average academic quality of admitted students, and their research productivity clearly enriches this profession. Their increasing presence does, of course, raise potential national security questions, as well as questions regarding future relative competitive advantage in international trade. On the other hand, it raises the issue of "brain drain" as measured by the number of students from third-world countries who remain in the United States instead of returning to help the development of their own countries. To these may be added the problems of mastery (or lack thereof) of English among graduate teaching assistants as well as the issue of allocation of limited resources in support of graduate students. On balance, however, our foreign students probably do serve our nation and our institutions well, just as they do serve the exporting nations and their institutions well upon return.

### Economic impact of foreign students of New England

The direct economic impact on the New England region by foreign student enrollments is significant and positive. It has been estimated that total expenditures of all New England institutions of higher education plus student expenditures total over $1 billion dollars per year. Those expenditures have an estimated multiplier effect of at least 2, so that the total impact on the N.E. economy is over $20 billion per year. With 3.5 percent of the region's enrollments, foreign students might legitimately be said to be contributing an effect of some $700 million per year.

**New England can boast of a number of innovative international education programs at home and abroad.**

This is roughly corroborated by IIE's estimate of student maintenance expenditures (excluding tuition, fees, books) of about $6,300 per nine month academic year; and by our estimate of at least $6,000/year per student in tuition and fees. The majority (75 percent) of foreign students are in independent institutions and predominantly in the higher-cost independent institutions, at that.

It is true that these institutions provide substantial financial aid,

---

**TABLE 4**

SOURCE OF NEW ENGLAND'S FOREIGN STUDENTS in 1985-86 (Percentages)

<table>
<thead>
<tr>
<th>State</th>
<th>Africa</th>
<th>Europe</th>
<th>Latin America</th>
<th>Middle East</th>
<th>North America</th>
<th>Southeast Asia</th>
<th>Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>9.3</td>
<td>10.1</td>
<td>14.0</td>
<td>14.8</td>
<td>5.0</td>
<td>1.2</td>
<td>45.1</td>
</tr>
<tr>
<td>CT</td>
<td>7.2</td>
<td>19.3</td>
<td>10.9</td>
<td>9.8</td>
<td>6.1</td>
<td>.9</td>
<td>44.7</td>
</tr>
<tr>
<td>MA</td>
<td>7.6</td>
<td>18.6</td>
<td>15.6</td>
<td>12.0</td>
<td>8.4</td>
<td>1.1</td>
<td>36.3</td>
</tr>
<tr>
<td>RI</td>
<td>4.7</td>
<td>24.7</td>
<td>11.8</td>
<td>17.6</td>
<td>10.9</td>
<td>0.7</td>
<td>29.4</td>
</tr>
<tr>
<td>ME</td>
<td>6.9</td>
<td>14.6</td>
<td>11.7</td>
<td>9.0</td>
<td>28.7</td>
<td>—</td>
<td>29.0</td>
</tr>
<tr>
<td>NH</td>
<td>8.5</td>
<td>19.6</td>
<td>7.8</td>
<td>9.2</td>
<td>15.7</td>
<td>0.7</td>
<td>38.6</td>
</tr>
<tr>
<td>VT</td>
<td>5.0</td>
<td>24.7</td>
<td>19.6</td>
<td>7.3</td>
<td>15.6</td>
<td>0.2</td>
<td>26.9</td>
</tr>
<tr>
<td>N.E.</td>
<td>7.3</td>
<td>19.2</td>
<td>14.5</td>
<td>11.5</td>
<td>9.0</td>
<td>1.0</td>
<td>36.9</td>
</tr>
</tbody>
</table>

(Weighted Percentage)

Source: Zikopolous, Mariasimi, Editor, Profiles 1985-86 (Institute for International Education, New York, N.Y.)

*NEBHE Analysis, November 1988*

**TABLE 5**

SOURCE OF FOREIGN STUDENTS COMPARED TO DISTRIBUTION OF AMERICAN STUDENTS

<table>
<thead>
<tr>
<th>Area</th>
<th>Origin of Foreign Students Studying in U.S.</th>
<th>Destination of American Students Studying Abroad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>48.8%</td>
<td>5.4%</td>
</tr>
<tr>
<td>Middle East</td>
<td>13.4%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Latin America</td>
<td>12.4%</td>
<td>7.0%</td>
</tr>
<tr>
<td>Africa</td>
<td>9.1%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Oceania</td>
<td>1.2%</td>
<td>9%</td>
</tr>
<tr>
<td>Subtotal</td>
<td>84.9%</td>
<td>18.4%</td>
</tr>
<tr>
<td>Europe</td>
<td>10.3%</td>
<td>79.6%</td>
</tr>
<tr>
<td>North America (Canada)</td>
<td>4.7%</td>
<td>9%</td>
</tr>
<tr>
<td>Multiple Regions</td>
<td>—</td>
<td>1.0%</td>
</tr>
<tr>
<td>Sub-Total</td>
<td>15.0%</td>
<td>81.5%</td>
</tr>
<tr>
<td>Total</td>
<td><strong>99.9%</strong></td>
<td><strong>99.9%</strong></td>
</tr>
</tbody>
</table>

Total Number: 349,609 48,483*


*The study-abroad population in this survey has been narrowly defined as only those students who received academic credit from a U.S. institution after they returned from their study-abroad experience.

NEBHE Analysis, November 1988
but IIE reports that fewer than 20 percent of foreign students cite their U.S. college or university as their primary source of aid.

The majority of foreign students are in independent institutions and predominately in the higher-cost independent institutions, at that.

Let us say that the full average tuition is $8,000 and that as much as $2,000 is remitted on the average for a net of $6,000. This $6,000 tuition and fees plus $6,300 living expenses is $12,300/year for each of the region's 27,700 foreign students or a grand total of $340 million. With a multiplier effect of over 2 we come again to a rough estimate of $700 million as the total direct effect on the regional economy.

Long-term effects

Over time the indirect, more abstract effects of our foreign students may be of even greater value. The stimulus they provide to us to venture forth in greater numbers into new geographical areas and new fields of study has almost unlimited potential. Horizons are broadened; new insights are gained; new products and enterprises as well as new friendships and understandings are developed. The more we and the rest of the world know about each other the less likely we are to retain irrational fears and prejudices. It works domestically; it works internationally. And the good news is that we seem to be doing better at it.

Richard G. King is a senior fellow at the New England Board of Higher Education.

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**TABLE 6**

**CHOICE OF FIELD OF STUDY, 1986-87**

<table>
<thead>
<tr>
<th>Area</th>
<th>Foreign Students Studying in U.S.</th>
<th>Americans Studying Abroad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>21.2%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Business &amp; Management</td>
<td>18.9%</td>
<td>10.9%</td>
</tr>
<tr>
<td>Math &amp; Computer Science</td>
<td>10.1%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Physical &amp; Life Science</td>
<td>7.8%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Health Science</td>
<td>4.1%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>2.1%</td>
<td>1.0%</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td><strong>64.2%</strong></td>
<td><strong>20.3%</strong></td>
</tr>
<tr>
<td>Liberal Arts &amp; Humanities</td>
<td>3.8%</td>
<td>26.0%</td>
</tr>
<tr>
<td>Foreign Languages</td>
<td>3.9%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>7.3%</td>
<td>13.7%</td>
</tr>
<tr>
<td>Fine &amp; Applied Arts</td>
<td>4.2%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Education</td>
<td>3.5%</td>
<td>4.1%</td>
</tr>
<tr>
<td><strong>Sub-Total</strong></td>
<td><strong>22.7%</strong></td>
<td><strong>67.4%</strong></td>
</tr>
<tr>
<td>Undeclared &amp; Other</td>
<td>13.1%</td>
<td>12.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

**Total Number**

349,609

48,483*


*The study-abroad population in this survey has been narrowly defined as only those students who received academic credit from a U.S. institution after they returned from their study-abroad experience.

NEBHE Analysis, November 1988

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CONNECTION SPRING 1989 67
Our Elusive Service Sector

Book reviews by

MELVIN H. BERNSTEIN

International Trade in Services: An Overview and Blueprint or Negotiations.
By Geza Feketekuty.

International Trade in Business Services: Accounting, Advertising, Law, and Management Consulting.
By Thierry J. Noyelle and Anna B. Dutka.

By Ingo Walter.

New England entered the 1980s with medicine, finance, scientific technology and other sophisticated services ticketed as fast growth, high export industries. Because the region outperforms the nation in these fields, and because New England has become a world renowned center for advanced professional services, there is good reason to believe exports have kept pace with earlier growth projections — but no data is yet available to demonstrate it. The problem, simply, is the lack of export data for services at the national level, which must be forth coming before we can measure more specifically the character and growth of professional services in the region's international economy.

Scholars and policy advisers of the American Enterprise Institute have authored an immensely valuable new "Trade in Services" series of books. While they do not contain regional data, the books do provide a framework for understanding more clearly the role of services in both the domestic and international economies.

What you learn from reading the three books is that services are an elusive part of the economy, hard to count and hard to measure. They account for everything in the economy sold other than goods produced in the agriculture, mining, manufacturing and construction industries. Everyone knows that services have grown rapidly since World War II. Not commonly known, however, is the fact that they amount to as much as 71 percent of gross national product and 75 percent of total employment. However, the United States expects a trade deficit in services in 1988, its first in 50 years, resulting from the income and profits flowing overseas from the huge foreign investments made in the U.S. in the 1980s.

These books provide a framework for understanding more clearly the role of services in both the domestic and international economies.

The first book, International Trade in Services, provides the conceptual frame of reference for the eight book series. Feketekuty argues that international trade in services has become very big business and, therefore, an important public policy issue. He has little use for those who contend that manufacturing remains the core of the economy and that greater emphasis on trade in services will only distract attention from making improvements in manufacturing. For the author, the issue is not services versus manufacturing but how services are used to support manufacturing. He says, "Manufacturing has come to depend more and more on service inputs, and the quality of manufacturing is increasingly a function of the quality of service in puts." In other words, the quality of services helps to make manufacturing more competitive in the global economy.

International Trade in Business Services is based on market data and interviews. Noyelle and Dutka illustrate the difficulty of accurately measuring trade in business services. The Commerce Department's Bureau of Economic Analysis reported U.S. service exports of $42 billion for 1983. The Office of Technology Assessment, the congressional research arm, in a later study, however, found that service exports amounted to $76 billion for the same year, a figure generally regarded as more accurate. Because data is so hard to come by for service exports, economists have suspected for some time that government figures seriously undercount the size and growth taking place for service exports. The internationalization of business services is borne out by trend data shown for tax accounting, advertising, law and management consulting firms.

The last book reviewed, Global Competition in Financial Services, is the most technical of the three, written largely for specialists. A few figures demonstrate the revolution taking place in the world financial community. Citicorp, America's largest bank, has 53 percent of its assets in the United States and a whopping 47 percent outside the country. Foreign bank offices in the U.S. numbered a mere 50 in 1970 but as many as 783 in 1985. In 1950, only seven American banks had offices overseas for a total of 95 branch locations. By 1984, those numbers had grown to 150 American banks doing business abroad in 1,000 branch offices.

Coming on the heels of the fine 1984 handbook, Trade in Services by Jonathan David Arnsen and Peter F. Cowhey, AEI scholars are clearly doing some of the best and most comprehensive work in unraveling the puzzle of what services mean to American trade and the domestic economy. It couldn't be more timely as far as New England is concerned.

Melvin H. Bernstein, Ph.D., J.D., is a senior fellow at the New England Board of Higher Education.
Paul Gray of MIT Causes Stir With Report, Made in America
WENDY A. LINDSAY

As Paul E. Gray approaches his last year as president of the Massachusetts Institute of Technology, the Commission on Industrial Productivity he appointed has released Made in America, a report sharply critical of American industry for its inability to adapt to today's international economic environment.

"The corporate culture which developed over the time we were king of the mountain doesn't serve us very well now," said Gray in an interview. "That is our principal message... Business had better pay attention... There has to be a decision from the top that this isn't working for us." The report calls on corporate leaders to put quality before short-term gain, better educate workers, promote greater cooperation inside and among firms and look beyond American methods.

The study commission, which was comprised of scientists, engineers, social scientists and economists, surveyed more than 200 companies in the United States, Europe and Japan and interviewed 550 leading industrialists, government and labor officials, and analysts over two years.

Gray will have been MIT president for a decade on his departure in July 1990. He will succeed David S. Saxon as chairman of the MIT Corporation, a full-time, salaried position directing the governing body of the institute.

Notable among Gray's achievements are his success in placing the school on a more solid financial footing; expanding research in biology and medicine; assuring the success of the Media Laboratory, a center for cutting-edge information technology; advances in campus computerization; and creation of the Whitehead Institute for Biomedical Research. Gray's area of specialization is semiconductor electronics and circuit theory. He holds three degrees in electrical engineering from MIT, and served as professor, dean of engineering and chancellor before becoming president.

Perlman to leave Suffolk
Daniel H. Perlman concludes his nine-year tenure as Suffolk University's seventh president July 1. The youngest president in Suffolk's history on his appointment in 1980, Perlman had spent 20 years as an administrator at Roosevelt University in Chicago. During his tenure at Suffolk, fund raising totalled more than $10 million; the Frank Sawyer Building was opened at 8 Ashburton Place; and science laboratories, law-school classrooms and the 600-seat C. Walsh Theatre were expanded and renovated. The university substantially increased its scholarship programs; made strides in enrollment and retention of minority students; expanded cooperative education; implemented a new computer-engineering technology program; and adopted a unique student-retention loan program. This plan provides loans that are forgiven and converted into a scholarship if the student remains in college through graduation. Perlman holds three degrees from the University of Chicago, including a doctorate in higher education.

NEBHE delegates appointed
New delegates from Maine, Massachusetts, New Hampshire and Vermont have been appointed to the New England Board of Higher Education. Board members from each New England state are appointed for two-year terms by the governor, speaker of the house or senate president.

Scottie Higgins, executive vice president of the Maine Educational Loan Marketing Corp, has joined NEBHE's Maine delegation. Before coming to MELMAC, Higgins was executive director of the National Committee on Arts for the Handicapped in Washington, D.C. She earned bachelor's and master's degrees from New Mexico Highlands University and a doctorate in education administration from the University of Massachusetts at Amherst.
NEBHE's new delegate from Massachusetts, Rep. Kenneth M. Lemanski, is assistant vice chair of the House Ways and Means Committee. A Massachusetts state representative since 1981, Lemanski chaired the commerce and labor committee from 1985 to 1986, and authored 1985's most significant statute, worker's compensation reform. He earned a bachelor's degree from UMass-Amherst and a doctor of jurisprudence degree from Western New England College School of Law.

Sen. George F. Disnard, chair of the Senate Education Committee, joins NEBHE's New Hampshire delegation in his second term as senator. He also serves on the Banks and Executive Departments committees. A retired school superintendent, Disnard earned his bachelor's degree from Bates College and his master of education from Keene State College of New Hampshire.

Vermont has two new delegates: Rep. William B. Talbott and Sen. Jeb Spaulding. In his second term as representative, Talbott serves on the House Education Committee. A certified marine surveyor and former public-school teacher, he holds a bachelor's degree in mathematics from the University of Florida and has pursued graduate study in industrial arts education at the University of Vermont. Spaulding, who chairs the Senate Education Committee, is in his third term as senator. He holds a bachelor's degree from the University of Vermont.

Recently reappointed to the NEBHE board are Rep. William J. Cibes, Jr. of Connecticut; former Maine senator Bennett Katz; and Sen. Hilton Wick of Vermont.

Former NEBHE executive director remembered

Alan D. "Doug" Ferguson, who served as executive director of the New England Board of Higher Education from 1968 to 1978, died April 26 in Burlington, Mass. at the age of 75. Before joining NEBHE, Ferguson had served as a national representative for the Woodrow Wilson Fellowship Foundation; director of the Graduate Fellowship Program at the U.S. Department of Health, Education and Welfare; and program director in the education and research division of the Ford Foundation.

Ferguson graduated from Yale College in 1947 and received a doctorate in Russian history from Yale in 1954. He was also employed at Yale during the 1950s as assistant dean of admissions at the Graduate School, director of Veterans Affairs and director of the Office for Foreign Students.

The Hon. Bennett Katz, chairman of the board during Ferguson's tenure at NEBHE, recalled Ferguson: "Doug was the one who made the New England Board tick and made the board's Regional Student Program the most successful regional program in the United States. He was a scholar and a man of vision. Although the board has gone on to new successes and major contributions, we still build on the foundation he laid.''

NEBHE President John C. Hoy, who succeeded Ferguson, commented: "Doug Ferguson was deeply committed to educational opportunity in New England. The successful development of the Regional College of Veterinary Medicine at Tufts University stands as testimony to his foresight and tenacity. He was far ahead of his time in anticipating the power of telecommunications and in overseeing the creation and implementation of NELINET [New England Library Information Network] and NERComp [New England Regional Computer Network]. He had an historian's perspective and a scientist's appreciation of the frontiers of knowledge.'

Trueheart will head Bryant College

William E. Trueheart, executive vice president of Bryant College, Smithfield, R.I. since 1986, will become president August 1, replacing William T. O'Hara. Trueheart came to Bryant from Harvard University, where he was associate secretary in the Office of Governing Boards, and assistant dean and director of the master in public administration program at the John F. Kennedy School of Government.

In announcing the appointment, the Hon. Bruce M. Selya, circuit judge for the U.S. Court of Appeals in Providence and chairman of Bryant's board of trustees, described Trueheart as 'a
renowned educator, a proven administrator and the bearer of an enviable national reputation. Dr. Trueheart's accomplishments are many and varied, but, most of all, he is a humanist—a man of warmth, compassion, vision and integrity."

Trueheart previously held three positions at the University of Connecticut: dean for undergraduate affairs and director of the academic advisory center for the college of liberal arts and sciences; assistant to the president; and assistant director of admissions. Trueheart earned a bachelor's degree in political science from the University of Connecticut and a master of public administration and doctorate in education from Harvard.

Law scholar will become Trinity College president

Tom Gerety, dean and professor of law at the University of Cincinnati College of Law, has been named the 17th president of Trinity College in Hartford, Conn. Gerety has had a distinguished career teaching constitutional law, ethics and political philosophy at a number of higher-education institutions, including the University of Pittsburgh, Stanford University and Indiana University. He holds four degrees from Yale University, including bachelor's and master's degrees in philosophy and doctoral degrees in law and philosophy. Gerety, who speaks fluent Spanish, was a bilingual teacher in the Boston schools during the early 1970s. He will assume his new post July 1, succeeding James F. English, Jr., president of Trinity since 1981.

New dean appointed at Kennedy School

Harvard University's John F. Kennedy School of Government has a new dean: political scientist Robert D. Putnam, who succeeds Graham T. Allison. Allison concluded his 12-year tenure at the school with academic year 1988-89. A professor of government at Harvard, Putnam is a former chairman of the government department and associate dean of the faculty of Arts and Sciences. He earned his bachelor's degree from Swarthmore College, and master's and doctoral degrees from Yale University. Formerly professor of political science at the University of Michigan, he served on the staff of the National Security Council under President Carter.

Wendy A. Lindsay is assistant editor of Connection.

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