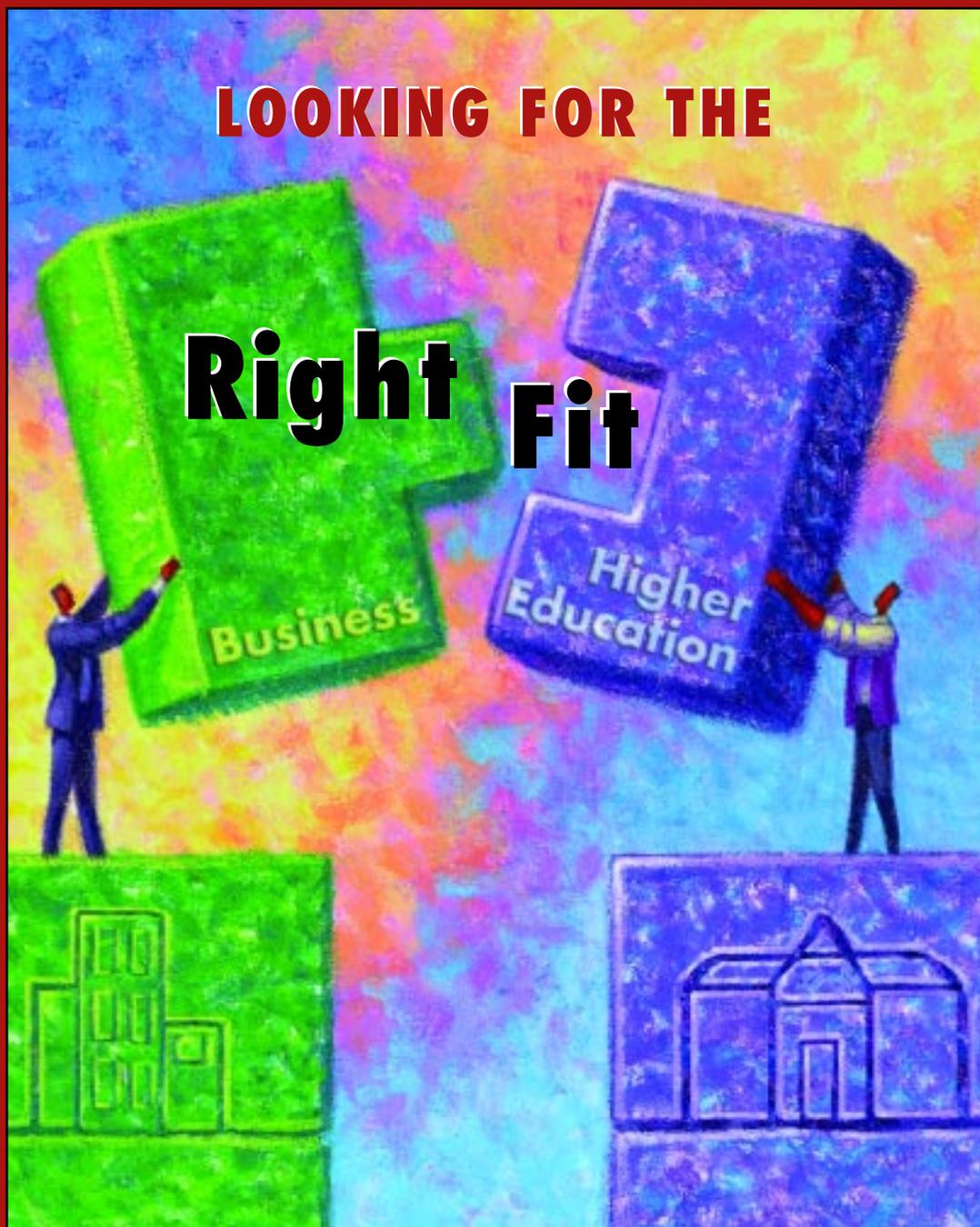


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THE JOURNAL OF THE NEW ENGLAND BOARD OF HIGHER EDUCATION



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NUMBER 4
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- William Bulger on the Recession in Our Democracy
- Raising the Stakes on Testing: Point-Counterpoint

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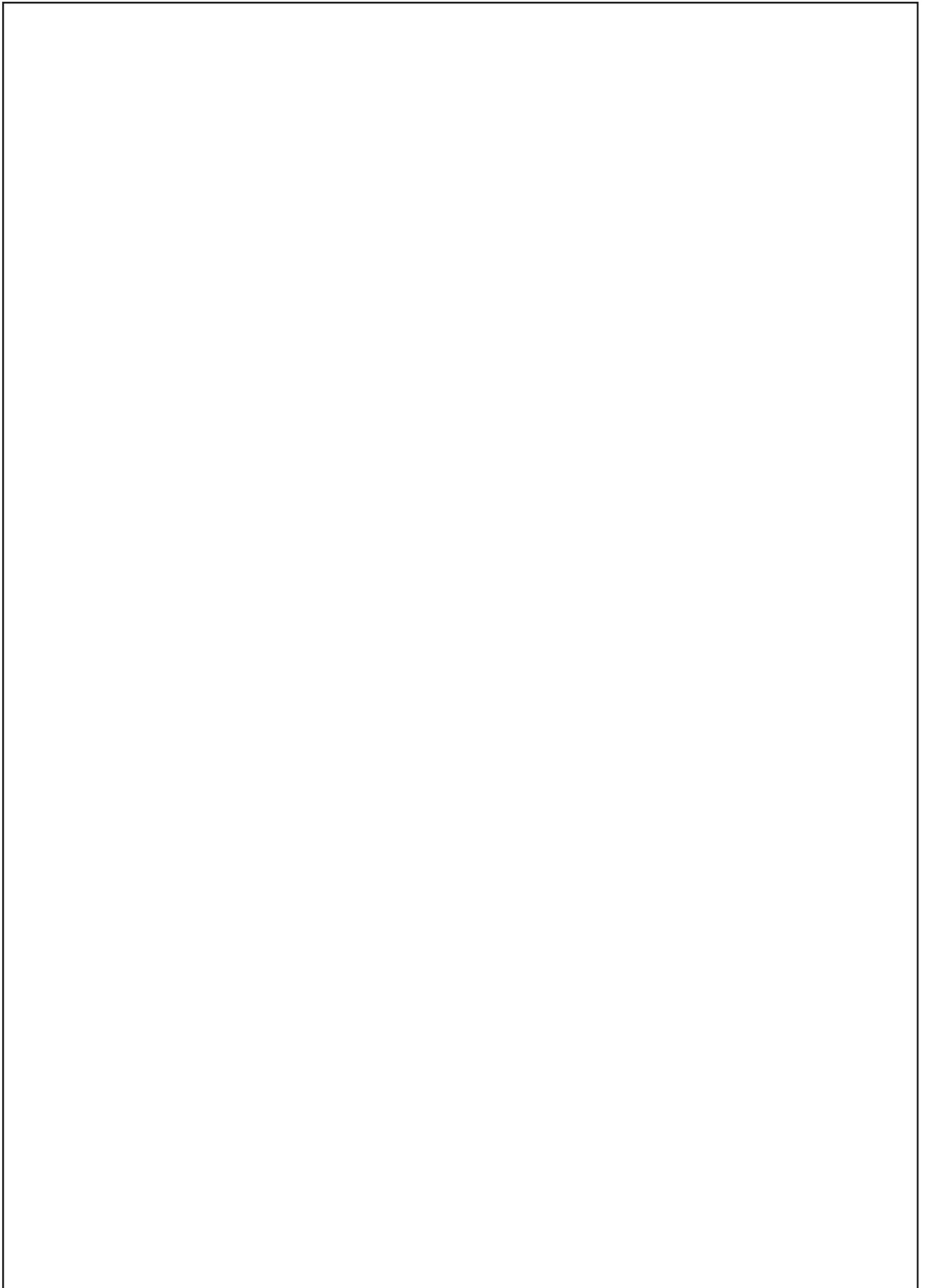
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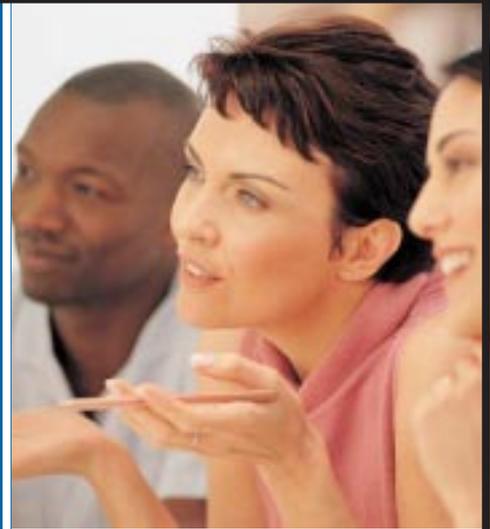
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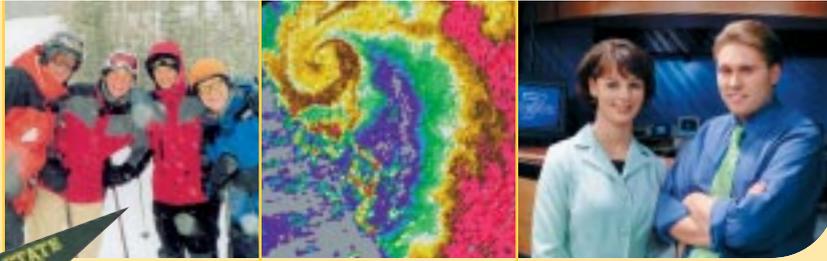
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NEBHE was established by the New England Higher Education Compact, a 1955 agreement among the states of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.



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EDITOR'S MEMO

Minding our Business

Our usual "Books" section is on sabbatical, so to speak, returning in the spring. But let me say a word here about a book whose very name conjures up this issue's focus on business-higher education collaboration. The book is titled *Route 128 and the Birth of the Age of High Tech*. It was written by former *Mass High Tech* newspaper editor Alan R. Earls and published in the fall as part of Arcadia Publishing's *Images of America* series of local history picture books.

Full disclosure: I've known Alan Earls a long time. When I was a freelance writer in the mid-1980s, Earls edited a magazine called *s/f* on the then-booming New England real estate development market. I wrote a few pieces for the magazine and got a taste of the business media's slant on growth and priorities. Since I began editing CONNECTION more than a decade ago, and Earls became the freelancer, he has been providing our readers with no-nonsense reportage on issues from research commercialization to campus privacy. Note his piece in this issue on public higher education's role in business collaboration 140 years after Vermont Congressman Justin Morrill pushed landmark legislation creating Land Grant universities.

For the 128 book, I provided Earls with a photo of my in-laws strolling through the Pleasure Island amusement park, one of the many open spaces along the fabled Boston beltway that would be gobbled up by one after another "knowledge-based" companies with names like Analogic, Millipore or Xenergy. Route 128 is, or was, the world's preeminent model of how business-higher education collaboration spawns high-tech economic development. And the more than 200 photos that Earls has assembled depicting room-size computers, primitive Radars and rockets show the circumferential road in all its gadgetary glory. (No wonder my in-laws wound up on the proverbial cutting-room floor.)

But anyone interested in education and quality of life can fairly have a few gripes with the historical development of "America's Technology Highway" and with the Earls book's uncritical treatment of it.

For one, released as Washington was beating the war drums over Iraq, the book offers a sad reminder of how much the Route 128 version of business-higher education partnership has been channeled into destructive force. The book is in no small part a celebration of Hawk missiles and phased array radar, delivered deadpan, with no suggestion of how those ventures have diverted investment away from, say, health research or education itself.

Secondly, the playful photos and cutlines depicting the emergence in the late 1970s of high-tech business councils seem to suggest an era of limitless, backslapping collaboration. What really emerged were deep strains in the business-higher ed nexus, as the councils adopted the role of reformer, launching tirades against tenure, faculty workloads and frivolous (read social sciences) curricula. With no war to rally around, they began a full-scale offensive to make academia safe for market principles.

Still, 128's glory days also remind us that there remains great promise for constructive forms of business-higher education collaboration aimed at preparing not compliant workers, but critical thinkers, capable of leading New England through future economic and civic storms. There is certainly enough expertise in both sectors to make a better region. Now to harness it.

"Books" will be back in the spring.

John O. Harney is executive editor of CONNECTION.

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Networking

In what has become a rite of fall in New England, more than 400 students of color from across the region dawned as early as 4 a.m. on Saturday, Oct. 5, and made tracks to the Massachusetts Institute of Technology. Awaiting them there: the rare chance to mingle with rocket scientists, forensic specialists, biotechnicians and engineers, many of whom, rarer still, looked a little bit like those students.



NIH cancer researcher Alfred C. Johnson (right) shares insights with students.

Part of the New England Board of Higher Education's Excellence Through Diversity Program, the meeting of the "Science, Technology, Engineering and Mathematics Academic Support Network" attracted more than 90 advisors from academia and industry, who gave their Saturday to inspire and mentor the minority high school and college students interested in careers in science, technology, mathematics or engineering.

During the day, students met with an assigned advisor and small group of peers interested in similar fields. Besides encouragement and guidance, students got access to information about summer science internships and college opportunities. Presenters also discussed barriers they had to overcome to succeed in their careers.

In his keynote address, cancer researcher Alfred C. Johnson of the National Institutes of Health beckoned students to take full advantage of the opportunities provided through the network, urging the future scientists to be mindful of Newton's law: "An object at rest will remain at rest unless acted upon by an external force."

African-Americans, Latinos, Asian-Americans and Native Americans make up nearly 30 percent of the U.S. population, but only about 14 percent of New England college students and much smaller shares of science and engineering majors.

The network, now in its 11th year, is supported by MIT, Northeastern University, Middlebury College, Mount Holyoke College, the University of Connecticut, the University of New Hampshire, the University of Rhode Island and Wellesley College, as well as corporations including Pfizer Corp., Genzyme and Texaco.

Changing Lives

Ten years ago, a Bay State district court judge and probation officer teamed up with University of Massachusetts Dartmouth English Professor Robert Waxler for a *novel* undertaking.

Judge Robert Kane began screening offenders who came before him to determine their readiness to change and their reading ability. Then he'd sentence the promising ones to Waxler's "Changing Lives through Literature" program. The offenders would read novels and short stories by authors such as Ken Kesey and Norman Mailer and meet every two weeks at UMass-Dartmouth to talk about how the books relate to their own lives.

A study commissioned by the Gardner Howland Shaw Foundation, which funds the Changing Lives initiative, found the rate of recidivism among those who passed through the program to be 18 percent, compared with 43 percent among other offenders. No wonder criminal justice officials in

six other states, including Connecticut, have adopted similar initiatives.

Marked Up

New England colleges continue to charge far higher prices than their counterparts elsewhere in the United States.

Average in-state tuition and mandatory fees at New England's four-year public institutions rose to \$5,484 in 2002-03, up by \$594 or nearly 11 percent over the previous year, according to the College Board's annual report on college costs. Nationally, in-state tuition and mandatory fees at four-year public institutions reached \$4,081, up nearly 10 percent over the year before.

Meanwhile, average tuition and mandatory fees at New England four-year private institutions hit \$23,289, compared with \$18,273 nationally. Both rose by about 5 percent over the previous year. (The *Chronicle of Higher Education* reported, meanwhile, that New England is home to five of the nation's 10 priciest private colleges.)

At New England's two-year public institutions, in-state tuition and mandatory fees rose to an average of \$2,643, up by \$362 or almost 14 percent. Nationally, in-state tuition and mandatory fees at two-year publics rose by 8 percent to an average of \$1,735.

Like their counterparts nationally, New England's private two-year colleges hiked tuition and mandatory fees by 8 percent. But that translated into a \$1,326 hike in New England, compared with \$690 nationally.

The rate of inflation over the period was well under 2 percent. The College Board attributed the steep public

Education Governors

Where did New England's and the nation's 2002 gubernatorial candidates earn their undergraduate and graduate degrees?

	Public Institutions		Private Institutions	
	In New England	Outside New England	In New England	Outside New England
New England Candidates	3	0	9	6
Other U.S. Candidates	0	53	12	35
All U.S. Candidates	3	53	21	41

Source: CONNECTION analysis of *Chronicle of Higher Education* data.



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tuition hikes to weak state tax support of higher education.

The University of Massachusetts Lowell, for one, announced it would have to rely more heavily on "non-state sources of funding, including private fundraising, returns and commercial and intellectual property ventures ... and corporate education offerings, especially via the Web." But analysts noted that the torpid economy reduced other non-tuition revenues including charitable gifts.

Washington, D.C., higher education groups searched for a bright side and found it in student aid. The College Board's companion annual report on student aid notes that total aid funds nationally grew faster than college prices, rising by nearly 12 percent, to \$90 billion. Grants grew faster than loans for the second year in a row. But over the decade, loans grew from 47 percent of all aid to 54 percent, while grants continued shrinking from 50 percent to 39 percent, with tax credits accounting for the rest of the aid.

College Board officials also noted that federal Pell Grants for financially needy students covered just 42 percent of public college charges last year, compared with 84 percent two decades ago.

Comings and Goings

Jack Warner, former vice chancellor of the Massachusetts Board of Higher Education, became Rhode Island's commissioner of higher education, replacing **William Holland**. ... **Judith A. Brissette**, senior associate with the Washington, D.C. higher education executive search firm of R.H. Perry & Associates, became president of the Rhode Island Independent Higher Education Association, replacing **Robert J. McKenna** who retired. ... **David C. Smith**, former president of the Ohio-based Council for Ethics in Economics and executive director of the Maine Council for the Humanities and Public Policy, became executive officer of the Council of Presidents of the New England Land-Grant Universities, replacing **Neil R. Wylie**, who retired after 13 years with the regional council based at the University of New Hampshire.

Correction

CONNECTION'S *2003 Directory of New England Colleges & Universities* inaccurately reported the founding date of Bryant College. The Smithfield, R.I., college was founded in 1863.

Snippets

Student Migration

"There are certain states (you know who you are) where the first thing that the intelligent students say when they graduate is: 'I'm getting out of this armpit.'"

—Humorist **Dave Barry** in his Nov. 3, 2002, syndicated column on why state rankings based on class size and test scores do "not determine state intelligence."

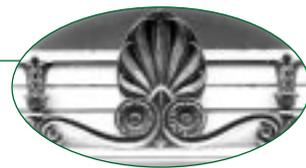
"Some states find importing non-residents to be a highly profitable business that enriches the state. (New England thinks and acts this way.)"

—From "Interstate Migration of College Freshmen, 1986-2000," published in the October 2002 issue of the "Postsecondary Education Opportunity" newsletter.

Recession-Proof

"For many occupations, a downturn in the economy is obviously bad news. But when money is precious, companies are willing to hire lawyers to go to court to get what they think is due. Also, bankruptcies are on the rise, which creates more work."

—"Massachusetts Lawyers Weekly" newspaper editor and attorney **David L. Yas** on why the median salary for Bay State lawyers has risen steadily over the past three years.



A Secretariat for Education and Workforce Development

ROBERT A. WEYGAND

The year 2003 brings an extraordinarily rare opportunity for change in New England. Five of the six states inaugurate new governors in this new year. The five new chief executives will name five new staffs with whom they will advance five new visions that they hope will leave a permanent mark on their states.

Improving the sour economy will be high on their list of priorities. Budgets will be scrutinized in record time to meet legislative deadlines. Alarms will be sounded about declining revenues, unnecessary spending and looming layoffs. The bad news will be emailed to every media outlet and relayed to the public, striking fear in the hearts of all. "It's the economy, stupid" will be resurrected as a catch-phrase in each New England state and as a slogan in the presidential campaign of 2004.

The condition of higher education may not capture the same level of buzz. But all six New England governors inevitably will find they cannot solve the economic problems of their states without solving the educational problems. The two are inextricably linked. Historically, governors who have focused on one and ignored the other have failed to make their mark and, more importantly, failed the people they represent.

Surely, each state has different circumstances and special problems that require different solutions. The problems facing Massachusetts and

Connecticut vary greatly from those facing Maine, Vermont, New Hampshire and Rhode Island. There are no simple solutions to these problems. But there are some lessons to be learned from the mistakes of the past.

The old *ad hoc* attempts at cooperation won't suffice.

In recent decades, for example, governors have attempted to put new emphasis on links between higher education and economic development by forming commissions, councils, quasi-public agencies and boards comprising interested parties. These groups would convene, sometimes grudgingly, stumble through their different perspectives, issue a news release and then go their separate ways to practice separate policies. Good intentions all, but little success.

Additionally, during the prosperous 1990s, many state agencies took on ever greater independence. Some began to look like fiefdoms. And though the more difficult economic times of the new decade argue for new ideas and new collaboration, the fiefdoms try to hold on to the vestiges of failed practices and isolationism.

It's time to wake up and smell the coffee.

If New England's governors are problem-solvers, and they all must be, then they must be mindful of the mistakes of the past and make bold moves that yield measurable results.

The old *ad hoc* attempts at cooperation won't suffice. These governors must now compel state agencies to work in total cooperation and collaboration.

One concrete way they can do that—and leave their marks too—is to create a single cabinet-level secretariat in each state to firmly direct education, workforce and economic development policy. This consolidated authority would hold the responsible agencies' feet to the fire, and enjoy the full attention and support of the governor. The respective departments of education and economic development must work together not just at a few meetings per year, but all the time. This won't occur unless the governors bring full force to bear on these agencies.

The political obstacles to such consolidation will be great. But the need is clear. The labor-intensive industries of our region are being rapidly replaced by knowledge-driven businesses. New England's present and future economy depends upon a high-quality higher education system. The region's higher education system, in turn, depends upon a healthy economy.

So, now more than ever, New England's students and businesses depend upon visionary and determined governors who will lead in word and deed.

Robert A. Weygand is president and CEO of the New England Board of Higher Education and publisher of CONNECTION.

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Higher Education Gets Down to Business

JOHN O. HARNEY
AND LYNN DOAN



**A GROWING ARRAY OF PARTNERSHIPS
BETWEEN CAMPUSES AND CORPORATIONS
BRING MUTUAL BENEFITS ... AND RISKS**

When leaders in education, business and government met last fall at the New England Board of Higher Education's "Building Human Capital" conference in Newport, R.I., Anthony Carnevale of the Educational Testing Service, reminded them: "No one intended that higher education's fundamental purpose would be to make foot soldiers for American business—especially not in this region where higher education was set up to educate teachers and preachers." But the noted economist also warned them that America could soon find itself short 15 million college-educated workers and that "higher education will feel extraordinary pressure to align its offerings with the demands of employers."

Already, colleges and universities across New England are teaming up with business to prepare students for real-world jobs as both foot soldiers and critically thinking generals. They are also entering into agreements with business to commercialize faculty research and contracting out their strategic expertise. Businesses, in turn, are providing scholarships and internships, funding university research programs (to the tune of more than \$170 million annually in New England) and giving their execs time off to teach on campus.

In Vermont, dozens of college students gain real-world experience in customer service at a

Putnam Investments facility on the campus of Champlain College. Rensselaer at Hartford provides customized, degree programs to employees of MassMutual Financial Group at their workplace. The Legal Seafoods restaurant chain and Marriott Corp. have a hand in curriculum planning at Johnson & Wales University. Merck & Co., the pharmaceutical firm, is building state-of-the-art research labs on the campus of Emmanuel College. Babson College MBA students earn academic credit while they provide consulting expertise to start-up businesses.

Though business and higher education can seem like foreign cultures, a new wave of ambassadors move between the two. Take the recent appointment of former Fidelity Investments fund manager Scott Stewart to head up the master's program in investment management at Boston University, where he previously served as an executive-in-residence. Or consider Boston College marketing professor Bert Mendelsohn's work with pizzeria owner Joe Crugnale. Mendelsohn helped Crugnale with the nuts and bolts of small business operations and had his students conduct market research for the pizzeria. Today, Bertucci's restaurants is a \$103 million business.

"Businesses work with higher education because they want a presence on campus and they want students to think of their organization, so it becomes mutually beneficial," says Ann Perry, director of career services at the National Association of Colleges and Employers.

For public institutions that depend on state funds, there are added incentives to working in partnership with business. For one, state legislators want public campuses to have visible impacts on state economic



development, particularly in the areas of workforce training and applied research. Secondly, campus leaders hope that financial support from business can help soften the blow of cuts in their state funding (without giving states an excuse to cut further).

Connecticut's Tunxis Community College flaunts its economic development potential with this pitch to business: "One. Talk to us. Tell us what you want to accomplish. We'll listen to your concerns, then help you set priorities and explore training options. Two. We'll design a training program precisely tailored to your needs, your people and your business goals. Three. Your employees will receive customized, quality training at a time and place most convenient for you. And we handle all the administrative details—so you can take care of business."

Meanwhile, against the backdrop of state budget cuts, the University of Massachusetts generated nearly \$15 million in technology licenses and royalties in fiscal 2002. One recent deal allowing Texas-based Re-Engineered Composite Systems to market a UMass-Lowell engineering professor's technology that transforms old tires into high-tech materials, could bring UMass \$20 million in royalties over the next 10 years.

All told, corporations contributed several billion dollars to U.S. colleges and universities in fiscal 2001 or 18 percent of all private support of higher education, according to the RAND Corp.'s Council for Aid to Education.

In many instances, companies fund scholarships to ensure a supply of graduates in related lines of business. Swingline, the home and office accessories producer, provides \$3,000 grants to industrial design majors at the Rhode Island School of Design. The New England Gas Co. provides \$2,000 scholarships to environmental management students. Microsoft offers full-tuition scholarships to encourage students to pursue technical degrees and software careers.

In other cases, companies fund new campus buildings—and expect their names to grace them.

Sometimes, the strings are attached more ominously. A University of Wisconsin sponsorship agreement with Reebok requires that "the University will not issue any statement that disparages Reebok" and that it will take steps to address any such remarks made by university staff. The University of Kentucky's \$25 million deal with Nike is terminated if the "university disparages the Nike brand." The Kent State student council routinely denies Amnesty International funding because the nonprofit criticizes one of Kent State's sponsors, Coca-Cola.

Critics are also sounding the warning about corporations using non-disclosure agreements to take ownership of university scientific research that once would have fallen into the public domain. Gary Ruskin, executive director of Portland, Ore.-based Commercial Alert, worries that educational institutions could "become factories for commercial products."

What is fair involvement for businesses? "Only philanthropy," says Ruskin, "when corporations give money to schools with no strings attached and all they receive is a heartfelt letter of thanks. There's been a drift from philanthropy into marketing."

Meaningful codes of ethics to guide business-higher-education partnerships are hard to find. But Ruskin is happy to improvise: limit corporate seats on college boards of trustees, limit naming rights on buildings, give faculty rights to their inventions, limit conflicts of interest, ban college presidents from serving on corporate boards, limit ad space in college media ... and, of course, keep sight of mission. "The mission of education must stand," concludes Ruskin. "It must be a dominant value in any university-corporate activity."

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A Call to Action

on New England's Innovation Economy

WILLIAM GUENTHER



WILL BUSINESS AND HIGHER EDUCATION ANSWER THIS TIME?

Like the region itself, the relationship between business and higher education in New England has historically been proper and polite, with each holding the other in high regard. But despite personal, financial and other ties, different cultures and priorities often leave these important players operating on separate planes when it comes to regional economic development.

With serious long-term economic and fiscal challenges across the region, New England's business and higher education sectors now have little choice but to work together much more closely. They need each other, and the region, with its "innovation economy," needs them to interact effectively.

Business requires the talent produced on New England's college and university campuses as well as the innovation spawned by the more than \$2 billion in annual research and development spending by the region's research universities. This research has fueled growth of biotech, life science and technology firms, and the good jobs they provide.

For *universities*, the advantages of closer collaboration with the private sector are obvious. Such strategic ties can help them gain access to the best corporate researchers, better understand the potential applications of basic science research and be surer that they are educating students in appropriate skills.

State government, for its part, must be much more active in shaping and assisting strategic alliances between local universities, both public and private, and science and technology firms. This should be part of an economic development strategy that places higher education and science and technology research at its core.

Mass Insight Corp., a public policy and communications firm that organizes public-private initiatives to

support economic growth in Massachusetts, recently issued a new report, titled *An Economy at Risk*, making the case for a Massachusetts economic development strategy organized around higher education and science and technology.

One of the people interviewed for the report was Michael Best, director of the Center for Industrial Competitiveness at the University of Massachusetts Lowell. "It's incumbent upon Massachusetts government, universities and industry to do a much better job of technology auditing and forecasting," Best observed. "We need to collaborate more effectively and develop a technology road map that looks five or 10 years down the line. Otherwise, we're likely to turn into Cambridge, England—we'll have the very best university research but none of it will be linked to local industry. We'll create all the new ideas, but everyone else will get the benefit."

Contrary to popular belief, Massachusetts remains home to substantial numbers of manufacturing jobs. In fact, outside Route 495, 75 percent of the private employment base is in manufacturing, according to an earlier Mass Insight report. What's changed is that those manufacturing companies that have survived—like American Saw and Manufacturing in Springfield, Quaker Fabrics in southeastern Massachusetts and Nypro in Clinton—have moved up the technology food chain. And in fact, the high skill workforce makes Massachusetts and other states in New England attractive locations for advanced technology production. However, unless we improve the connections between universities and business, we risk losing the advantages we have.

Massachusetts, with its extraordinary mix of world-class universities and technology industries, has long proved the benefits of industry-university connections. But its lack of a coordinated science and technology strategy, including targeted investment to expand the alliances among the University of Massachusetts, the

state's private universities and industry, proves the danger of lost opportunities.

As one high-technology executive told Mass Insight, "Massachusetts thinks it has so much going for it that [its academic cluster] alone will sustain it. It won't. Other states are seeking to eat our lunch. The new paradigm lies in university collaborations with industry and with government."

Current economic and fiscal woes make it hard for the New England states to fund new major science and technology initiatives, however meritorious. In fact, because of the traditional role of private higher education in New England, there has been little history of targeted public investments in science or the kind of match programs that states such as California and New York have in place.

Executives and university officials argue that we cannot afford *not* to invest in education and research, especially in the face of action by key competitor states. California, for example, has *increased* spending on higher education to \$13.3 billion for the current fiscal year, up by 28 percent since 1998, despite a fiscal situation even more dire than New England's. California lawmakers also spared from the latest round of state budget cuts a successful program in which Sacramento will invest \$400 million over four years in four university-based Institutes for Science and Innovation, to be matched on a two-to-one basis by private and federal funds.

"Massachusetts has been slow on the trigger when it comes to state support for university research," said Analog Devices Chairman Ray Stata. "Our goal should be to make the University of Massachusetts look more like California's public universities in terms of state support. If the Legislature stepped up more broadly to create centers of excellence in Lowell and Amherst, and committed to making Amherst as prominent in engineering as UC Berkeley, it would have an enormous long-term impact on the Massachusetts economy."

California isn't the only state competing for the Bay State's science and technology advantage:

- New York, with its own concentration of major private universities, continues to build up the State University of New York (SUNY) as a research powerhouse. The state also provides incentive funds for SUNY, private colleges and businesses such as IBM to collaborate on world-class research initiatives. In 2002, IBM agreed to commit \$100 million to SUNY Albany, matched by \$50 million in state funds, to build up the nation's premier microchip research and development center.
- Pennsylvania, another state with a wealth of private institutions, launched the Ben Franklin Partnership two decades ago to create university-based research centers of excellence and provide seed-stage investments in the technology companies that emerge from those centers or collaborate with them. Since 1989, the partnership's participants have created

nearly 50,000 high-tech jobs and boosted the state's economy by \$2.9 billion—all for an investment of about \$4,000 per job.

- Texas is investing more than \$300 million in a network of science and research facilities at Texas colleges and universities, with \$45 million dedicated to product development and business incubators.

By contrast, Massachusetts lacks a coherent economic development strategy organized around higher education and framed by science and technology research. And rather than boosting support for public higher education, Massachusetts has been cutting it. Massachusetts retains a leading position according to many "new economy" indicators, such as patent and Small Business Innovation Research awards and federally funded R&D. But its continued leadership in key technology areas is far from guaranteed.

Indeed, high-tech executives and academic deans have told Mass Insight that compared to California or New York, Massachusetts can be a difficult place to establish collaborations or to gain the level of government coordination and support they need to build required new labs or find trained technicians. Some of this is a result of the fragmented marketplace in higher education. Without a dominating public university as a major point of access to higher education resources, Massachusetts and the other New England states that are home to significant private higher education institutions need state government to play a role in helping coordinate public and private resources.

Critical comments from industry also reflect Massachusetts' relatively weak financial support for its public university system and a lack of leadership in fostering industry-university ties. "At UMass, we have developed strengths in new fields such as nanotechnology," noted UMass Vice President Thomas Chmura. "But, in competing for federal grants, we're operating at a disadvantage. Competing institutions such as UC or SUNY have received recent infusions of capital funds for new nanotechnology research facilities and have access to state seed funds and matching science and technology grant programs that simply don't exist here."

Such frustrations are not new. In 2001, Mass Insight's *Call to Action* report called for state government and higher education to forge much stronger and more strategic ties. Among other things, the report called for government, industry and university leaders to assess technology-sector needs and establish a state role in brokering long-term relationships between industry and the state's public and private campuses. The report also recommended a re-examination of how public higher education is structured in Massachusetts, with an eye toward giving UMass the authority and resources to coordinate public university-private industry relations.

But that call to action went largely unanswered. State government has remained a bystander, assuming that Massachusetts' largely private higher education

system and technology marketplace alone will ensure a secure economic future. Public higher education has begun some promising new science and technology initiatives, but has also had to deal with the immediate effects of budget cuts. Until now, business groups have failed to seriously lobby for higher education, despite its importance as a competitive asset.

At the least, the current downturn should be used to lay the foundation for a science and technology strategy involving both public and private universities. As Teradyne CEO and chairman of the Massachusetts High Technology Council George Chamillard told the *Boston Globe*, "The state's broke right now, but what's required in this period is to start building up the profile of the (public) universities and putting in place the kinds of capabilities they have in other states." Last fall, Chamillard co-signed a letter organized by Mass Insight, calling upon Massachusetts gubernatorial candidates to, among other things:

- Increase collaborations among public universities, private universities and Massachusetts businesses;
- Accelerate the development of the UMass system as a leading-edge technology university; and
- Support initiatives that coordinate science and technology collaborations between private campuses and the public higher education system.

Newly elected Massachusetts Gov. Mitt Romney has the opportunity to start by assembling academic and private-sector leaders to assess shared needs and strategic opportunities. Rather than a one-shot summit, such coordination should be built into the state's ongoing economic development operations.

The first step private-sector leaders have proposed is to produce a sort of technology "road map," including an inventory of major research operations, a survey of what regional industry clusters need and the potential for new collaborations between universities themselves and between higher education and business.

Current fiscal problems will dominate government for at least the next year or two. But economies act and respond in far longer cycles. Massachusetts must be able to look beyond its current red ink to consider prudent, long-term capital and operating investments in closer strategic alliances among state government, business and higher education. That's not just good policy—it's an economic imperative.

William Guenther is president of Mass Insight Corp.



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HOW EDUCATION'S SOCIETAL MISSION AND BUSINESS'S HUMAN RESOURCE NEEDS ARE CONVERGING

ANTHONY P. CARNEVALE
AND DONNA M. DESROCHERS



In today's economy, access to postsecondary education or training has become the threshold requirement for individual career success. And successful business organizations now depend on employees with at least some education or training beyond high school. The increasing economic value of postsecondary education is good news in a society that strives to make economic opportunity subservient to individual merit, rather than family background. Unlike the European welfare states that guarantee access to income and benefits irrespective of individual educational performance, our increasing reliance on education as the arbiter of economic opportunity allows us to expand opportunity without surrendering individual responsibility. As a result, we emphasize equality of educational opportunity rather than equality of economic outcomes. Ultimately, student performance is assessed individually and individual educational performance determines access to income and benefits in labor markets.

At the same time, the growing economic value of a postsecondary education is the source of new tensions among educators, government leaders and the business community. It has become increasingly apparent that with tight public budgets we cannot afford all the postsecondary education we need, especially given the growing costs associated with pre-K development and meeting new standards in elementary and secondary education. As a result, there are growing pressures to produce postsecondary education cheaper, faster and better. As one business leader puts it: "Higher education isn't really *higher*, it's just longer."

The relentless market pressures for more efficiency in higher education create inevitable tensions, because higher education is different from other economic commodities. Postsecondary education is about more than dollars and cents. It does more than provide foot soldiers for the American economy. Postsecondary education, more than K-12 education, has intrinsic as well as extrinsic value. College educators also have cultural and political missions to ensure that there is an educated citizenry that can continue to defend and promote our democratic ideals. Nevertheless, the inescapable reality is that ours is a society based on work. Those who are not equipped with the knowledge and skills necessary to get, and keep, good jobs are denied full social inclusion and tend to drop out of the mainstream culture, polity and economy. Hence, if postsecondary educators cannot fulfill their economic mission to help youths and adults become successful workers, they also will fail in their cultural and political missions to create good neighbors and good citizens.

Growing demand for postsecondary education

Postsecondary education will be a key ingredient in the 21st century recipe for a growing economic pie. In the 20th century, increasing educational attainment, principally improvements in the rate of high school enrollment and graduation, contributed about 25 percent to overall economic growth. Currently, high school completion rates—including students earning General Education Development (GED) certificates—are approaching 90 percent. In the future, the economic contribution from increasing educational attainment will have to come from increasing access to college. The economic returns from expanding access to college, persistence and graduation can be substantial. Increasing a country's level of schooling by one year can increase economic growth by 5 percent to 15 per-

cent—that means between \$500 billion and \$1.5 trillion added to U.S. economic output, including roughly \$160 billion to \$500 billion in new tax revenues.

While important to national wealth and competitiveness, the apportionment of economic opportunity among individuals and their families is also strongly influenced by access to college. Access to college has become the new threshold requirement for good jobs. Since the 1970s, the earnings of workers with at least some college relative to high school graduates (the so-called “college wage premium”) has doubled from 35 percent to 70 percent, even though the overall supply of workers with at least some college has grown by 60 percent over the same period.

Since 1959, the fastest growth has occurred among jobs that require at least some college education. Jobs employing prime-age workers (ages 30 to 59) that require at least some college increased from 20 percent of all jobs in 1959 to 59 percent in 2000. And about three in 10 prime-age workers have at least a bachelor’s degree.

Moreover, college requirements have increased across all occupations and industries. Consider:

- Office jobs, the fastest growing set of jobs in the economy, have grown from 30 percent of all jobs in 1959 to 39 percent today. About 50 million Americans work in these white-collar office jobs. Fully 69 percent of them have at least some college education, up from 38 percent in 1973.

- Education and health care jobs have grown from 10 percent to 17 percent of all jobs since 1959, and the share with at least some college has grown from 50 percent to 75 percent over the past 30 years.

- Technology jobs have doubled. They now account for 7 percent of all jobs, and 86 percent of the people working them have at least some college, up from 63 percent in 1973.

- Manufacturing jobs have declined from 32 percent to 17 percent of all jobs, mostly as a result of productivity improvements. At the same time, skill requirements in manufacturing increased dramatically. In 1973, more than half of line workers were high school dropouts. In 2000, only 19 percent were dropouts, and 36 percent had at least some college.

- Low-skilled service jobs accounted for 20 percent of jobs when Ike was president and still do. About one quarter of workers in these jobs are either in school or just passing through on their way to better jobs.

Complex skill requirements

Good jobs not only require higher cognitive skills, they also require a new set of problem-solving skills, interpersonal skills and “positive cognitive styles” that employers associate with college education.

The new applied skill requirements have emerged, in part, because of the changing occupational structure of the economy. Most new positions are in business services, education, health care and office jobs. Because this work entails relatively higher levels of human interaction and personalized responses to peo-

ple’s wants and needs, more general problem-solving and interpersonal skills are required. Broader and more general skills also are required because of the spread of “high-performance work systems” that push broader responsibilities down to work teams at the point of production and service delivery.

These same behavioral skills are also required in high-technology and manufacturing jobs, because the technology itself handles more of the rote, manual processing tasks, allowing for fewer, but more highly skilled, employees to interact more with each other in order to exploit the capabilities of new flexible technologies in providing higher quality, variety and speed of operations.

In both manufacturing and services, these new prob-

The inescapable reality is that ours is a society based on work.

lem-solving and behavioral skills are also required to create new kinds of value-added. Unlike the old manufacturing-based economy where the paramount concern was simple productivity—high volume at low cost—the new economy demands new kinds of value, measured by a more complex set of performance standards and workers with the broad skills to meet them. These new kinds of value include: quality, variety, customization, customer focus, speed of innovation and the ability to add novelty and entertainment to products and services.

For instance, companies that make or sell quality products or deliver quality service need workers with solid academic and occupational preparation. But good academic basics do not guarantee quality. Companies that meet quality standards require conscientious employees who are able to take responsibility for the final product or service—regardless of their position in the company. Variety and customization require workers who are creative and good at problem solving. Continuous innovation requires a general ability to learn and work in groups. Customer focus requires the ability to empathize with customers. To continuously improve products and services, institutions require employees, up and down the line, to have leadership and learning skills. Successful teamwork and good customer service require interpersonal and communication skills.

The most subtle behavioral quality in managing the complexity and pace of schooling, work and family life in the constant flux of postmodern times is “cognitive style.” The notion, pioneered by the psychologist Martin Seligman, is more than “self-esteem” or “the power of positive thinking.” Those are internal attitudes that persist irrespective of external experiences of success or failure. By contrast, cognitive styles refer to the various ways people process information gained from experience. Those with a negative cognitive style tend to see failure as a result of causes that are “permanent, pervasive and personal.” They tend to discount successes as temporary, limited in scope and unrelated to personal merit. People with a negative cognitive style tend to

be less successful because they cede control over the choices in their lives to circumstances, reducing their ability to act and persevere. Cognitive style helps explain why some succeed against the odds and others fail in spite of their advantages.

The general reasoning, problem-solving and behavioral skills, as well as a positive cognitive style, are critical for lifelong learning and success in modern labor markets. Still, at some point, everyone has to put an occupational point on their educational pencil. For a small share of students, occupational preparation begins some time in high school—in vocational programs, career academies or cooperative education programs. But for most high school students, occupational preparation continues or begins after high school with enrollment in occupationally oriented training or in degree- and non-degree-granting college programs. A much smaller share, primarily liberal arts graduates, continue their education beyond college and get their professional credentials in graduate or professional schools. Irrespective of the type of degree held, the workers with the most educational attainment tend to get further training on the job.

The vast majority of college degrees come in occupational or industry-specific flavors. For instance, of the 1,238,000 bachelor's degrees conferred in 2000, only one-third were in the humanities or behavioral and social sciences. The remaining two-thirds of bachelor's degrees were conferred in more vocationally oriented subjects: 21 percent in business, 9 percent in education, 9 percent in computer sciences and engineering, 8 percent in natural sciences and 21 percent in an assortment of other vocational fields such as architecture, home economics and protective services. The same pattern is reflected in the growing number of associate degree, certificate, certification and customized training programs.

Demand will outpace supply

Looking to the future, there will be an overall shortage of workers in the American economy. Between 1980 and 2000, the U.S. labor force increased by 50 percent. There were 29 million native-born new entrants into the labor force and 9 million immigrants. David Ellwood, professor of political economy at Harvard University, projects that over the next 20 years, between 2000 and 2020, growth in the labor force will increase by only 16 percent. There will be *no* new growth in prime-age, native-born workers; two-thirds of the increase is expected to come from workers age 55 and over, while the remaining one-third is projected to come from immigration.

The most acute shortages will occur among college-educated workers. The share of American workers with at least some college education increased by 19 percentage points between 1980 and 2000—from 39 percent to 58 percent. But over the next 20 years, from 2000 to 2020, the share of college-educated workers is expected

to only increase by 4 percentage points, to 62 percent. In the meantime, college-level jobs are expected to grow by about 22 percent over the foreseeable future.

The net effect of these trends is that we could see an overall shortage of 20 million workers, including 10 to 15 million college-educated workers.

Meeting the need

It is clear that higher education will feel extraordinary pressure to align its offerings with the demands of employers. We will not be able to afford all the higher education we need to satisfy these demands and meet the broader education needs of students. So there will be pressure to bring more accountability to higher education by improving basic efficiencies as measured by graduation rates, persistence and cost containment. A relative emphasis on higher education's economic role over its more traditional academic, cultural and political roles is implicit in these trends.

The challenge for higher education is to balance its charter to provide a well-rounded education while continuing to prepare the nation's workforce. The way forward is to emphasize the common ground among economic, cultural and political missions. Happily, the interests of business and educators are not all that different, although they differ in emphasis. Critical thinking skills, more general reasoning abilities and social skills are important components of work and life alike. Teaching these skills and the habits of mind they require serve the career interests of individuals, the competitive interests of business and the cultural role of educators.

Fortunately, the educators' broad societal mission and the employers' more narrow human resource needs are converging in a growing number of high-performance work systems, where workers are more autonomous, involved and broadly skilled, and where diverse workers and customers are valued. This convergence is strengthened further by new research on the way people learn. This new understanding suggests a reformed pedagogy that combines academic and experiential education in a system of lifelong learning in schools, in the community and at work. In addition, the growing interest in community service and the willingness of American employers to work with colleges and universities in order to get the employees they need offer the promise of ending American education's isolation from the community and the workplace. In combination, these convergent factors suggest a unique, historic opportunity to create a seamless weave of academic and experiential learning that will make our colleges and universities, communities and workplaces more accessible and effective venues for both human development and economic growth.

Anthony P. Carnevale is vice president for assessment, equity and careers with the Educational Testing Service (ETS). **Donna M. Desrochers** is ETS senior economist.

The Public's

Business

**140 YEARS AFTER MORRILL,
NEW ENGLAND'S LAND
GRANTS ARE CRUCIAL
BUSINESS PARTNERS ...
BUT COULD THEY BE MORE?**

ALAN R. EARLS



Since his death more than 100 years ago, Vermonter Justin Morrill has largely faded into obscurity. Few remember his long career in government as both a Whig and Republican congressman and senator, his authorship of the Tariff Act of 1861 or his chairmanship of the House Ways and Means Committee. But mention Morrill in the context of higher education, and something might click. It was Morrill, after all, who composed and championed the Land Grant Act of 1862, with which his name will be forever linked. If copying is the sincerest form of flattery, then Morrill's Land Grant legislation is well-honored. Among emulative programs: the 1966 Sea Grant program (thanks largely to another New Englander, U.S. Sen. Claiborne Pell of Rhode Island), the 1987 Space Grant program and the never-enacted High-Tech Morrill Act, the late U.S. Sen. Paul Tsongas's 1980s attempt to support business-higher education partnerships in math and science education.

No wonder Vermont Public Television saw fit to examine Morrill's life a few years ago with an hour-long documentary titled *Land for Learning*. Producer Jill Halstead says the Strafford, Vt.-native was a natural for late 20th century revival. "He opened higher ed to a whole class of society who would never have gotten close," she says. "The Land Grants provided not only practical things like agricultural and engineering skills but also language, arts and history."

Morrill also made the Land Grant institutions implicit partners with the agriculturists and industrial entrepreneurs upon whom the wealth of the nation depended.

Today, Land Grants continue in these familiar roles, but also in new ones. The National Association of State Universities and Land Grant Colleges (NASULGC) reports that public universities, led by Land Grants, provide major stimuli to state and regional economies, generating \$5 on average for every state tax dollar invested. The institutions capture an average of \$105 million a year in research grants and contracts. They also attract new business: nearly two-thirds of them sponsor research parks or business incubators.

Still, many economic development pros hope these special institutions can do more. Some talk about renewing the Land Grant for the 21st century with new legislation such as the proposed Higher Education Millennial Partnership Act, a loose plan to offer Land Grant universities the technological tools to revolutionize higher education, perhaps using governmental sales of sections of the electronic spectrum as a source of funds. "Almost everyone involved believes that while the original Land Grant provided grants of land to be used or sold to create an endowment for the new colleges, this time around, the millennium land grant should focus in one way or another on technology," says University of Maine President Peter S. Hoff.

The Morrill of the story

Though New England was a national center of education before Morrill (Harvard had already been operating for more than 200 years), the legislation made the most of government largesse, providing states with federally owned tracts of land to sell or lease and use the revenues to create colleges geared to the needs of the state economy.

Massachusetts chose to split its appropriations between the Massachusetts Agricultural College, now UMass-Amherst, and a college emphasizing mechanic arts, the private Massachusetts Institute of Technology. MIT received \$3,409 under the legislation, "a drop in

the bucket, even in 1865,” according to MIT associate news office director Robert Sales. Still, the funds gave MIT’s founding president, William Barton Rogers, the help he needed to complete the creation of the institution that would come to symbolize technological know-how. As MIT is fond of noting, it has played midwife to thousands of new enterprises and, indeed, whole industries over the past 140 years. As of 1994, firms launched by MIT graduates employed 1.1 million people and “if they formed a nation ... would have ranked that year as the 24th largest economy in the world.”

For New England’s six public Land Grant universities, operating from the start in one of the most industrialized regions of the country, the Land Grant mandate has always been an invitation to expand and reach out.

Hoff points out that Land Grant Universities were “truly revolutionary” at their inception because they extended higher education to all who had the intellectual tools and preparation to benefit. Furthermore, they emphasized a research mission and an intention to reach out to help society solve its most pressing problems. “In 1865, those problems included agriculture to feed a nation devastated by the Civil War and mechanic arts—engineering—to help the country move into the industrial age,” says Hoff.

Reaching out

The notion that Land Grants were focused solely on agriculture is belied by their history and even the enabling legislation itself, which aimed to nurture “such branches of learning as are related to agriculture and mechanic arts, in such manner as the legislatures of the state may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life.”

Today, Land Grants continue to extend access to university education at an affordable cost to people with limited means but academic potential and to conduct cutting-edge research. But as the needs of the citizens have changed, so have the Land Grant institutions.

Says Hoff: “The problems themselves have become more complex: economic development and the health of our population are at the top of our list [now] along with meeting the homeland security issues presented by 9/11.”

As an example of a modern interpretation of the Land Grant role, Hoff cites UMaine’s programs in advanced engineered wood composites, which aim to develop uses for wood from Maine forests that create jobs without hurting the environment. UMaine’s work in chemical and biological sensors, useful for detecting dangerous chemical agents, has also taken on new relevance because of terrorist threats.

Like its sister Land Grants created in response to the demands of a 19th century agrarian society, the University of Rhode Island in 1971 became one of the nation’s first four Sea Grant universities and quickly made its presence felt in marine sciences and fisheries. Now, URI pursues state-of-the-art research and training

programs for new industries such as biotech, which, in the form of giant companies like Dow and Amgen, have been expanding in the Ocean State. “We have not forsaken our agricultural roots; rather we have grown from them to encompass the new scientific and social challenges of the 21st century,” says Jeffrey R. Seemann dean of URI’s College of the Environment and Life Sciences.

Leaving His Stamp

Justin S. Morrill of Vermont began advocating for the Land Grant Act in the 1850s. The act’s passage in 1862 provided a grant of 30,000 acres of public land for each member of a state’s congressional delegation, to be sold to raise funds for the creation of agricultural and engineering colleges. A second act in 1890 extended the provisions of the legislation to former Confederate states. In 1962, the U.S. Post Office honored Morrill with a “Higher Education” stamp commemorating passage of the Land Grant Act.



John Mullin, vice president for university outreach at UMass also sees Land Grants operating on the cutting-edge of fields like biotech. UMass graduated 600 life science majors in 2001 and boasts an annual research budget of \$250 million, more than half of which is in life sciences. UMass also recently launched new master’s/Ph.D. degrees in biotech and biomedical engineering and is developing a \$120 million R&D center in Worcester and \$80 million vaccine manufacturing plant in Boston.

Furthermore, Mullin adds, “We no longer have legions of extension agents, but we do have people helping 40,000 at-risk kids and focused efforts in agricultural sectors like the cranberry industry.” Indeed, he says UMass faculty are involved in more than 1,000 business, social and cultural projects across the state. “The Land Grant tradition is alive and well,” he says, “but it isn’t the same mission as a century ago.”

Shifting priorities

Underscoring the shift in mission, NASULGC consultant Irvin T. Omtvedt, who is the emeritus vice chancellor for agriculture and natural resources at the University of Nebraska in Lincoln, notes that while U.S. Department of Agriculture funding to support scientists and extension educators at Land Grants declined

by 16 percent between 1988 and 1998, research funding from NASA and the National Institutes of Health grew by 58 percent and 43 percent, respectively.

Although federal R&D funding to research universities keeps growing, state tax support for Land Grant operations has been historically low and periodically slashed due to budget crises. Last year, every New England Land Grant suffered either reductions or rescissions. If there is a silver lining to the dark fiscal cloud, it is that Land Grant institutions, which have always focused on collaborative partnerships, have had added incentive to work more closely with the private sector and with other institutions of higher education. The increasing complexity of problems also has led Land Grants to form interdisciplinary centers that cut across departmental and college lines to address their research and educational priorities. In biotech, for example, agricultural scientists work increasingly in teams with biologists and engineers from other departments or other institutions entirely.

Despite their financial instability, Land Grant institutions remain better suited to solve many state problems than other private or governmental institutions. Says UMaine's Hoff: "They are usually in a stronger position to respond."

Hoff notes that businesses in fields from aquaculture to electronics work with UMaine because of its Land Grant and Sea Grant affiliations. Cheryl Timberlake, executive director of the Biotechnology Association of Maine, says university contributions to Maine's biotech industry range from research collaborations to UMaine researcher Michael Vayda's significant volunteer involvement on industry panels.

More traditional Maine industries such as agriculture, forestry, marine science and engineering also work extensively with the university. For example, the Irving Chair in UMaine's College of Natural Sciences Forestry and Agriculture, is funded by an endowment from J.D. Irving Ltd., a private, family-owned forest products company based in the Maritime region of eastern Canada. Last year, after a national search, UMaine appointed Jeremy Wilson, a specialist in the application of computer mapping and modeling technology to forest management, to fill the position. The Pulp and Paper Foundation, meanwhile, focuses its philanthropy on UMaine because of the top-grade scientists the Land Grant makes available for that industry.

In its broader effort to help new business, UMaine recently opened the Target Technology Center in Orono. With a focus on information technology, the center is a part of the State of Maine's network of seven technology incubators. Other facilities specialize in aquaculture, composites, biotechnology and environmental monitoring.

"Our strategic initiative in information science (IS) across the university has helped promote relationships with software developers and many industries that rely on graduates with IS skills," says Hoff. And of course, there is the Maine potato. Vayda, the assistant director of UMaine's Forestry and Agriculture Department, notes that researchers have had a tremendous impact

on the potato industry, developing new cultivars and finding new storage techniques that help bring more of the crop to market. They have also helped growers control insect pests, particularly the Colorado potato beetle, using integrated pest management programs, and developing new ways to control insects with less dependence on traditional insecticides.

Seemann at URI says businesses beat a path to the doors of Land Grants because they know they can get high-quality, independent information at lower cost than they would by contracting with other types of organizations. They can also get well-educated workers. Valerie Gamble, the training manager at Amgen, the West Greenwich, R.I., biotech firm, says the university's biotech graduates will be an important factor in the industry's success in Rhode Island. "With my colleagues, I am helping URI design a biotech curriculum that will prepare students for the real-world needs of the industry," she says.

A new Land Grant Act?

In 2000, NASULGC and the W.K. Kellogg Foundation issued a report calling for a renewal of the historic "covenant" between the American people and their public colleges and universities. Among other things, the commission called for a Higher Education Millennial Partnership Act. The proposed legislation would provide funding for Land Grants and the other public campuses. In return, the public universities would commit to providing genuinely equal access to students of all ages and backgrounds, as well as "conscious efforts to bring the resources and expertise at our institutions to bear on community, state, national and international problems in a coherent way."

Land Grants, for their part, want to be sure that any new legislation comes with funding. John Bramley, senior vice president and provost at the University of Vermont, says he would not favor any new legislation that doesn't provide additional resources.

If there seems something too gimmicky about new Land Grant acts and new G.I. Bills, Hoff doesn't see it. "It makes sense for America to renew its covenant with higher education, as it has in the past with Land Grant legislation, investment in university extension, creation of and investment in historically black and other minority institutions, the G.I. Bill and widespread federal aid to needy students," he says. "Millennium Land Grant legislation and investment in technology represent the logical next steps in our nation's pioneering approach to higher education."

The Land Grant concept will continue to shape the role of public universities in the economic development of their states. Says Omtvedt: "The Morrill Act is as relevant in the 21st century as it was in 1862, and our challenge is to ensure that the Land Grant institutions continue to change to keep abreast of the changing needs of the citizens they serve."

Alan R. Earls is a freelance writer based in Franklin, Mass.

Community Colleges Mean Business ...

But What Does Business Mean?

CATHRYN L. ADDY AND WILLIAM F. RITCHIE



New England faces a complicated set of problems. Over the next decade, the region will see: shrinking tax revenues to support state and local governments because of an unfavorable business climate; increasing disparity between the skills of workers entering the labor market and those possessed by an experienced yet aging workforce; an influx of younger immigrant workers, many with language barriers, who are not ready for even entry-level jobs; and a relatively high cost of living that will make it difficult to attract and retain the educated workforce needed to replace workers who retire.

It is imperative for businesses to find a reliable and prepared labor force. This was easier when all a worker needed most was a strong back or basic skills that could be learned on the job. But those qualities no longer cut it in New England or anywhere else in the United States. As a result, businesses are spending as much as \$23 billion a year to train their employees, according to IDS, the Framingham, Mass.-based consulting firm.

Community colleges have believed from their inception that, given the opportunity, they could offer the solution to business's labor-supply problems. In some states, including Connecticut, in fact, it is the statutory

mission of community colleges to provide career and job preparation. Yet while community colleges have been the educators and trainers of choice in some fields—for example, preparing two-thirds of all allied health workers—they have not always been able to deliver what business needs.

One reason is that our expectations and those of business may be as far apart as planets in the solar system. While successful businesses must be cutting-edge and instantly responsive to market shifts and consumer demands, traditional educational institutions move at the pace of bureaucracy, slowed by layers of approval and oversight imposed upon curricular decisions. While businesses want to spend the least possible on indirect costs, community colleges depend, in part, upon the financial support of the businesses to which they provide education and training. While businesses want personnel to be instantly productive, the processes of education and training require time for students to acquire experiences that directly relate to classroom theory.

The business community has many options for training and educating workers. Large companies such as Motorola and McDonald's have created their own corporate universities. Proprietary schools such as DeVry, Argosy and the Education Management Corp. have carved a national niche in employment training. The University of Phoenix enrolls almost 50,000 online students. Other colleges and universities also run networks of training programs specifically designed to

meet the needs of businesses and provide continuing education for workers. So despite their public mandate, lower costs and ubiquitous availability, community colleges face a lot of competition.

If New England community and technical colleges are going to be of greater service to business and industry, then we want a few things from the business community. First, we want employers to invest in *all* their employees. At the most basic level, employers should commit to the idea that every one of their employees must be literate not only in the traditional sense, but also computer-literate and familiar with the role of technology in the workplace. Recent literacy studies show that nearly one quarter of U.S. adults are functionally illiterate. Businesses have a responsibility to make sure that their employees do not fall into this category. Workers with marginal literacy levels and no technical skills are disproportionately disadvantaged if they become unemployed in an economic recession. Indeed, virtually every time a manufacturing company moves out of New England, community colleges are called upon to retrain the company's former employees to make them employable. Too often, we have to start with reading and writing.

Moreover, community college enrollment goes up when the economy is weak, which places demands on us when we are least able to meet them. We need to get over the idea that education and training are needed only in times of upheaval or economic crisis. Businesses will prosper more if they view employee education and training as a long-term priority rather than a stopgap measure to ward off financial ruin.

We also want businesses to see community colleges as partners. Internship and practicum experiences benefit both students and the businesses that employ them. Tuition reimbursement and loan-forgiveness programs encourage long-term commitments to education on the part of employers, while supporting community college students, who are often economically disadvantaged.

Finally, if businesses will work with community colleges and articulate what they are looking for in future employees, then we will be better able to produce graduates who meet those requirements, perhaps ultimately saving businesses the money they now spend on retraining, which is a significant part of the \$23 billion figure.

Business understands what it means to focus on core strengths. Wall Street is littered with the remnants of companies that tried to diversify too much and thereby diluted their base. For too long, community colleges also have diluted their base, trying to be all things to all people. It is difficult to serve the needs of business when so many of our resources are devoted to other community college missions, including the traditional mission of preparing students for transfer

to four-year colleges, the developmental mission and the community service mission. This creates a tension between our role in economic development and our desire to be seen as traditional academic institutions. It may be time to reassess our core mission and functions and make some choices about who we are and what we do best, so that we all know what to expect.

Community colleges also must recognize that whether a program is *credit* or *non-credit* means little to the world outside. We hear constantly from business leaders that they want employees to have specific skill sets as well as critical thinking and problem-solving abilities. It is educators who have insisted on attaching a degree or certificate to that body of knowledge. To serve businesses, community colleges should embrace the idea that there are myriad ways to credential learning, not all of which are tied to accumulating traditional college credit. What we now label non-credit training is often the best route to licensure in emerging technical fields, for example, and it is the license, not the college credit, that leads to employment.

Community colleges must recognize that whether a program is *credit* or *non-credit* means little to the world outside.

Community college leaders and business leaders often work side by side serving their communities. Yet their relationships too infrequently translate into programmatic collaborations or educational partnerships, resulting in wasted opportunity for everyone.

We may inhabit different worlds, but in the end, businesses and community colleges have much in common. We rely on our human resources to improve the quality of life for everyone. We want well-trained employees who are well-educated, and well-educated employees who are well-trained. Ultimately we can do better work together than we can do alone. Isn't that really what we want?

Cathryn L. Addy is president of Tunxis Community College. William F. Ritchie is the college's director of institutional research.

Perspectives

ANTIOCH UNIVERSITY'S JAMES CRAIGLOW AND THE UNIVERSITY SYSTEM OF NEW HAMPSHIRE'S STEPHEN RENO ON BUSINESS AND HIGHER EDUCATION

INTERVIEWS BY CHERRYL JENSEN



What does business want from higher education? What does higher education want from business? CONNECTION asked presidents of two distinctly different higher education systems to ponder these questions.

James H. Craiglow is chancellor of Antioch University, a private five-campus university with sites in Ohio, New Hampshire, California and Washington. Its mission is “to develop students and graduates who desire to grow in their commitment to the improvement of the human condition through responsible leadership in their careers and communities.” Before he became chancellor, Craiglow was president of Antioch New England Graduate School in Keene, N.H., from 1986 to 2002.

Stephen J. Reno is chancellor of the University System of New Hampshire. The system serves more than 28,000 students at campuses in Durham, Plymouth, Keene and Manchester, and operates the state’s public broadcasting affiliate. Reno was president of Southern Oregon University before moving to New Hampshire. He also served as provost there and has taught comparative religion and served as an administrator at the University of Leicester in England, Harvard University and the University of Southern Maine.



Antioch University Chancellor
James Craiglow

What do you believe business wants from higher education?

It appears that business wants a certain level of technical and quantitative skills and expertise. This is partly shaped by the technological age. It’s true, that’s what they need, but it may be a bit unbalanced. I suspect business also needs people who can think critically and understand change, who know how to work together in teams and appreciate the human dimension of the work experience—people with the more qualitative side of the skills base.

There’s a delicate relationship between what I would characterize as the world of quantitative mindsets versus the world of qualitative mindsets. I’m not always sure that businesses understand the critical importance of the qualitative mind set. This plays itself out in curricular issues, in how the quality of life in the workplace is perceived, in how customers and others view their transactions with companies.

Focus on a clear set of specific, technically driven skills is not enough. The human side of the enterprise

is very important. You've got to have the data, the research, but you also have to ask: "What are the real-world issues and problems?"

Give me a smart person any day and I'll figure out how to get them to acquire the necessary technical skills.

Do businesses still want graduates with MBAs?

The MBA still has an incredibly powerful cachet with business. That's less true from the higher education perspective. We are recognizing the importance of a more balanced preparation for management and leadership. Business has been slow to adopt this more broadened perspective on management and leadership training.

Do you believe the traditional business school curriculum has anything to do with the current business scandals and financial problems in companies such as Enron, Adelphia and Tyco?

We certainly can't blame the MBA but there may be a relationship. If I don't understand the dynamics of group communication and interpersonal relationships, it's easy to become oblivious to others. It fosters a sense of self-centeredness and egregious behaviors. If I'm trained in a way that gives me a broad perspective, I'm less inclined to take a narrow view and to engage in unethical behaviors. I understand the implications internally and externally.

How does the balanced approach you mentioned play out in the Antioch New England management program?

For us, the balance means the qualitative and the quantitative are given equal billing in the curriculum. We believe a solid grasp of qualitative skills is just as important to an organization as some of the technical stuff. The human resources aspects of business permeate our management curriculum. A person with great technical expertise but no human relations skills is a recipe for disaster. Ideally, higher education would work with business to encourage less attention to the letters in a degree and more to defining the balance of skills needed to survive and thrive in this anxious business world.

As a progressive institution, Antioch promotes social change. Our goal is to change the workplace to make it more responsive and productive. If we don't change—whether we're a business or a college or an individual—we get left behind. We aim to help people understand where change is necessary and how to manage it. And you don't manage change by putting numbers into an Excel spreadsheet.

Do you believe business wants this type of preparation for its future managers?

I am struck by the fact that the business community is often silent on issues that seem to work against critical thinking, team-building and human relationship skills. For instance, they have not come out with

one voice regarding high-stakes testing. If business really wants a workforce that can think and work together, why not speak out forcefully against it?

And I don't hear business talking about what it means to deal with a more diverse workforce or the changing demographics of the workforce. It does not appear that the ramifications of these issues are given as much attention as branding or capital equipment purchases.

I don't believe businesses have effectively conveyed a sense of care and compassion for those who labor. Or dealt with issues related to long-term sustainability—the so-called green workplace. We are all required to look at a multiplicity of issues.

It sounds like you would have business get more involved in education issues—something many higher education leaders have resisted.

I believe business should take a more active and public role in education policy issues. They ought to look at whether high-stakes testing, for instance, really serves them. And at what kinds of leaders we are preparing. I don't see it happening, though. I don't see anything on the public policy screen except homeland security and war.

I have a deep concern that we are not cultivating and developing a new generation of leaders in all sectors—business, education, health, politics. Leadership is perceived as stressful and filled with headaches, litigation and unethical behavior. This ought to disturb business and education alike. What can we do to foster a different impression of leadership? This is a major public policy issue. We ought to be scared to death.

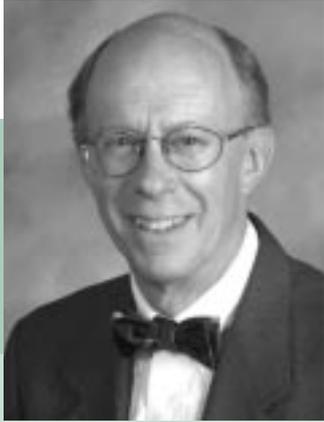
We can't find enough school administrators, for example, or managers in health and elderly care. This opens the door to untrained leaders and fosters incompetence and unethical behavior. It will weaken us as a country. If we train people to understand how to manage change and how to approach taking a risk, we begin to counter this lack of leadership.

The reality is that, as a leader, you will agonize, you will come under fire. My own sense is that learning certain skill sets can help people see that those things that accompany leadership aren't so awful, so debilitating, as they expect. Some of us can't bear to be unloved and there is no question that the persons willing to put themselves out in front will feel negativity. But the ability to defuse that negativity is related to how successfully they learn to define and engage in productive dispute. It doesn't have to be terrible to be a leader.

What should businesses expect of higher education, especially alternative institutions like Antioch?

They should expect progressive education to continue to raise questions, to challenge where it's appropriate. One of the great strengths of this country historically is that higher education has raised challenging ques-

tions. If one is silent, one accepts the status quo and gets bogged down in inertia. Our role is to continue to question, to have dialogue and to realize there is no one single way to truth. You don't move things forward, you don't leave the world a better place, by being silent, by not asking questions and ignoring change.



University System of New Hampshire
Chancellor Stephen Reno

What do you believe business wants from higher education?

Business wants higher education to be responsive, productive, of high quality and entrepreneurial—many of the same things business wants of itself. Business also expects us to be committed to the intrinsic value of knowledge, to be deliberative in our operations and to be a stable presence in society. And it wants us to provide a rigorous and relevant curriculum and to produce graduates who are well-prepared.

Do any of the expectations of business clash with what you see as the mission of higher education?

Public higher education in particular has a clear responsibility to contribute to economic and workforce development. At the same time, however, we are not simply training facilities. We engage in both basic and applied research, but also contribute to the general level of public discourse and cultural enhancement. We share these responsibilities with private colleges and universities.

What are some of the challenges for business and higher education as they work together?

We live in different worlds. Our friends in the corporate world don't understand why we are sometimes so slow to act, so slow to change. To them, we may seem unresponsive, and they sometimes rightly complain that we don't follow through. Businesses operate within a tight

How would you like to see higher education and business work together to move things forward?

I think this is a good time for higher education and business to figure out ways to assess what is really needed to prepare ourselves more effectively for the future. Businesses are at a crossroads in some cases. People's confidence has been shaken; they're nervous and confused. Higher education recognizes that it has a critical role in real-world service and research. Given this reality, it might be a good time to talk about the deeper issues, to go beyond internships or shadowing or the number of engineers we're training ... to attempt a deeper level of engagement.

time frame and must themselves change and bring products to market quickly.

Colleges and universities, on the other hand, realize that things of quality often take time. And some things are serendipitous in their creation and simply do not come about on a strict timetable. That is the reality of the research enterprise.

We need to acknowledge our different approaches and assumptions. The challenge is to bring our two parties together, to find our common ground, and to decide what we'll work on together.

What does higher education want from business?

It sometimes seems to me that business expects more of higher education than higher education expects of business.

We want support and advocacy, certainly. Last year, for example, the New Hampshire Legislature and governor made the largest capital allocation to the university system in the history of the state. We got those dollars in part because of the advocacy of the business community. They sat at the table with us.

But even more important, we hope for true collaboration and partnership—for higher education and business to recognize each other as problem solvers. I am pleased by the times when business and higher education have come together. We often discover that there is something we can do together that is above and beyond what either of us could do alone.

Collaboration won't work, however, if either side simply dictates. The human dimensions of a partnership must be attended to carefully.

How do you see the role of business in helping determine the university curricula?

Universities can benefit from business advisory committees that help to bring current practice to our attention. The new bachelor's degree in environmental engineering at the University of New Hampshire was developed in association with industry; it's a good example of such a partnership. And the Whittemore

School of Business and Economics (also at UNH) has substantially revised its curriculum in close collaboration with its advisory council.

We must address the curriculum from both ends, making sure we are providing the fundamentals but also being responsive to the needs of the workplace. But as we all know, workplace needs ebb and flow. What's at the "cutting edge" changes almost daily. Higher education must be sensitive to such changes, but we cannot be driven by them.

This continuing conversation between higher education and the professional community is well-illustrated in the area of nursing. Nursing educators recognize that their colleagues in the clinical sites, hospitals, nursing homes and the like are their partners in the preparation of their graduates. Part of the student's education comes in the classroom and laboratory but, equally important, part of the work is done at the clinical sites. There is an understanding from both parties that neither can do it alone. The same is true for medicine. Looked at one way, teaching hospitals are places where the two worlds (of education and professional practice) come together.

Are there other issues where higher education and business could work more closely?

We all need to address the issue of the preparation of the students coming into higher education. A little over 10 years ago, the New Hampshire Business and Industry Association set out to examine what skills we should expect of our high school graduates. Since then, the business community has been actively engaged in questions regarding outcome assessment and accountability. Since the Claremont* decisions, however, the state's attention has turned to the question of school funding and the issues of adequacy and accountability have become intertwined, often leading to lack of clarity regarding both. Much time has been spent defining "adequacy" and determining what is "average." I know only a couple places where "average" is good enough: your cholesterol level and your blood pressure. When I see a bumper sticker that says, "It takes a school to impoverish a village," I feel very sad. Our children deserve more than an "adequate" education, and we must find a forum in which to discuss

these matters in an informed and committed way.

How do you envision this collaboration between higher education and business?

I'd like to see a structure that brings together the higher education and business communities around solid and useful partnership opportunities, activities such as internships, loaned executives and loaned faculty programs, research and development projects, consultancies and contract projects. Such an organization would perform an honest brokering function, publicizing needs and resources and then matching up and supporting specific partnerships. The New Hampshire Forum on Higher Education offers the possibility of serving as such a structure.** Its members seem ready to work together to bring this about. I sincerely hope so.

**In 1997, the New Hampshire State Supreme Court ordered the state to overhaul its system for financing education. The court said the state must provide every child with an adequate education and pay for it with a statewide, uniform-rate tax.*

***The New Hampshire Forum on Higher Education is a nonprofit organization formed to provide a place for higher education, primary and secondary education, business and public policy leaders to join together in addressing education and workforce issues.*

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Conflicting

Views

Ask business leaders and college deans how to improve higher education, and you are sure to get very different answers. In fact, ask them anything, and you will probably get different answers.

That's just what Villanova University Associate Vice President for Academic Affairs John Immerwahr found out a few years ago when he surveyed business, government and academic leaders about pressing

higher education issues for the National Center for Public Policy and Higher Education. (Immerwahr revisited the subject in 2002 for the Futures Project at Brown University, but did not include business people among the interviewees.) The 1999 report, *Taking Responsibility*, reveals sharply contrasting opinions on issues from college curriculum to governance.

A Scorecard of Business and Academic Attitudes Toward Higher Education

Percentage who think ...	Professors	Administrators and Deans	Government	Business
Higher education has a lot to learn from the private sector—adopting more business practices will make colleges more efficient and productive.	17%	40%	39%	64%
Today's colleges teach students the things that are important to know.	59%	70%	60%	46%
Colleges should raise more money from alumni, businesses and foundations.	94%	93%	93%	87%
State and federal government support should be increased to address rising college costs.	95%	90%	79%	65%
Since society benefits from having a large number of college graduates, taxpayers should pay more of the cost of a college education.	49%	48%	49%	30%
Too much of the research conducted in higher education is irrelevant to the needs of society.	39%	44%	44%	51%
Technology will fundamentally change higher education for the better.	25%	48%	54%	62%
The system of tenure for college professors should be phased out altogether.	8% (tenured) 14% (non-tenured)	29%	21%	44%
A decreased emphasis on the liberal arts curriculum is a serious problem.	66%	61%	58%	38%
Giving students a solid grounding in history, literature, philosophy and the arts is absolutely essential.	55%	54%	56%	34%
Teaching students foreign languages and a global perspective is absolutely essential.	39%	38%	31%	25%

Source: National Center for Public Policy and Higher Education data. See www.highereducation.org.

Building a Pipeline

ONE COMPANY'S HOLISTIC APPROACH TO COLLEGE RELATIONS

JOSEPH PRATT



Over the next two decades, many of America's 76 million baby boomers will exit the workforce. This, along with an expected 15 percent decline in the 25- to 44-year-old workforce over the next 15 years, is a worrisome statistic for companies like Fidelity Investments, who rely on a steady supply of new talent for success.

In light of existing labor trends and the ever-present pressures to do more with less, Fidelity, the largest mutual fund company in the United States, has transformed a traditional college recruiting program into a holistic college partnership that emphasizes the interdependence of its parts. As the chart on p. 30 reveals, recruiting college graduates is only one piece of the proverbial pie.

How does a company maintain a consistently strong presence on campus when markets are sporadic and there is little recruiting activity?

Fidelity is privately owned, which allows the firm more flexibility in developing long-term strategies for business development without the same short-term profit pressure as publicly traded companies. On campus, Fidelity's multi-pronged solution includes fashioning a College Relations Program around the themes of learning alliances, talent acquisition, public affairs and business development. This unique initiative is being executed across Fidelity's businesses and eight regional sites.

Classroom collaboration

In New England, colleges and universities have opened their classrooms to learning alliances for the benefit of business, students and the institutions themselves. In Rhode Island, Bryant College, Johnson & Wales University and the Community College of Rhode Island joined with Fidelity to fine-tune their curricula to prepare students for careers in the financial services industry, specifically training students to take the

National Association of Securities Dealers (NASD) Series 7 exam and earn broker's licenses.

Providing the Series 7 training at the college level, rather than in the workplace, saves financial services firms both time and money. At Fidelity, new hires spend approximately three months in training before taking the Series 7 exam. "Companies who hire licensed students have a reduced rate of attrition, because the students have already succeeded on the exam and shown an interest in continuing in this field," says Tim Walker, director of performance, support & improvement for Fidelity in Smithfield, R.I.

College programs also benefit existing associates who are looking to continue their education. Convenient classes and full-tuition reimbursement for full-time employees make it easy and affordable to attend school. For example, Clark University offers its master of business administration program at Fidelity's Marlborough, Mass., site.

Innovative internships

Last year, Fidelity employed approximately 500 interns and co-op students across the country. In New England, interns are recruited from a variety of colleges, including Bryant and Babson colleges, the University of New Hampshire and Worcester Polytechnic Institute.

Fidelity's enhanced internship program embraces the "try before you buy" philosophy, which benefits both the firm and the student. During their internships, students are encouraged to explore Fidelity's 60-plus business units by attending onsite education and training sessions, visiting other regions for job shadowing and mentoring opportunities and participating in community service initiatives with current employees. The internship and co-op positions offer students the opportunity to do "real" work and participate as active members of their business group.

Melissa Marcoux, a senior at Northeastern University, works as an intern in Fidelity's Corporate

Affairs department in Boston. Her work includes interviewing senior executives on a variety of topics, ranging from developing sound investment strategies to demystifying gender communications at work. “My internship has taught me lessons that could never be learned in a classroom,” says Marcoux, who serves as the Fidelity Student Ambassador, a sort of on-campus student representative, for her school.

As a senior finance and economics major at Babson College, William Connors has spent the past two years as an intern in Fidelity’s finance department. “The summer internship speaker series was a great opportunity to hear senior executives talk about diverse cutting-edge topics ... and is also a great way to get a sneak peak at the multitude of career opportunities that Fidelity offers,” says Connors, the Fidelity Student Ambassador for Babson.

Interns are fully emerged in Fidelity’s high-achievement, entrepreneurial culture. Says Fidelity’s vice president of strategic staffing, Terrance Savitsky:

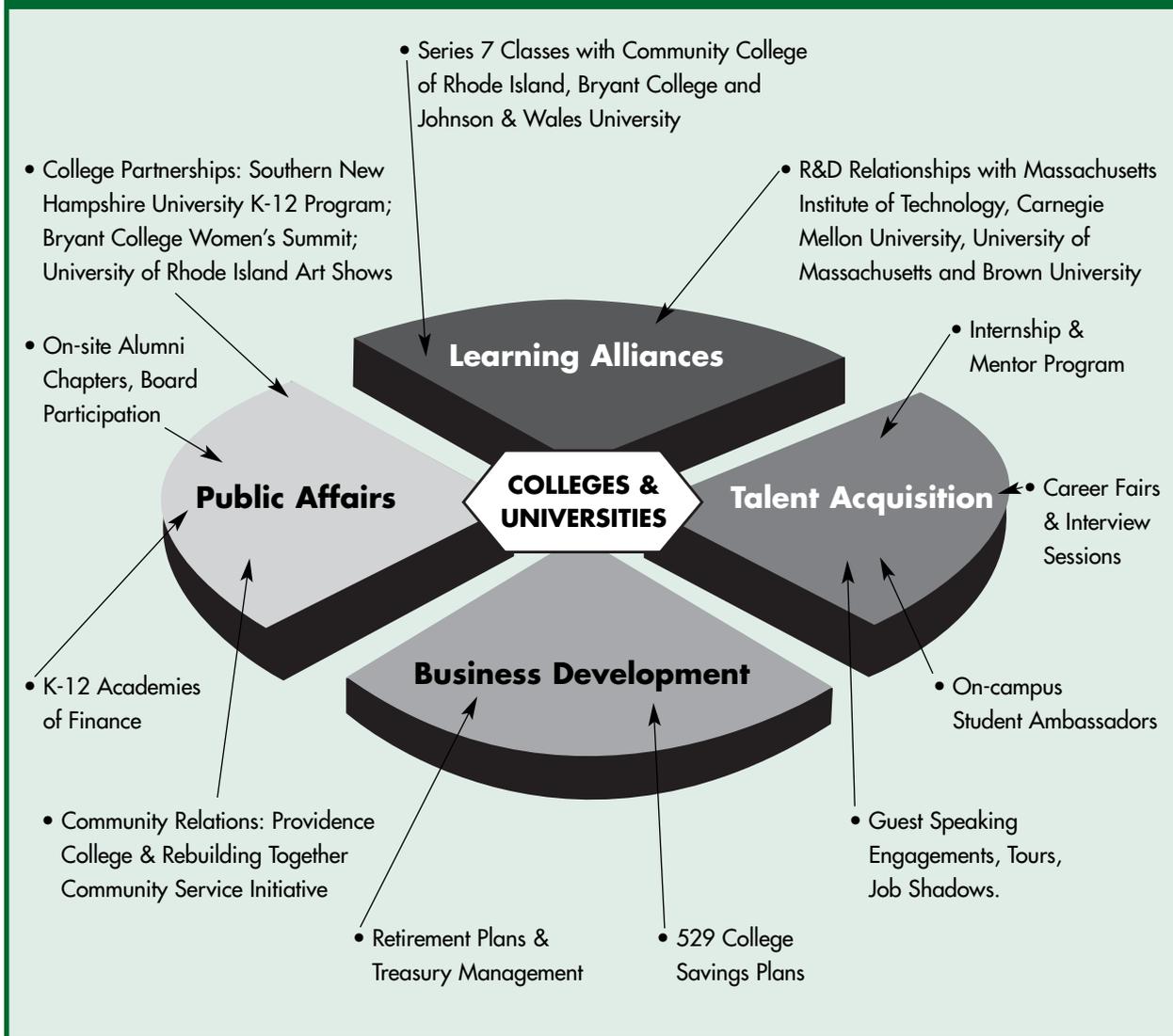
“Looking to attract students who are excited by the culture, the internship program provides students the opportunity to stretch their skills and achieve significant results, right from the start.”

One challenge arises in consistently recruiting employees who possess the right skill-set to thrive in Fidelity’s unique culture. “A typical college student must demonstrate competency in a variety of skills, such as problem-solving, intellectual curiosity, flexibility, commitment to quality, teamwork, leadership and communication,” notes Savitsky.

“Recruiting the best employees involves building a strong relationship with the schools, faculty, and student leaders,” adds Tara Place, the firm’s college market manager. “It is not a random selection or short-term process. This strategic effort takes time and deliberate cultivation.”

Another talent acquisition approach includes building a pipeline into the K-12 arena, a strategy that prepares Fidelity for future market gaps while building goodwill in the community.

Fidelity Investments: A Holistic College Relations Approach



A partnership with Southern New Hampshire University works to develop and implement financial management and technology training for public high school teachers throughout New Hampshire. Dale Gilpin, general manager of Fidelity's Merrimack, N.H., facility, says the partnership will enable the university to strengthen its position with New Hampshire high schools, yielding stronger in-state enrollment and an increased supply of well-trained, highly skilled workers for the region.

Throughout New England, Fidelity is active in the Academy of Finance Programs, which are designed to offer high school students exposure to the broad career opportunities in the financial services industry. In addition to providing high school students with internships, credit for college-level courses, tours and job shadow opportunities, the program offers teachers the chance to gain real-world experience by participating in "externships."

Jeff Goss, the director of the Portsmouth High School Finance Academy in Rhode Island, spent a week last July as an extern at Fidelity's Smithfield site, where he job-shadowed several employees within the firm's retail business.

Community connections

Public affairs efforts help Fidelity maintain a strong relationship outside the hiring process, while building brand recognition through its commitment to community partnerships. In April 2002, close to 300 Fidelity employees, Providence College students and faculty teamed up to renovate an entire Providence street for Rebuilding Together, a volunteer organization that revitalizes low-income neighborhoods.

Says Ed Caron, vice president of college relations and planning at Providence College: "The magic is that you can get a boardroom executive, an entry-level employee and a college student together, and they are all getting their fingernails dirty in the exact same way. That's what makes this approach to community building work."

Similar programs bridge the gap between Fidelity employees and the higher education community. Onsite alumni chapters unite company associates with their alma maters. These small clusters are extensions of Fidelity and provide much-

appreciated resources for successful connections. "Each opportunity that unites a college to the Fidelity community boosts employee morale, while presenting a valuable resource to the college," says Michele Nota, executive director of alumni relations at the University of Rhode Island.

In many instances, these programs with the community increase brand awareness and recognition of Fidelity, which in turn can lead to business development opportunities. Leads and referrals are often provided to Fidelity as the result of these partnerships, resulting in a "win-win" situation for both business and education. Examples include operating institutional treasury management services and offering opportunities for faculty and administrators to streamline philanthropic giving through Fidelity's Charitable Gift Fund.

During a period of volatile markets and low recruitment activity, Fidelity recognizes the importance of a holistic approach to college relations. Fidelity's College Relations Program enables the firm to transcend tough times.

Joseph Pratt is director of college relations at Fidelity Investments in Smithfield, R.I. Molly Hanlon, an intern at Fidelity Investments and a senior at Providence College, provided research assistance for this article.



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Internships

Now!

MANDIE SULLIVAN



The poor economy has New England companies focused on the bottom line. Many are laying off employees or encouraging early retirement. Most are holding off wage increases and bonuses. Facing reduced profits and sagging market confidence, New England businesses are focused on staying alive. They should also be focused on internships—now more than ever.

Most businesses view internships as community service at best, if not a drain on precious resources. But in fact, employing interns is a smart way to develop a company's future workforce.

The U.S. Labor Department estimates that it costs companies one-third of a new hire's salary to replace an employee. Companies spend valuable time finding, interviewing and selecting prospective employees, then negotiating sometimes-complex benefit packages. After all that, the successful applicant may not even fit in at the company or be productive within a reasonable time-frame. By developing relationships with local high school and college internship coordinators, companies increase their chances of finding the right fit—and at lower cost.

Whether paid or unpaid, interns do not receive normal benefits such as health care or retirement plans. When a company invests wisely in an internship program, the cost of recruitment declines and the return on investment can be enormous. Indeed, the National Association of Colleges and Employers suggests that internships are *the* most effective method of recruitment among companies hiring college graduates.

To ensure a successful internship experience, a company should explain clearly to the school's internship coordinator the responsibilities and skill sets required for the position. One Rhode Island state government official, asked why he felt internships were not valuable, remarked, "I had no idea what the kid could do, or even what he was interested in, so I had him file papers all day!" Not a rewarding experience for anyone.

Not only do companies gain tremendous energy, inspiration and appreciation from interns, they also find that interns create a positive environment for full-time, permanent employees. Carol Malysz of the Center for Women in Enterprise explains how a summer intern at the center not only developed a marketing plan for the group, but also, in the way she greeted staff and guests, introduced a new sense of family at the nonprofit. Meanwhile, staff members who serve as mentors and coaches to interns learn new management skills.

Many companies find that when they hire a former intern after graduation, they get a valuable, committed employee who knows the company and understands the challenges and possibilities from day one. A summer intern we hired at SilverLight Productions learned structured management skills during his experience and became a good coach for a new batch of interns. He was later promoted to project manager.

In Rhode Island, the Greater Providence Chamber of Commerce hosts seminars that teach businesses how to run successful internship programs. Panel presentations from companies of all sizes offer first-hand experiences on how to do it right. Among other things, these seminars introduce companies to appropriate contacts at the schools and colleges.

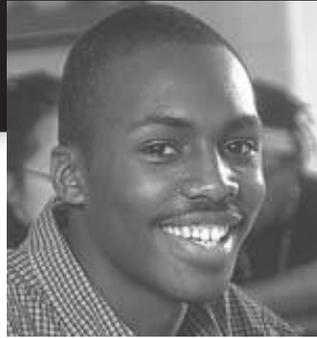
Yet in these difficult economic times, many businesses, large and small are scaling back internship programs. One Rhode Island defense firm admits it will probably halve its number of internships this year. This retrenchment threatens to widen the gulf between business and higher education.

We must find ways to strengthen collaborations, especially internship programs, among a range of parties, including businesses, schools and colleges, government agencies, professional associations, chambers of commerce, parents and the community at large. We may not all speak the same language or have the same perspectives. But we may find that in the end, we have the same goals.

Mandie Sullivan is president of Portsmouth, R.I.-based SilverLight Productions.



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It's Not *Just* the Economy

Higher Education Can Also End the Recession in Our Democracy

WILLIAM M. BULGER

The world is filled with baffled workers, both affluent and poor, who seek some meaning in their lives beyond their jobs.

Remember those who told us 10 years ago that *It's all about the economy*? Well, there is much more to *It* than the economy, and the curricula of our colleges and universities need to reflect what we see as important to our lives.

To be sure, higher education institutions have a compelling case to make about their economic impacts. These impacts are real and they are powerful. Our institutions, for centuries, have been the creators of economic opportunity for millions of people and they are more important than ever in performing that mission.

Every tax dollar invested in our public universities generates a five-fold return. The research conducted on our campuses underpins our economies and is increasingly critical as we make this rapid transition to a knowledge-based global economy.

In fact, a University of Massachusetts study shows very clearly that a college degree plus employment in the knowledge sector is necessary to achieve a middle class standard of living in Massachusetts.

In Massachusetts, if you have a four-year degree and work in the knowledge sector—as 20 percent of the workforce does—you will earn, on average, \$54,000. If you have a college degree but work in any other sector of the economy, your income drops to \$40,300 per year. And, if you lack a college degree, your income, on average, drops below \$30,000, no matter what sector of the economy employs

you. In other words, college plus knowledge equals financial prosperity in Massachusetts.

It is, therefore, understandable that so many students coming to our colleges and universities are motivated by the exciting advances in technology and by the monetary rewards that come with knowledge in the sciences. This is fair, and we must do everything to encourage and continue the great developments in our science and engineering programs. They are critically important to our universities and to the economic well-being of our communities and our individual students.

New England states need to equip their public universities and colleges to play lead roles in the development of our innovation economies. Likewise, the universities and colleges need to collaborate in this effort when possible. One excellent example of this is the partnership between the UMass Medical School and Worcester Polytechnic Institute to advance the technology and processes needed to map brain abnormalities.

A recent report by the National Governors Association encourages the chief executives of the 50 states to work with their public universities and the private sector to design curricula and programs that address the needs of business. Governors are also encouraged to play a leadership role in attracting star research faculty and talented out-of-state high school graduates to the campuses in their states.

Other states are recognizing what we in New England have long known—that

world-class research is the ticket into the global economy.

In April, Michigan Gov. John Engler unveiled the NextEnergy Initiative, designed to establish Michigan as the international leader in alternative energy education, research and manufacturing. The state government in Lansing is prepared to assist companies seeking federal research dollars. Michigan is financing university-industry collaborations; developing new community college, undergraduate and graduate programs in critical fields such as power electronics and fuel cell technology; and using scholarship funds to attract students to these fields.

California is making similar investments in nanotechnology. Georgia has launched a campaign to become a top-tier, technology-driven state by 2010. New York's intention is to become "the leader in high-technology academic research and economic development."

North Carolina, Kentucky, Texas, Kansas, Colorado and many other states are building their 21st century economic development plans around their universities.

These states are making bold and strategic investments in their colleges and universities to accelerate the development of the high-tech industry clusters. At the same time, many of the emerging technology states such as North Carolina have the advantage of lower costs of living than the New England states.

Massachusetts is beginning to take notice. An emerging coalition of business, academic and policy leaders recognizes that the Bay State cannot afford to be complacent—that our leadership position in science and technology is not guaranteed.

I was at a meeting recently where a high-ranking official from one of the world's pre-eminent health care institutions said Massachusetts could actually surrender its leadership position over the next decade if it fails to be more aggressive in supporting the kind of research and education that has made our economy the envy of most states.

We must strengthen our lead. If we fail to pursue every opportunity to enhance this longstanding advantage, we will lose our enviable position and

we will place our state, indeed the New England region, at long-term economic risk. Clearly, therefore, one of our highest priorities as higher education institutions is to strengthen the economic position of our states and of our students.

The University of Massachusetts continues to pursue this economic mission very aggressively despite the fact that the five-campus system had

its state appropriation, which makes up about a third of its operating budget, reduced from \$500 million to \$450 million over the past two fiscal years.

UMass is rapidly building a life science research capacity that includes a \$100 million research center at its medical school in Worcester and a new biology lab in Boston, as well as an emerging partnership between the Amherst campus and the Bay State

The College-Knowledge Connection

RALPH WHITEHEAD JR. AND ROBERT J. LACEY

The difference between workers with four-year degrees and workers without them has long been a key division in New England's labor force, because college-educated workers earn more than non-college-educated workers. Now, a second earnings gap is also apparent. It lies between people who work in the knowledge sector of the region's economy and people who work in other sectors. Noting this gap leads to a revealing view of the labor force.

The New England College-Knowledge Matrix

	Knowledge Sector	Other Sectors	Unemployed
With Four-Year College Degree			
Percent of Labor Force	16%	18%	1%
Earnings	\$53,800	\$40,100	
Without Four-Year College Degree			
Percent of Labor Force	17%	46%	2%
Earnings	\$28,000	\$26,000	

Source: Authors' analysis of Current Population Surveys for March of 1999, 2000, and 2001. Figures are for members of labor force, ages 25 through 62, and therefore underestimate the percentages of persons who are unemployed.

This view sorts workers by a combination of educational attainment and economic sector. It puts them into four groups: 1) college-educated workers in the knowledge sector (which includes information technology, health care, financial services, research and professional services); 2) college-educated workers in other sectors; 3) non-college-educated workers in the knowledge sector; and 4) non-college-educated workers in other sectors.

For non-college-educated workers, the sector gap in earnings is small. Those in the knowledge sector typically earn 8 percent more than those in other sectors.

For college-educated workers, however, having a knowledge-sector job carries a large earnings advantage. Those in the knowledge sector typically earn 34 percent more than those in the other sectors.

What is also striking about the table is that the single largest group of workers occupies the part of the employed labor force where earnings are the lowest.

One implication of this view: efforts to increase the region's number of college graduates should be paralleled by efforts to increase its number of knowledge-sector jobs. And vice versa.

Ralph Whitehead Jr. is the public service professor of the University of Massachusetts.

Robert J. Lacey is a research associate at the university's Donahue Institute.

Health Center in Springfield. High-tech incubators in Lowell and Fall River are spawning new companies. The Amherst campus is working with the University of Connecticut to leverage investments in the so-called “New England Knowledge Corridor,” which runs from Springfield to Hartford. The university is now ranked in the top 25 nationally in the commercialization of technology.

The University of Massachusetts takes great pride in these achievements, which not only strengthen the economy,

but result in life-saving medicines and a cleaner environment. The past year, however, reminds us of those other things that contribute to our lives, both as communities and individuals.

What’s important

We are so much more than an economy, and we cannot allow our universities and colleges to serve only economic purposes. What about our culture? The curricula of our colleges and universities should indicate what we see as important to our lives.

A few years ago, UMass-Lowell Chancellor William Hogan, an engineer who has developed an outstanding engineering and applied science program at his campus, told me that Lowell graduates indicated in surveys that, as they got older, they began to wish that they had expanded their education beyond engineering and the sciences. They wished they spent more time on those subjects that teach us about human nature rather than just human capital. They recognize that Socrates had a point when he said: “The unexamined life is not worth living.”

The world is filled with baffled workers, both affluent and poor, who seek some meaning in their lives beyond their jobs. To all humans come quiet moments of agonizing introspection. These moments come to those searching for inner strength as well as those coping with more obvious problems such as hunger or fear. We have had many such moments over the past year. It is the humanities that provide the ennobling grace that is essential to our lives.

Over the past year, it has also become clear that our economy is influenced as much by our culture as it is by the vocational skills and scientific knowledge of our workers. Our economy is profoundly affected by the citizenry’s faith in its public institutions, the people’s confidence in their personal safety and their perception of the ethics of our corporate leaders. The stock market falls when war is imminent and when there is news of corporate scandal. Airlines have gone bankrupt over safety fears and the inability of our public leaders to calm those fears.

When we talk about human capital, the discussion needs to go far beyond skill sets and leading-edge technology.

A recession in democracy

Consider Jose Ramos-Horta, the foreign minister of the newest democracy on earth, East Timor. Ramos-Horta is one of the most courageous leaders of the movement to free his tiny island nation from the corrupt, murderous rule of the Indonesian government.

I recently listened as he told the story of an elderly woman he once knew. Last year, finally having the opportunity to vote, this woman, suffering from

A Degree of Importance

For years, the economic value of a college degree has been well-understood. But not all degrees are created equal. ...

Degrees Pay Off Monthly Earnings of People Age 18 and Older

Field	Vocational	Associate	Bachelor’s	Master’s
Business	\$1,947	\$2,444	\$3,678	\$5,671
Computers	\$2,144	\$2,675	\$4,160	\$5,212
Engineering	\$2,759	\$2,945	\$4,435	\$5,006
Liberal Arts	NA	\$2,241	\$3,071	\$2,931
Social Science	NA	\$2,345	\$2,754	\$3,142
Natural Science	\$1,966	\$2,543	\$3,094	\$3,708
Education	NA	\$1,767	\$2,322	\$3,715
Vocational Studies	\$2,169	\$2,817	NA	NA
Other	\$2,154	\$2,390	\$3,339	\$3,590

Source: U.S. Census Bureau, 1996 earnings data released in 2001.

A fall 2002 salary survey by the National Association of Colleges and Employers found that majors in pharmacy and various engineering fields bring down the largest salaries. ...

Majors with a Major Payoff Average Annual Salary for Top-Paid Majors

Major	Average Salary
Pharmacy	\$78,080
Petroleum Engineering	\$56,622
Chemical Engineering	\$51,137
Computer Engineering	\$51,135
Electrical/Electronics & Communications	\$50,391
Systems Engineering	\$49,917
Computer Science	\$49,413
Aerospace/Aeronautical/Astronautical	\$48,790
Mechanical Engineering	\$48,282
Industrial/Manufacturing Engineering	\$46,755

Source: National Association of Colleges and Employers, Fall 2002 Salary Survey.

malaria, arose at 2 a.m. on election day and walked four hours to a polling place.

She was one participant in an election that drew 95 percent of voters to the polls and established East Timor's new democratic government. What an act of courage on her part! What an act of citizenship!

Ramos-Horta told this story during a visit to the University of Massachusetts Dartmouth campus just three days after the Massachusetts primary. In that election, less than 30 percent of the electorate voted. This, at a time when there are so many difficult questions facing our country and our state. These questions demand the attention of citizens.

I was hoping for better. In the months since September 11, there has seemed to be a renewed sense of the importance of citizenship and public service. Yet, when it came to the most basic responsibility of being a citizen in the land of Adams, Hancock and Kennedy, so few chose to participate.

Where is our sense of history? Is our democracy still vibrant? Do we

care deeply about matters that are truly important?

Even while we face a serious economic recession, we need to recognize an even deeper kind of recession, one that has extended over decades, one that threatens our way of life in more dangerous ways than any financial challenge ever could: the recession in our participatory democracy. It should be our purpose to re-teach and re-learn those things that will end the stubborn recession in our democracy.

In his 1939 defense of classical education, Samuel Elliot Morrison said of Adams and Jefferson and their fellow patriots: "When we contemplate the mess the world is in today, we can look back not only with pride but with wonder at those [citizens] who pledged to the cause of independence their lives, their fortunes, and their sacred honor ... The amazing success of the young republic was due to the classical training of her leaders."

It is the liberal arts that will provide the knowledge and inspiration that will

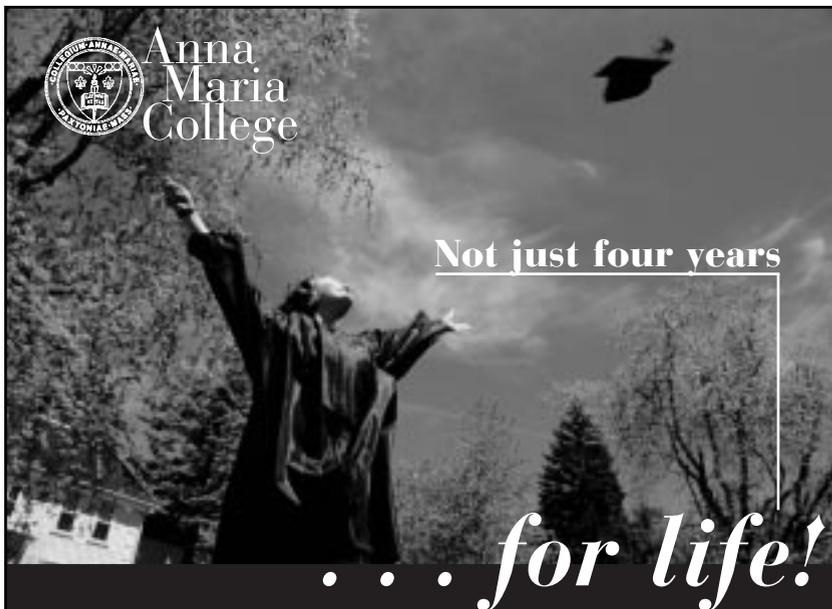
create leaders who can inspire people to participate in the life of their nation and community—not just wave the flag, but vote and serve the public good.

It is the liberal arts that will help us deal with attacks by foreign foes in a principled manner, devise reasonable protections against these attacks while preserving the Constitution, and create a new generation of corporate and civic leaders with the courage and talent to seek out the right things rather than the easy things or the most personally profitable things.

If we are to accomplish those important goals we must cultivate knowledge and interest in the best that has been written and thought in our world.

Our students trust us to provide educational opportunity. We owe them much more than job training. We owe them the ability to make informed, sound judgments.

William M. Bulger is president of the University of Massachusetts.



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Raising the Stakes on Testing

Point-Counterpoint

POINT

Massachusetts Graduation Test Raises Barriers, Not Standards

CHRISTINA PEREZ

This June, Massachusetts will become the first state in New England to make receipt of a high school diploma contingent upon passing a graduation exam. Although Massachusetts boasts one of the highest college-going rates in the nation, with three-quarters of graduating seniors accepted to college, this success will become a thing of the past once the testing requirement takes hold.

As of November 2002, 12,000 members of the class of 2003—nearly one in five seniors in the state's public schools—had not passed the Massachusetts Comprehensive Assessment System (MCAS) exam. Students of color are over-represented in this pool, with half of Latino seniors, 44 percent of African-Americans, and 65 percent of Limited English Proficiency students in the “failing/needs improvement” category, compared with 13 percent of white and 17 percent of Asian students.

A new report by the National Center for Fair & Open Testing (FairTest) and

the Coalition for Authentic Reform in Education (CARE) demonstrates that MCAS will result in thousands of capable students being denied access to college once receipt of a high school diploma is tied to the test. When college acceptance rates from past years are compared with MCAS pass rates for the current senior class, the analysis projects that roughly 12 percent of African-American and Latino seniors statewide who would otherwise have been accepted to college will be denied admission.

Data from individual high schools show that the average percentage of seniors accepted to college is substantially higher than the MCAS pass rate. For example, at the Jeremiah Burke High School in Boston, which is more than 95 percent minority, all the students in the past two graduating classes were accepted to a postsecondary institution—yet 40 percent of the current senior class still needs to pass MCAS. At Lawrence High School, a review of last year's college acceptance rates and this year's MCAS scores suggests that 33 percent of students who would otherwise be accepted to college will have that opportunity closed to them. At Fitchburg High, that figure stands

at 18 percent, while at Cambridge Rindge & Latin High School and Lowell High School, approximately 11 percent of seniors who would otherwise be accepted to a postsecondary institution will have the door to a college degree closed to them.

These schools and the others highlighted in the report represent lost opportunities for thousands of graduates. Individuals attending private and parochial high schools and those coming from out-of-state still have the full menu of choices open to them because they don't have to pass the MCAS test to receive a high school diploma. Only Massachusetts public school students face this hurdle.

This double standard will only be reinforced by the state Department of Education's plan to grant “certificates of attainment” to students who have met all graduation requirements but not yet passed MCAS. Certificates are not the equivalent of a diploma for the purposes of college admission, employment or military eligibility.

One hope for students who do not pass MCAS rests with the more than 50 school committees throughout Massachusetts that have adopted resolutions supporting full diplomas for students who have met all other

graduation requirements but not passed the test. While the state Department of Education has contested the right of school committees to grant such diplomas, an overwhelming majority of school boards affirmed this power at the 2002 convention of the Massachusetts Association of School Committees. The U.S. Department of Education has also indicated that students who have local diplomas will be eligible for federal financial aid once they are accepted to college.

Differences in admissions policies between private and public colleges are an important element in analyzing how MCAS will affect college participation. Given the demographic profile of the students who still need to pass MCAS, it is likely that most would seek admission to a Massachusetts community college or a public four-year college. Within the Massachusetts public higher education system, there is currently no policy requiring students to pass MCAS before being eligible to enroll in a state higher education institution. But applicants must have a high school diploma to enter a state college or university and some community colleges. The Board of Higher Education could adopt such a policy as part of a push by the state's political leadership to force students to take the MCAS more seriously. If this does happen, many students' access to affordable higher education in Massachusetts will be severely undercut.

This contrasts with private colleges, which set their own admissions policies and therefore have greater flexibility in admitting students who have not passed MCAS. Some private colleges do not require applicants to have a high school diploma; others have pledged to honor the non-MCAS diplomas that Massachusetts school committees have endorsed. Several public colleges and universities outside Massachusetts, such as Eastern Connecticut State University, the University of Southern Maine and the University of New Hampshire, have also said they will consider Massachusetts applicants with "non-MCAS" local diplomas. In effect then, Massachusetts public school students will be disadvantaged in the admissions process within their own state's public college and

university system, while out-of-state and private colleges keep their institutions accessible.

MCAS proponents have argued that even though the state's pipeline to higher education has been very robust, "borderline" students do not succeed once they enter college. Data from *Measuring Up 2002*, the recent report of the National Center for Public Policy and Higher Education, undermines this myth. No state ranks above Massachusetts in the percentage of freshmen at four-year colleges who return for their sophomore year nor in the percentage of students who earn a bachelor's degree within five years of high school graduation. These data indicate that public schools are already doing a good job preparing many students for higher education and of devising admissions policies that attract academically capable student bodies. The notion that MCAS is needed in order to fix an ailing higher education system doesn't match the available evidence. The evidence also contradicts the claim by test proponents that only educationally unprepared students will be denied a diploma and that MCAS is somehow saving these students from having a diploma that "means nothing."

Given the damage that MCAS will cause and the high standards already in place within the K-16 system, the Massachusetts Legislature and state Department of Education should immediately suspend the testing graduation requirement. Colleges and universities concerned about how MCAS will undermine educational equity and limit access to higher education should join the many institutions that have pledged to consider applicants regardless of MCAS. Without these efforts, thousands of qualified graduates will have important educational opportunities closed to them.

Christina Perez is an advocate for university testing reform with the Cambridge, Mass.-based National Center for Fair & Open Testing (FairTest). The MCAS report from FairTest and CARE is available at www.fairtest.org.

Will We Hear the Message ... Or Shoot the Messenger?

ABIGAIL THERNSTROM

The day is approaching when some Massachusetts seniors will be leaving high school without state-recognized diplomas, although they will have fulfilled all the traditional graduation requirements. The problem: they will have failed to pass the 10th-grade MCAS exam in math and English language arts. Making matters more painful, a disproportionately high number of those denied diplomas will be African-American or Hispanic.

A clear civil rights violation? No. It's a heart-rending, infuriating state of affairs. But MCAS is just the messenger, delivering news about a problem that we should not ignore. To do so is morally repugnant, as well as dangerous to American society.

Today, the typical non-Asian minority student leaves high school with only junior-high skills. And yet roughly 75 percent of African-Americans and 70 percent of Hispanics (who have been in the country since at least eighth grade) go on to postsecondary education, according to the U.S. Department of Education's National Education Longitudinal Study (NELS). MCAS, some argue, will lower those numbers and, thus, further disadvantage America's most disadvantaged students.

In fact, however, as every teacher and school administrator knows, students who enter college without even 10th-grade skills are not likely to flourish academically. This country has been highly successful in opening the college doors to African-American and Hispanic students, even to those with extremely weak academic records. The problem in higher education is not at the point of entry but down the road. Almost 77 percent of whites in the NELS sample started college, but just 34 percent managed to earn a four-year degree. For blacks and Hispanics, the drop-off from the start of freshman year to graduation was far greater. African-Americans were as likely to begin college as

whites, but only 17 percent finished. The dropoff for Hispanics was almost as large; 70 percent went on to higher education, but just 15 percent obtained a bachelor's degree.

The extraordinarily high African-American and Hispanic dropout rate is no mystery. Students who leave high school with skills at the eighth- or ninth-grade level can't keep up in colleges that are not geared to teaching students what they should have learned in high school. A high percentage of college students take remedial courses, but the more remedial work they need, the lower their likelihood of graduating.

At the same time, students with similar high school test scores have the same college dropout rates, regardless of their race or ethnicity. Equally skilled and knowledgeable students—as measured by standardized tests—do equally well in college.

A *Boston Globe* article in September 2001 told the story of Mayra Marquez, who was a junior at the Burncoat High School in Worcester. She wanted to be a pediatrician, she said. But MCAS was an “intimidating obstacle [that stood] between Mayra and her dream,” the *Globe* reported. In fact, it was not MCAS, which simply assesses basic academic competence, that threatened to thwart her hope of becoming a pediatrician. Without the skills that MCAS tests, Mayra was unlikely to make it through college, medical school and medical boards.

At worst, MCAS will discourage unprepared students from pursuing unrealistic dreams. More likely, however, the new demand will encourage students like Mayra, their families, schools, school districts and the state to try harder, raising the number of youngsters who have the skills and knowledge to do well in college and beyond.

Indeed, so far, that seems to be the story. The state is certainly trying harder, with more equitable education funding to ensure more equitable educational outcomes. The gap between per-pupil expenses for the 25 percent highest-spending districts and the 25 percent lowest-spending districts

was 40 percent in 1993; that number has now been reduced to 3 percent. It is a real triumph of public policy and the strongest possible signal of the state's commitment.

The Massachusetts Department of Education has worked with hundreds of educators to develop curriculum frameworks in English and math that have been recognized by nonprofit groups such as Achieve Inc. and the Education Trust, among others, as national models. The MCAS math and English tests, themselves, have also been held up as models of good tests, well-aligned with the standards and using open-ended response questions to assess the ability of students to think analytically and present well-organized evidence.

But none of this investment and hard work would accomplish much, history tells us, without reasonable stakes attached. The proof is right in front of us. The 10th-grade MCAS became a high school exit exam for the first time with the class of 2003; when the assessment started to count, scores began to climb dramatically. Consequences, in other words, change the level of student effort; students could do better, we learned. And so could educators. Effort—inspired by inadequate academic performance on a statewide test—pays off.

Our goal has been ambitious, but in English we are very nearly there. We now have 90 percent passing rates for the class of 2003 and 86 percent (after just one try on the test) for the class of 2004. Two-thirds of African-American students in the class of 2004 passed the test this past spring, which was the first time they took it.

For those who did not make it, small instructional groups, individual tutoring and other forms of help, including post-12th-grade programs at community colleges and elsewhere, will be available. Districts can also choose to issue a “certificate of attainment” to students who fall short on the last available MCAS retest, but who have otherwise met all graduation requirements and maintained an attendance record of at least 90 percent. State community colleges have promised to accept these

students into remedial programs, and federal financial aid may be available.

Without the MCAS graduation requirement, there is every reason to believe that students without minimal math and literacy skills would have been ignored—a long and dishonorable tradition. Instead, Massachusetts this year is pouring \$50 million into remediation, \$30 million of which will go to high schools—a remarkable and unprecedented commitment. Students are receiving support, attention and resources that simply didn't exist before. The result: with each retest, thousands of previously failing students in the class of 2003 are making it over the bar.

Those test scores are not the only measure of a good education. High school graduates should be responsible citizens and caring people, as well as competent in math. But disciplined minds and an understanding of history, science and other basic subjects are not only essential to individual welfare; an educated citizenry is the foundation upon which a good society and a democratic polity rest.

Students who do not acquire basic skills and knowledge by the end of high school or soon thereafter are not likely to catch up with their more prepared peers down the road. And most tragically, if we do not insist that all students meet 10th-grade academic standards—and insist simultaneously that schools provide the help they need—a high proportion of those left behind will be black and Hispanic youngsters. The result will be persistent racial and ethnic inequality—that old story that never seems to end.

Those who care about civil rights should embrace MCAS. The test results are telling schools, students and parents what they may not want to hear. But those results point to a problem too long ignored. And they are already forcing change.

Abigail Thernstrom is a member of the Massachusetts state board of education, a senior fellow at the Manhattan Institute and a commissioner on the U.S. Commission on Civil Rights.



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Part Church, Part Car Dealer

The following is adapted from testimony delivered by Williams College economics professor Gordon Winston on Oct. 2, 2002, before the U.S. House Committee on Education and the Workforce.

Colleges and universities look a lot like ordinary businesses, and higher education looks a lot like an ordinary industry. Colleges make a product (educational services) using purchased inputs (faculty labor, heating oil, buildings) and they sell the product to customers (students) for a price (tuition). As an industry, colleges compete hard for students to whom to sell their product.

But those comforting parallels with familiar businesses are only skin-deep. There are very fundamental economic characteristics that keep the comfortable analogies from working well for higher education. Indeed, both Ph.D.s with their economic theories and ordinary people with their economic intuition and common sense face the same problem: our experience has been with ordinary businesses and ordinary industries, so it's very hard to shift gears to understand firms and an industry that are not at all ordinary.

Probably the most important single fact in understanding college costs and prices—and the most fundamental economic difference from ordinary businesses—is this: the price the student-customer pays for his or her education is strikingly less than the cost of its production. It cost \$12,400 a year to educate a student at the average U.S. college in 1995-96. But he or she paid a price of \$4,000. So each student got a subsidy of \$8,400 a year on average. It's as if the Taurus that cost your Ford dealer \$20,000 to put on the showroom floor were sold for less than \$7,000—regularly and routinely. If you were poor or an exceptionally good driver, you might pay even less. Clearly, no ordinary Ford dealer would survive.

But colleges do. That's because the student subsidy is paid for by "charitable contributions," broadly defined to include private and public donations to the college, past and present: appropriations, gifts, returns on endowments and other wealth. So the average student paid just 32 cents on the dollar for his or her education; in public institutions, that price falls to 13 cents on the dollar. It's a bit cute, but a useful reminder, to think of colleges and universities as "part church and part car dealer"—they're charities, giving things away,

at the same time that they're commercial firms, selling a product to their student-customers for a price, tuition. So they can't be understood simply as car dealers. Indeed, nationally, it appears that 75 percent of colleges' resources come to them in their charitable role, and only 25 percent from commercial sales revenues.

Those charitable contributions also break the link between price and cost found in an ordinary firm where price increases can usually be explained by cost increases. In Econ 101, you're taught that "in a long-run competitive equilibrium, price will come to equal unit cost." But in a college, where price (tuition) *plus* subsidy equals unit cost, it's clear that tuition *might* go up because costs go up, but it can also go up because those charitable contributions go down. And that's what's happening in a lot of public higher education right now; states are cutting per-student appropriations, leaving public institutions to either cut their production costs (and quality) or raise tuition or do a bit of both.

That's not the end of it on pricing. There's a posted sticker price for a year of college—the one the press makes much of when the College Board report on college prices comes out every fall. But not everybody pays that sticker price. Indeed, in the group of small private colleges sampled by the National Association of College and University Business Officers, only 10 percent of entering freshmen are "full-pay" students; the rest get price discounts in the form of scholarships or financial aid. So it's important not to confuse changes in sticker price with changes in what people actually pay (as the press so often does). In a recent study, Amy Schwartz of New York University and Ben Scafidi of Georgia State University corrected the higher education component of the Consumer Price Index to recognize the net prices people actually pay for college, and when they did, the "rate of inflation" fell markedly.

Those price discounts are often given for the most ordinary of business reasons: to make the product more attractive to reluctant customers and, in the case of merit aid, to improve student quality.

But a good deal of that price discounting is in service of the ideal of "equality of opportunity," such as when financial aid is given to a qualified student who isn't able to afford even a school's highly subsidized tuition, room, board and fees.

Need-based financial aid. That one is not at all compatible with business experience. It's as if the local Porsche dealer felt so strongly that every very good driver should have a high-performance car that he priced his 911s so that even the poorest of excellent drivers in the town could afford one. We recently did a study of the prices actually paid by Williams College

students, relative to their family incomes, and found that kids who come from families in the bottom national income quintile—less than \$24,000 a year—pay on average just \$1,683 for a year at Williams. (The sticker price was \$32,470). In this, Williams is typical of those high-quality schools—including Princeton, Harvard, Swarthmore, Yale, Amherst and Stanford—that use need-blind admissions and give full-need aid.

Consider two more key elements in the economics of higher education—and key differences with familiar firms and industries:

Those charitable donations to colleges and universities are *very* unevenly distributed among them. The rich schools are very much richer than the poor ones, and most of the 3,400 institutions in the United States are somewhere in between. At one end, there's Princeton or Williams with, at Williams, more than \$800,000 of wealth per student—so they can sell a \$75,000 a year education for that sticker price of \$32,470 (and an average price, net of financial aid, of \$24,000). At the other end, in the bottom quintile, a struggling little school with little more wealth than its (heavily mortgaged) buildings, charges \$6,400 a year for an education that costs \$8,100 to produce.

Overall, a kid in the average top decile school gets a yearly subsidy of \$21,000 while one in a bottom decile school gets \$1,700. The average Williams student gets \$51,000 in subsidy each year. The message to take from this is that it's misleading and will often make bad policy to think of "higher education" or "colleges" as if all schools were the same, facing the same problems and the same incentives and opportunities.

The last existential-economic fact that makes colleges very different from the businesses we're familiar with has to do with the way they make their product—the way they produce educational services. It's the fact that students help educate students. In the jargon of Econ 101, our customers supply an input (student quality) to our production (of educational services) that we can't buy anywhere else. In the jargon of a more advanced economics course, customer quality "creates an externality" in the production of education. There are "peer effects." In the car example, it's as if the quality of the car you got from your Ford dealer depended on the quality of the other drivers who bought cars there; if they were very good drivers, your Ford would turn into a BMW. So schools that can afford to, care very much about who they sell their product to—who they admit. They're not indifferent, as are most business firms, because good students help produce a good education and poor students don't. That means that a major focus of competition,

especially between wealthy schools, isn't for student/customers *per se* for the sake of sales; it's for *good* students for the sake of high-quality inputs to their production.

Meanwhile the federal government has long taken responsibility for low-income students, thus protecting equality of opportunity. The low-income superstar going to a rich school is doing very well, as evident in the net tuition of \$1,683 for the low-income kid described above. Need-blind admissions, with (full) need-based financial aid, works.

But the worry is that the good-but-not-great low-income kid is being lost. Competition for student quality with price-discounts to the strongest students can simply use up available financial aid resources on the wealthy kids who can be bought for less—who need smaller price discounts—than the equally high-quality poor kids. And the federal government has abandoned those low-income students in favor of middle-income ones. Those who have looked at HOPE programs and tuition tax credits and the decline of Pell Grants as a fraction of college costs conclude that government tuition supplements are increasingly targeted at those who'd go to college anyway, and colleges like Georgia's are using their increased enrollment pressure to improve their student quality. The low-income kids—the focus of equality of opportunity—appear in danger of serious neglect.

I want to leave you with this:

- Don't trust your economic intuition or common sense or Econ 101 in thinking about prices and costs in higher education. It's a very odd industry, quite unlike what we're all familiar with. "Part church and part car dealer" can be a useful mantra and reminder.
- Prices (tuitions) cover roughly one-third of production costs. The rest comes from donations.
- Cost is only loosely related to price so price changes can't usually be explained by cost changes; they can often better be explained by changes in donations.
- There's a sharp hierarchy of schools, based largely on those donations and the resulting wealth that makes generalizations over all schools quite likely to be wrong.
- Students educate students, so schools care about who they sell to, and much of the competition between them, especially at the top of the hierarchy, is for student quality, not for sales.
- Low-income superstar students are doing very well at Princeton and Amherst and Swarthmore. But more ordinary poor kids are being abandoned by private price competition and by the shift of state and federal support to the middle class. ■



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DURHAM, N.H.—The University of New Hampshire received a \$2 million gift from Arnie and Della Hanson of Berlin, N.H., to provide needy students from Coos County with four-year scholarships covering the full cost of attendance at UNH. The couple previously gave UNH \$500,000 to support teaching.

CAMBRIDGE, MASS.—Harvard University introduced new scholarships for Boston city employees in honor of Boston City Councilor Brian Honan who died suddenly last year. The scholarships will cover full tuition for courses in the Harvard Extension School's graduate-level Certificate of Special Studies in Administration and Management program. The Boston mayor's office will select three city employees to receive the scholarships each term, with preference given to city employees who live in Boston's Allston-Brighton section, which Honan represented. Harvard has been involved in controversial development projects in Allston.

LOWELL, MASS.—Middlesex Community College and Northern Essex Community College were awarded a five-year, \$2 million grant by the U.S. Department of Education to help teachers' aides in Lowell, Lawrence and other school districts in the Merrimack Valley to improve the academic success of students with limited English proficiency. Middlesex will use its half of the grant to extend an existing paraprofessional "career ladder" program operated in partnership with the Lowell Public Schools. Under the ladder program, aides earn certificates and associate degrees from Middlesex and bachelor's degrees in special education from Fitchburg State College, leading to teacher licensure. Northern Essex will expand a similar program with the Lawrence Public Schools.

HAVERTHILL, MASS.—Northern Essex Community College received a five-year, \$2 million grant from the U.S. Department of Education to develop programs aimed at attracting and retaining Hispanic students. The funds come from the federal Hispanic Serving Institution program, which supports institutions where at least 25 percent of enrollment is

Hispanic. Fully 45 percent of enrollment at the Northern Essex campus in Lawrence, Mass., is Hispanic, and college officials hope the grant will help them push the figure to 60 percent, reflecting the demography of Lawrence. Among other things, the college will use the grant to provide Hispanic students on the Lawrence campus with a one-stop center for services including financial aid, academic advising and counseling, and to hire bilingual faculty role models.

DANVERS, MASS.—North Shore Community College was awarded a five-year, \$950,000 grant by the U.S. Department of Education to encourage youths from the nearby cities of Lynn and Revere, Mass., to pursue college education. Under the TRIO/Talent Search grant, North Shore officials will offer a variety of college awareness and counseling programs aimed at encouraging students ages 11 to 27 from "nontraditional" backgrounds to finish high school and attend the college of their choice.

BOSTON, MASS.—Boston University's Goldman School of Dental Medicine was awarded a five-year, \$1.35 million grant by the Robert Wood Johnson Foundation to increase enrollment of minority and low-income students in dental schools, increase the number of dental schools with community-based practice sites and expand access to oral health care for vulnerable populations through dental school-community partnerships.

WALTHAM, MASS.—Brandeis University was awarded \$300,000 by the California HealthCare Foundation to study the effects of increasing use of hospital emergency rooms. Working with confidential data from Blue Cross of California and Blue Shield of California, researchers with the Schneider Institute for Health Policy at Brandeis will examine why ER use began to increase in the late 1990s and explore how overcrowding, diversion of ambulances and other trends affect health care quality and costs.

BURLINGTON, VT.—The University of Vermont College of Medicine received a \$250,000 grant from the U.S. Department of Transportation to test a

technology designed to increase the survival rate of critical patients transported via ambulance in rural areas. The mobile telemedicine technology will be installed and tested in an ambulance serving nearby Fletcher Allen Health Care. The technology allows for one-way, full-motion video and two-way audio communication between a command center, located at Fletcher Allen, and an emergency crew inside the ambulance. Trauma victims in rural areas are nearly twice as likely to die from their injuries as people in more urban areas, according to a study by UVM/Fletcher Allen faculty. The two institutions also received a \$385,994 grant from the Health Resource and Services Administration to expand their "tele-trauma" program linking the emergency departments of community hospitals with trauma surgeons at Fletcher Allen and UVM.

ORONO, MAINE—The University of Maine was awarded a two-year, \$457,079 grant by the U.S. Department of Agriculture to build international components into its resource economics and policy programs. The initiative will develop international aspects for existing courses, new international courses, a departmental concentration in international environmental and agribusiness management and international study programs with the Nova Scotia Agricultural College, Laval University in Quebec and the University of New Brunswick.

NEW HAVEN, CONN.—Yale University was awarded a four-year, \$1.2 million grant by the W.M. Keck Foundation of Los Angeles to study the technology needed to build a quantum computer. The grant funds a field-emission scanning electron microscope system that will complete Yale's new nanofabrication facility. Yale physicists and engineering faculty will use superconducting nanocircuits to explore design of the computer which would be more powerful than any conventional computer could be.

WARWICK, R.I.—New England Institute of Technology introduced two new associate degree programs in Web technology fields. A new associate program in programming and Web development

technology prepares students to develop Web-based computer applications. An associate program in multimedia and Web design technology provides students with skills in digital imaging, computer graphics design and animation, as well as Web page creation and interactive multimedia.

CONCORD, N.H.—Franklin Pierce Law Center and the University of New Hampshire introduced a joint graduate certificate program in health policy and law. Under the cooperative program, students admitted to Pierce Law or the UNH master's in public health program in Manchester will take two courses at each institution on their way to earning the joint certificates.

WENHAM, MASS.—Gordon College announced it would build a new \$24.5 million science center to bring together college science programs that are currently housed in two small campus buildings. The facility will be built on the site of two existing residence halls,

which will be replaced. The center will be named for Digital Equipment Corp. founder and longtime Gordon trustee Ken Olson. Olson pledged to match up to 50 percent of the \$13 million cost of the project's first phase, which is scheduled to begin in 2005.

NEW HAVEN, CONN.—Yale University was awarded a three-year, approximately \$435,000 grant by the U.S. Department of Education to create an online database of Middle Eastern print and digital journals and serials. The database, accessible free on the World Wide Web, will identify libraries that own the materials, and records will be searchable in Roman and non-Roman alphabets.

RINDGE, N.H.—Researchers at Franklin Pierce College's Monadnock Institute of Nature, Place and Culture began a major "Anthology" project to collect and record local New Hampshire stories and make them available to future generations. To solicit and collect

the material, much of which is passed down orally, researchers began conducting "stories circles" in towns across the Monadnock region. The stories will be published in book form and online along with photographs, journal entries and historical records.

FITCHBURG, MASS.—Fitchburg State College received the largest donation in its history—a \$1 million gift from 1938 graduate Amelia V. Gallucci-Cirio to endow programs in Italian language and culture as well as Western civilization. Endowment proceeds will fund teaching as well as lectures, symposia, visiting professors and foreign travel by faculty and students.

BOSTON, MASS.—Boston College introduced a peer-reviewed, Web-based publication to explore initiatives that combine technology, learning theory and assessment. Focusing more on practice than policy, *The Journal of Technology, Learning and Assessment* aims to offer perspectives on educational testing and assessment and the impact of computer technology on teaching and learning.

NORTH KINGSTOWN, R.I.—University of Rhode Island engineering and business students received a \$26,600 grant from the National Collegiate Inventors and Innovators Alliance for a project-based course in which they will develop assistive technology devices. The teams of students will design, develop, patent, manufacture and market devices that help improve the quality of life for the elderly or those with disabilities. For example, products under development could make it easier for an older person to open windows or place and retrieve items on upper shelves. The two-semester course aims to teach business and engineering students about financial and marketing topics as well as product design.

CHESTER, N.H.—The former White Pines College changed its name to Chester College of New England. Trustees at the four-year college approved the name change in September, effective immediately.

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—Horace Mann, President of Antioch, 1853–1859

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- Percentage of Americans who think people should be free to express unpopular opinions: **94%**
- Percentage who favor restrictions on the freedom of professors to criticize government military policy during times of war: **41%**
- Five-year change in percentage of U.S. chief financial officers who count “honesty and integrity” as most impressive quality other than ability in job candidates: **+26%**
- Five-year change in percentage of U.S. chief financial officers who count “verbal skills” as most impressive quality other than ability: **-16%**
- Percentage of Americans ages 18 to 29 who said they were *more* likely to support an increase in international students and scholars at their local college one year after the September 11 terrorist attacks: **37%**
- Percentage of Americans ages 18 to 29 who said they were *less* likely to: **26%**
- Percentage of Americans ages 45 to 64 who said they were *more* likely to support an increase: **18%**
- Percentage of Americans ages 45 to 64 who said they were *less* likely to: **51%**
- Ph.D.s awarded in science and engineering to students from countries that the United States considers to be sponsors of terrorism as a percentage of all Ph.D.s awarded to foreign students on temporary visas: **2%**
- Percentage of Americans ages 18 to 24 who could locate Iraq on a map as of the fall of 2002: **13%**
- Approximate number of barrels of oil burned annually to generate electricity in New England: **90,000,000**
- Change in sea level at Rockland, Maine, over the past 100 years: **+3.9"**
- Number of Massachusetts counties where New Hampshire is the top destination for people moving out of state: **3**
- Number where Florida is the top destination: **4**
- National ranks of Massachusetts, Connecticut and New Hampshire, respectively, in growth of per-capita personal income as a share of U.S. per-capita personal income since 1973: **1,2,3**
- Of New England’s 15 largest biotech companies, number whose headquarters are within 15 miles of either Harvard or Yale: **14**
- Approximate amount Yale plans to invest in science, engineering and medical facilities during this decade: **\$1,000,000,000**
- Rank of Hartford, Conn., among 50 state capitals in the percentage of residents who have a bachelor’s degree or higher: **49**
- Rank of Montpelier, Vt.: **2**
- National rank of Cambridge College in number of master’s degrees in education granted to African-Americans: **1**
- Of 10 most expensive U.S. colleges, number that are located in New England: **5**
- Women as a percentage of faculty at U.S. colleges and universities: **36%**
- Women as a percentage of faculty at community colleges: **50%**
- At private research universities: **26%**
- Women as a percentage of U.S. college presidents: **21%**
- Percentage of U.S. colleges that report sexual assault statistics in a way that is “fully consistent” with federal law: **37%**
- Percentage of state education departments that have obtained supplemental tutoring services for children in failing schools in compliance with the federal No Child Left Behind Act: **26%**
- Approximate change since 1930 in the number of Americans serving on local school boards: **-800,000**
- Percentage of current local school board members whose professional background is in education: **13%**
- Percentage who say they have “liberal” political views: **16%**

Sources: 1,2 First Amendment Center/*American Journalism Review*; 3,4 Robert Half International; 5,6,7,8 American Council on Education; 9 Georgia State University; 10 National Geographic Society; 11,12 Natural Resources Council of Maine, Mainewatch Institute and Maine Center for Economic Policy; 13,14 University of Massachusetts analysis of Internal Revenue Service data; 15 *Postsecondary Education Opportunity*; 16 CONNECTION analysis of *Mass High Tech* data; 17 Yale University; 18,19 *Governing* analysis of U.S. Bureau of the Census data; 20 Cambridge College; 21 CONNECTION analysis of *Chronicle of Higher Education* data; 22,23,24 U.S. Department of Education; 25 American Council on Education; 26 Education Development Center; 27 Association of Community Organizations for Reform Now; 28 KnowledgeWorks Foundation; 29,30 National School Boards Association



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