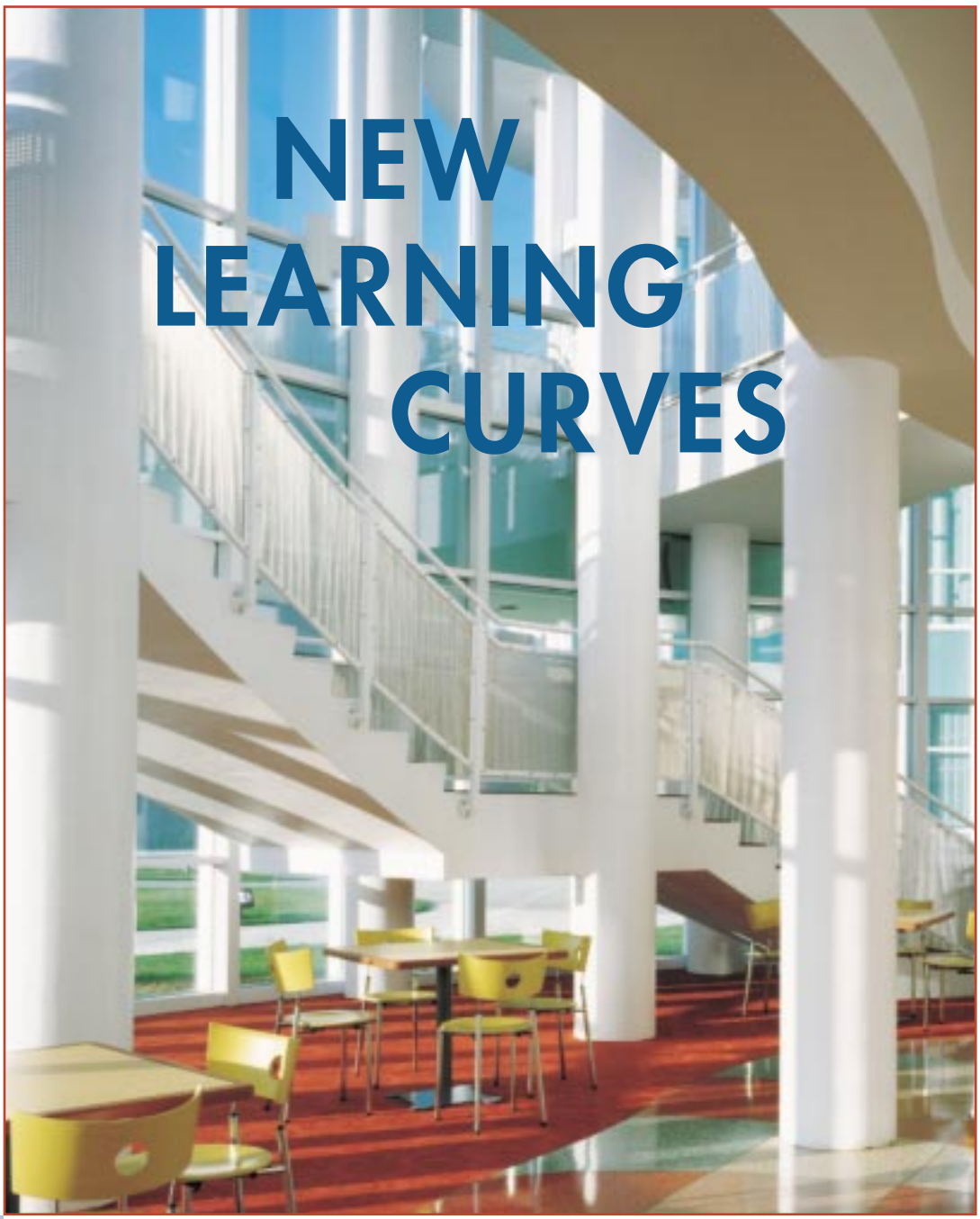
CONNECTION

THE JOURNAL OF THE NEW ENGLAND BOARD OF HIGHER EDUCATION



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Inside:

- Issues in Campus Architecture
- Save the Humanities
- Will Faculty Learn to Love Distance Learning?
- New England's Economic Outlook

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Volume XVII, No. 1
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COVER STORIES

COMMENTARY & ANALYSIS

DEPARTMENTS

On the cover: The Learning Resource Center at Manchester Community College, designed by Centerbrook Architects and Planners. Photo copyright © by Jeff Goldberg/Esto.

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Email: connection@nebhe.org

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The **New England Board of Higher Education** is a nonprofit, congressionally authorized, interstate agency whose mission is to promote greater educational opportunities and services for the residents of New England. 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.

EDITOR'S MEMO

Just a year-and-a-half ago, Connecticut was boasting a $400 million budget surplus, Massachusetts voters approved a tax rollback, and public higher education officials across the region were confidently expecting significant budget increases. By early 2002, however, that was ancient history. The dot-com bubble had burst. New England had lost nearly 100,000 jobs, and the six state capitals were awash in red ink.

As it turns out, the late, great economic boom had done little to lift the New England states out of the nation's higher education funding cellar. By fiscal 2002, Rhode Island, Connecticut, Vermont, Massachusetts and New Hampshire ranked 43rd, 46th, 48th, 49th and 50th, respectively in state support of higher education operating expenses per $1,000 of personal income. Maine did a little better, ranking 35th.

Chronic underfunding of higher education compromises access and quality in many intangible ways. But the cover stories in this issue of CONNECTION are about something more concrete … and steel and glass and brick. Underfunding, of course, also results in deferred maintenance and deteriorating buildings that must be rescued later by heroic measures such as UConn 2000, the billion-dollar program to upgrade facilities at the University of Connecticut, which is described in this issue.

Whether on the grand scale of the UConn initiative or the modest level evident at dozens of New England colleges, campus-building raises a host of new edu-architectural concerns. There is the opportunity, and the mandate, for colleges to improve access for people with disabilities. There is the chance for colleges to practice in sustainable building design what they preach about stewardship of the planet. And there are challenges, from wiring buildings for a wireless future to sating the appetites of today's consumerist students.

The built environment on college campuses is shaped in part by marketing concerns and has been at least since U.S. campuses chose Gothic buildings and quadrangles to imitate the temples of learning of Oxbridge. Today, the look of housing options—including "luxury dorms"—is particularly important in the student recruitment game. Campus planners know that more students are growing up with their own bedrooms and expect at least equal comforts at college (to hell with the virtues of sharing close quarters and experiences with roommates of different backgrounds).

All the focus in campus architecture is not on luxury dorms, however. There is also new interest in functionality—in how daylight, flexible furniture and space to collaborate improve student learning. Above all, changeable ideas about teaching and learning demand that buildings be adaptable, lest form follow dysfunction. And high stakes may be spreading to building design. In an article about K-12 school buildings in *Education Week*, architect Prakash Nair, suggests that "School officials responsible for planning, constructing and renovating facilities ought to be held accountable not only for whether the cost estimates are met and the air conditioning works, but also for the impact their decisions have on student learning."

Amid all these functional concerns, we can also hope that New England's colleges will continue to commission and preserve the kinds of bold, boundary-pushing architecture that inspires wonder in students and passersby as it enriches the regional landscape. As with so many other kinds of challenging expression, if colleges don't provide a safe environment, who will?

John O. Harney *is executive editor of* CONNECTION.

Regionalism Revisited

Spring brought forth new initiatives in regional self-examination. In May, the National Endowment for the Humanities awarded the University of New Hampshire $378,900 to establish a Center for New England Culture. UNH beat out a competing proposal from Brown University to host one of nine federally funded regional culture centers across the country. The grant will be matched 3-to-1 by private donations to establish a permanent endowment. The center, to be directed by UNH Professor David Watters, will host conferences on New England's historical and contemporary culture and work to strengthen curriculum on New England culture, especially the region's ethnic communities.

Meanwhile, Neal Peirce, author of *The New England States*, the 1972 book on the six-state region's people and politics, has fixed his gaze on New England once again. Peirce, the founding editor of the *National Journal*, and his partners in the Citistates Group are working with the New England Council conducting interviews with leaders of business, higher education, government, foundations and others to find out if there is a shared sense of New England's future and a shared agenda. The initiative is a cooperative venture between the council, the Boston Foundation and the Metropolitan Area Planning Council.

Vacancies ...

More than 150 New England colleges were still considering both qualified freshman and transfer applications for the fall semester as of the traditional May 1 admissions deadline, according to the New England Board of Higher Education's 2002 Student Vacancy Survey. An additional 18 campuses reported openings for transfer students only.

Of the institutions reporting openings, 47 indicated that certain academic programs, particularly in allied health fields such as nursing and dental hygiene, were already filled.

NEBHE has surveyed New England higher education institutions every year since 1960 as a public service to students who have not chosen a college by May and to measure college application trends.

The 2002 survey also found that New England campuses had received more than 500,000 applications for the

In and Out

CONNECTION'S Spring 2002 issue [Trends & Indicators, Spring 2002] featured 2000 data on students migrating into the New England states for college. State officials, of course, also want to know about students going out—and about the net gain or loss. For this, the federal government's data goes only up to 1998. Here it is…

State	Freshmen Leaving State	Freshmen Going to State	Net Migration
Connecticut	11,812	7,335	-4,477
Maine	3,799	2,375	-1,424
Massachusetts	14,329	24,618	10,289
New Hampshire	4,409	5,081	672
Rhode Island	2,636	7,960	5,324
Vermont	2,300	4,119	1,819

Snippets

"Let me hasten to debunk the myth that kids who are good or even brilliant at science and math are more "intelligent" than those who are not. ... In this increasingly complex world, we need such "whiz kids" more than we ever did and we should do everything we can to encourage them to achieve their fullest potential. But do we have to make the other kids who have no interest in science and math look stupid in the process? What happened to actors and musicians and artists and architects? The counselors and naturalists and chefs and jewelers and librarians and historians and writers, marathon runners and entrepreneurs?"

—Architect Prakash Nair, who heads the New Jersey-based Urban Educational Facilities for the 21st Century, in an online discussion hosted by Design Share.

****

"Transforming the chicken to serve our various needs, we have, in turn, been transformed. … How better to understand mankind's manipulation of the natural world than through the fabled and troubled history of one of its most important domesticates: the chicken?"

—Yale University political science professor James C. Scott, quoted in the Yale Bulletin & Calendar promoting a May conference titled, "The Chicken: It's Biological, Social, Industrial and Cultural History: From Neolithic Middens to McNuggets."

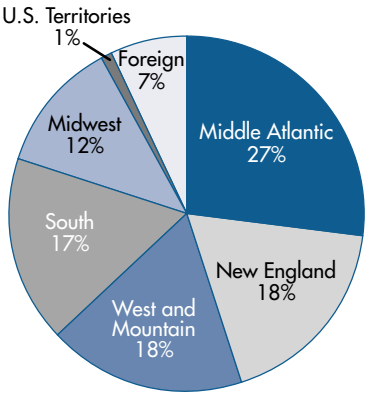
fall term—up 4 percent over last year. This follows a 3 percent one-year jump in freshman applications last year and a 5 percent increase in May 2000.

One reason college applications have been rising is that the number of traditional college-age New Englanders has grown steadily since 1995, when the region emerged from a 15-year downturn in the number of 18-year-olds. New England's high schools are expected to graduate more than 127,000 seniors this spring, up more than 2 percent over last year, though growth in New England's high school graduating class still lags behind the nation's.

It seems that every year, admissions officers note that this year's graduating seniors are more consumerist, more organized than the one before. A few years ago, students began haggling over their financial aid packages. The latest trend: students contesting admissions rejections.

Where Do Harvard Students Come From?

The following chart shows the geographic origin of students admitted to Harvard's Class of 2006:



Comings and Goings

Former University of Florida President **John V. Lombardi** was named chancellor of the University of Massachusetts Amherst. … **Ann Weaver Hart**, former provost

and vice president for academic affairs at Claremont Graduate University in California, became president of the University of New Hampshire, replacing **Joan Leitzel**, who retired after six years in charge. … **William Farrell**, former chancellor of the University System of New Hampshire and former president of Plymouth State College, was named president of Rivier College, replacing **Sr. Lucille Thibodeau**, who retired. Farrell is the first male and first lay person to head the nearly 70-year-old college. … **Mary C. Clancy**, Canada's former consul general to New England, became president of Burlington College, succeeding **Daniel Casey,** who retired. … **Brian M. Barefoot**, a former executive at PaineWebber and Merrill Lynch, became president of Babson College. Barefoot is the first graduate of the college to serve as president. … **James O. Ortiz**, former vice president of academic and student affairs at Bunker Hill Community College, became president of Southern Maine Technical College, replacing **Wayne Ross**, who retired after 23 years. … **Timothy D. Crowley** became president of Northern Maine Technical College after serving 11 years as academic dean. … Amherst College President **Tom Gerety** announced he would resign in June 2003 after nine years on the job. … Former Mexican President **Ernesto Zedillo** was appointed director of Yale University's Center for the Study of Globalization. … Former U.S. Secretary of Agriculture **Dan Glickman** was named director of Harvard University's Institute of Politics. … **Evelyn Hu-DeHart**, former chair of Ethnic Studies at the University of Colorado-Boulder, became director of Brown University's Center for the Study of Race and Ethnicity in America.

It's Not Whether You Win or Lose …

To the Editor:

James Martin and James Samels' characterization of Harcourt Higher Education (HHE) as a "loser" that went "belly up" needs some clarification ["Enrollment Winners, Losers, Turnarounds and New Players," Spring 2002]. During the two years I worked with HHE, it assembled a professional academic staff that developed five degree programs supported by 111 courses, a full range of support services, including a library, and a trained faculty. HHE was licensed by the Massachusetts Board of Higher Education in 2000, becoming the first entirely online degree program in New England.

HHE was preparing for candidacy status for regional accreditation and was starting to enroll students and develop partnerships when it was sold to Thompson Learning which shut it down. Since HHE's advertising budget was frozen, it never conducted a serious marketing campaign. Hence, the viability of its business plan was not really tested.

James Fay, Project Director
Universitas 21 Pedagogica
Former Dean of Arts and Sciences
Harcourt Higher Education

First Impressions of Campus Form *and* Function

ROBERT A. WEYGAND

First impressions are said to be among the most important. Job interviewers often make hiring decisions within the first five minutes of meeting a candidate. More than half of voters, it is said, judge political candidates by their appearance. Consumers may select a car by the way it looks before they know anything about how it runs. The same has been true of how students and their families choose a college or university.

Many of us remember that first visit to the college we thought might be right for us. We really weren't sure about that institution until we stepped onto the campus. The building facades, the interiors, the quadrangle, the landscape, the sense of space and form all made a big impression on us. It made us think, "This is where I want to be," or, "I don't think I'd like it here."

Much has changed in the way students select colleges. Today, in-depth information is available to prospective students online at the click of a mouse. Virtual tours of the campus, teleconferencing and other interactive experiences are all used to inform and entice students. But for many, that first personal visit to the college campus is still the clincher. That first impression often seals the deal.

Today's campus architecture and landscape architecture are taking on new forms *and* functions that have a profound impact not only on that first impression (form) but also on the student's larger educational experience (function). Many campuses are now emphasizing the functional features of their buildings as an additional tool to recruit prospective students.

The function of buildings and landscape spaces on campuses is changing to reflect new academic philosophies, tighter budgets and global perspectives. New designs stress the importance of utilizing renewable resources and developing sustainable buildings and landscapes. New buildings feature interior flexibility, mixed uses and multiple academic disciplines housed together in an attempt to enhance teaching and learning.

The demand for innovative educational experiences is driving innovative design and, in turn, shaping a new vernacular on campus.

Sustainability, flexibility, individuality, educational interfacing, interdisciplinary academic design … Are the new ideas improving higher education? Or do they go too far—throwbacks to the era of "open classrooms," individual academic programs and degrees in General Studies? Are we losing the structure and academic purity believed so vital to the educational experience? Are we back in 1966 again?

The function of buildings and landscape spaces on campuses is changing to reflect new academic philosophies, tighter budgets and global perspectives.

Whatever your opinion, we hope the articles and essays herein leave you with new ideas and firmer resolve about the importance of architecture and landscape architecture in improving today's educational experience, for the campus provides not only a *first* impression, but a lasting impression as well.

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

FORM follows FUNCTION?

Innovations in Education Demand Flexible Building Design

ARTHUR J. LIDSKY

The typical high school graduate, born in 1984 or 1985, will be entering college in the fall, never having known a world without computers, cell phones or TVs. The way this student will be educated is remarkably different from the way many of us over age 30 were.

There is a fundamental change occurring in higher education—a pedagogic shift from teaching to learning. This shift is being driven by considerable and significant research into educational theory, behavioral and cognitive sciences and human development.

In the past, a common mode of teaching was lecturing. Today, many faculty facilitate discussions. The question "What should I teach to my students?" has evolved to "What should my students know?" and "How should my students learn?"

Students today are encouraged to be more proactive and to take responsibility for their own learning. They have more experiential and hands-on education than their parents. Most of us, in college, were expected to work independently as individuals; many students today work collaboratively in small groups. Creating a community of learners is an important goal of many educators.

The Haas Library complex at Western Connecticut State University features a five-story glass atrium. The library was designed by Best Joslin and built by Konover Construction Corp. Photo copyright © by Richard Cadan.

Other forces are also changing higher education. The revolution in computer and communications technology has affected everything from groundskeeping to teaching to research. Off-campus and distance learning initiatives are proliferating. Institutions compete intensely for students and for financial resources. State and federal requirements on colleges grow apace. Through all this, there is an increasing need to maintain, renovate or replace aging facilities and equipment.

At the same time, building designs are evolving to support the changes taking place in education. The relationship between education and architecture is symbiotic—one affects the other. Building design can support and advance educational change, or it can hinder change.

In the not too distant past, architects created buildings for colleges and universities that were designed to meet the needs of specific programs or individual faculty. It was assumed that these programs would remain constant, and buildings were constructed accordingly. They were solid and often inflexible.

Today, in higher education, the assumption is that programs, teaching, research and technology will change over time, sometimes imperceptibly, often dramatically, and that buildings must be designed to accommodate change. The most successful academic buildings are those that allow rational and planned physical and programmatic change.

Building features

Here are some of the effects on facilities caused by the changes in teaching and learning and the impact of education and architecture on each other.

Atria. Many new campus buildings are designed around an atrium. Originally, a Roman concept, these spaces were large open-air gardens in the center of residential buildings. Today, atria are large, dramatic, enclosed spaces, usually the focal point of a building design. There is an interesting, and perhaps accidental,

confluence of architects' desires to create a dramatic and organizing space for their design and educators' desires to create collaboration and community space.

Colleges are often initially cautious about constructing an atrium because of added costs, but many embrace the concept when the programmatic possibilities become clear. This space can be an exciting focal point for a variety of events, such as gatherings, lectures, presentations, musical and theatrical activities, luncheons and dinners and study—as well as a space for formal and informal student and faculty collaboration.

Smart classrooms. The most noticeable architectural change caused by pedagogical shifts has been in the size, configuration and technological outfitting of teaching spaces—classrooms and laboratories.

"Smart classrooms" are equipped with ceiling-mounted digital projectors that are connected to the computer, DVD, VCR, institutional network and the Internet. "Glorified overhead projectors!" say some who see the technology reinforcing the lecture style of teaching. But others believe the technology enhances a skilled instructor's ability to entice students to participate in the learning experience.

Flexible lab space at Boston College's Higgins Hall allows researchers to work closely with students and provide a hands-on approach to the science disciplines. The lab was designed by Shepley Bulfinch Richardson and Abbott of Boston. Photo copyright © by Woodruff/Brown Photography, 2002.

A lecture style of teaching requires that the students face the front of the room, and most of the interaction is with the teacher. A teacher who uses the discussion format needs to have students facing each other, seminar style around a large table or in a circle or u-shape, to facilitate interaction. The amount of space required for a discussion-style room that provides more flexible furniture and furniture arrangements is more than the amount needed for a lecture-style classroom.

On many campuses, there are few small classrooms and many large classrooms. This historical imbalance has become more noticeable as faculty have moved toward teaching class sections that are smaller and more conducive to the seminar and discussion style of interaction. The appropriate room size enhances this style of teaching, creating a close connection among participants and an informal intimacy that fosters dialogue and debate.

Lab design. A national movement to improve science, math and engineering programs and facilities is propelling dramatic changes in laboratory design. An informal national alliance of individuals and organizations committed to strengthening undergraduate education called Project Kaleidoscope (PKAL), has been instrumental in encouraging programmatic and architectural change on many campuses.

PKAL's argument is that learning science and engineering requires a lab-rich, hands-on, experiential, project-oriented collaboration of students and faculty learning and doing research together—especially at the undergraduate level. This style of teaching, learning and collaboration requires a different type of laboratory environment than typically seen in the past.

Large, long, lab benches fixed to the floor are being replaced with more flexible, and in many cases, moveable benches designed for groups of two to four students working together. In addition, larger labs are required because, often, the labs are designed with both a discussion area with movable seating as well as a lab bench environment with small group benches. The goal is to capitalize on the "teachable moment" by enabling faculty and students to move back and forth between discussion and experimentation.

Science and engineering disciplines now require larger buildings for a variety of reasons including the need to provide the larger, more flexible labs, but also to provide student project and research space, at both the graduate and undergraduate levels, as well as space for increasingly more sophisticated equipment. As faculty adopt the idea that students learn more effectively by "doing" science and engineering, appropriate space needs to be provided for that hands-on experience.

Meeting rooms. Architects are finding creative ways to provide informal small group meeting and collaboration areas in contemporary academic buildings by designing them into alcoves within corridors, on open stairway landings and at the ends of corridors. These spaces are usually outfitted with movable tables and chairs for four to six people, network

ports, power outlets and whiteboards or chalkboards. These resources promote spontaneous collaboration.

Faculty offices. Faculty offices are increasingly recognized as both personal workspaces and teaching environments affected by pedagogical and technological change. Today, the faculty office may be used as a seminar or meeting room for small groups of students. In addition, computer, keyboard, monitor and mouse have superseded the use of pen, paper and typewriter. Along with the computer have come peripherals including printers, external drives and scanners. And in some disciplines, it is not uncommon to have two computers in the office. All this requires a reevaluation of the size, use and configuration of the office. When multiplied across an entire college campus, the need for more faculty office space has a significant impact.

Libaries. The most dramatic change in campus buildings is being seen in the library. Libraries are evolving from quiet warehouses to very specialized service facilities melding books, technology, online resources and active collaboration spaces to support various teaching and research needs. The changes are both internally driven by educational reform and externally driven by changes in technology, costs and copyright laws. Today, no one can say what the library of the future will look like. Because of the more varied demands placed on it, it is unlikely that the future library will require less space. But it will be a different and much more animated place.

Seeing stars

One trend in campus architecture that requires careful implementation is the increasing use of "star architects" to provide highly visible, cutting-edge buildings. Colleges increasingly seek out these stars for a variety of reasons, ranging from the ambition to create a campus building that is fresh, different and innovative, to the enhancement of name recognition and branding, to the need to increase fundraising, and most of all, because it's exciting.

Many of these standalone gems of buildings are functioning works of art that often are singularly different from others on campus. For some types of college and university activities, such a facility can be quite energizing. But for most academic purposes, they are not appropriate. All evidence supports the idea that programs, teaching, research and technology in higher education will change. Buildings must be designed to accommodate such change. A building conceived as a work of art—a piece of sculpture—won't be changed easily.

Most colleges and universities know by now that if they don't change, they won't improve—and may not survive. What they may not know is that change can be enhanced or thwarted by the way in which it is anticipated and reflected in campus architecture and design.

Arthur J. Lidsky *is president of Dober Lidsky Craig & Associates, a Belmont, Mass., consulting firm that specializes in campus and facility planning for schools, colleges and universities.*

High-Wired

Universities are trying to make educational technology readily available and easy to operate in all new classrooms. This faculty conference room at the Harvard Graduate School of Education, designed by The Stubbins Associates of Cambridge, Mass., features careful design of podiums, lecterns and wall-mounted control panels. With consistent user interfaces and interactive touch screens, the facilities provide simplicity of operation and eliminate the need for multiple remote controls. A centrally located phone connects faculty to a media center to immediately address any technical issues that arise.

Faculty conference room at the Harvard Graduate School of Education designed by The Stubbins Associates of Cambridge Mass. Photo by Warren Jagger.

a BUILDING like a TREE, a CAMPUS like a FOREST

Sustainable Design Comes to New England Higher Education

WILLIAM McDONOUGH, MICHAEL BRAUNGART AND DIANE DALE

Among all the achievements of his long and productive life, Thomas Jefferson wanted to be remembered for three things. They are inscribed on a stone obelisk over his grave at Monticello. "Here was buried Thomas Jefferson," the inscription reads, "Author of the Declaration of Independence, Of the Statute of Virginia for Religious Freedom, And Father of the University of Virginia." This from a man whose distinguished career included eight years as president of the United States. For Jefferson, his activities were not as important as the things that he designed, which suggests a mind keenly attuned to the ways in which the thoughtful and poetic ordering of things could create a vital legacy.

While we daily experience the legacies of the Declaration of Independence and the Statute of Virginia for Religious Freedom, which matured into the Bill of Rights, one can see the physical embodiment of Jeffersonian design on the campus of the University of Virginia. Moved by the belief that public education is the keystone of a democratic republic, Jefferson secured land for the university, developed its curriculum, pursued distinguished professors, stocked the library and perhaps most importantly, designed the campus.

Students at Oberlin's Lewis Center for Environmental Studies are greeted by a soaring atrium, which allows ample daylight to enter the building. Photo copyright © by Barney Taxel, 2002.

His "little academical village" was laid out around a central, tree-lined lawn. Students and professors lived in sturdy brick residences linked by open arcades to the stately presence of the central Rotunda, which housed the library and classrooms. At the other end of the lawn, one could gaze out on the nearby peaks of the Blue Ridge Mountains. The campus was, and is, a beautiful place—by design. Jefferson's collegial village was intended to be an inspiring setting for the dynamic activity of a community, a place where students and faculty could mingle, gather, learn and create a vibrant academic institution. It remains a living monument to that ideal, and we see in the quads of universities from New England to the Pacific that it is a much-copied icon of American campus architecture.

What legacy is today's campus architecture leaving for the future? As in other regions, development on many New England campuses over the past 30 years has tended to be more random than planned. Following the same patterns of sprawl that have defined most development in our era, the placement of new campus buildings often separated them from the life of the university, while a hodgepodge of architectural styles clashed with the vocabulary of the historic quad. Lost, or at least diminished, is a fundamental asset of academic life in New England: the experience of community on a campus uniquely and beautifully attuned to its surroundings. In recent years, an evolving understanding of the environmental impacts of new buildings has further separated campus architecture from a legacy universities can wholeheartedly embrace.

The University of Rhode Island, for one, is trying to change that. There, planning is underway for a cluster of new buildings many hope will mend the fracture between forward-thinking new development and the historic campus. Though pencils have not yet been put to paper, planners foresee the new buildings as the foundation of a sustainable academic community, a model of "green design" that will project the values of environ-

mental responsibility while enhancing the traditional assets of New England campus life. This melding of sustainability with strategic planning is not only the shape of things to come in campus architecture but the signal of a deeper cultural shift that may well change our understanding of literacy.

What is sustainability?

Sustainability is a descriptive term for a range of cultural responses to the environmental impacts of economic growth. It is often defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Described in this way, sustainability is just a minimum precondition of survival—not very inspiring. More richly defined, it is an intelligent, creative and hopeful stance towards the future. In Jeffersonian terms, we might say sustainability is an appreciation for the legacy of one's designs—an interest in the long-term health of nature and human culture.

Sustainable design puts that sensibility into practice. Conventional approaches to sustainable design focus primarily on outlining strategies for architectural systems that make efficient use of energy and materials. Sustainable land planning and site design strategies emphasize an environmentally responsive use of vegetation, water and other natural systems. While these strategies represent a marked improvement over land development patterns of the past decades, they tend to rely on minimizing the human impact on the environment, striving only to be "less bad."

And being less bad, or in this case, being more efficient, is not necessarily good. This is especially true when it comes to selecting architectural materials. Most building materials are not designed with human health in mind. Many commonly contain toxic substances such as formaldehyde and volatile organic compounds, which off-gas into building interiors. In energy-efficient buildings, which tend to be tightly sealed to reduce heating and cooling costs, toxic chemicals accumulate in concentrations that make indoor air quality on average three times worse than the most noxious urban air. In buildings such as these, one can only hope for a draft of cool New England air.

We do not see sustainable design as being about efficiency. Instead, we encourage an affirmative design agenda, one that allows the human impact on the environment to be positive, vital and good. This new conception of sustainable design finds its roots in the desire to discover fit and fitting spaces for human habitation—the desire to become native to one's place. For us, natural communities and ecosystems serve as models of interdependence, with each member relying on and contributing to the well-being of the whole. Informing good design, this vision affirms the possibility of developing healthy and creatively interactive relationships between the natural environment and human settlements.

The design process begins with an assessment of the natural systems of a place—its landforms, hydrology, vegetation and climate. Combining an understanding of building and energy systems with the site's natural flows of sun, wind, water and vegetation, designers discover an "essay of clues" that suggests appropriate patterns for development of the landscape. Building materials are selected with the same care; they are chosen only after careful assessments of a variety of characteristics, ranging from their design chemistry to the environmental impacts of their use, harvesting or manufacture. With this emphasis on sustaining and enhancing the qualities of the local landscape, the resulting architectural and community designs meet exceptional levels of performance and create beautiful, healthy environments for human and natural communities.

Plants are instrumental in the "living machine" water-treatment process at the Lewis Center. Photo copyright © by Barney Taxel, 2002.

Life-support system

We like to think that every landscape can be fecund, every building a life-support system. The Adam Joseph Lewis Center for Environmental Studies at Oberlin College is such a building. Designed to reverse environmental stresses and restore the local landscape, the building is like a tree: Enmeshed in local energy flows, it accrues solar income, filters water—absorbing it quickly and releasing it slowly—and creates habitat for living things.

With 3,700 square feet of photovoltaic panels, the Lewis Center will one day be a net energy exporter. Its other sustainable design features include geothermal wells for heating and cooling, daylighting and fresh air delivery throughout, an extended botanical garden that recovers nutrients from circulating water on-site, and a landscape that offers social gathering spaces, instructional gardens and orchards and a newly planted forest

Made of Recycled Classrooms

When Middlebury College began replacing its old science center with a spanking new college library this spring, builders planned to recycle 98 percent of the old six-story building that even college officials had referred to as an "architectural mistake."

The old Middlebury Science Center.

An onsite "crusher" is grinding the 35-year-old science center's 600 tons of concrete into project fill to be used for the new library construction and on roads. Limestone exterior walls will be salvaged for reuse, and copper, steel, aluminum, glass and wood will be recycled. Much of the center's old science equipment has already been donated to schools in Vermont and New Hampshire.

Middlebury in 2000 became the first U.S. college to adopt specific environmental policies on construction and demolition waste. College officials say the estimated $800,000 cost of recycling the science center is comparable to the cost of demolishing the building and shipping the waste to a landfill.

The $40 million, 135,000-square-foot library is expected to open in the fall of 2004. – *J.O.H.*

grove, which has begun the long process of re-establishing the habitat of the building's northern Ohio location.

The building and its surroundings have become the center of a learning community. The comfortable sunlit classrooms and public gathering areas encourage mingling, communication and reflection. Inside and out, the building offers students and teachers opportunities for learning about the natural world. In fact, encouraging fluency in the language of natural systems—what Oberlin Professor of Environmental Studies and Politics David Orr calls "ecological literacy"—was the guiding intention of the building's design. As Orr has written, architecture always serves a pedagogical function; the design of buildings teaches us how we use resources, how we relate to nature and what our culture values. It is absurd, he believes, to teach young people about the world in buildings that have no relation to their surroundings and express ignorance of how nature works. Instead, the Lewis Center teaches ecological literacy—the cultural currency of this new century, and the next.

This is an entirely new, restorative legacy—one that is within the grasp of any campus building or landscape in New England, old or new. On the campus of the Woods Hole Oceanographic Institution, for example, we are renovating a 17-room, 120 year-old Victorian summer home, transforming it into a model of sustainable design while preserving its historic character. And at URI, the university community will be determining the shape and feel of new buildings, imagining what fits in the landscape of coastal Rhode Island.

Seeking a sustainable campus, they will probably be looking at the region's natural energy flows, its soil and vegetation and climate. New England's rich tradition of vernacular architecture might be evoked, or the building could be a contemporary design that suggests the university's future relationship to human culture and nature in the region.

Though similar design principles will be applied, the URI sustainable community will not be a carbon copy of Oberlin's. Sustainable design is not an ideology that imposes foregone conclusions on a setting. But as planning proceeds, students and professors at URI just may decide they too want a building like a tree—and a campus like a New England forest.

William McDonough, *an architect, industrial designer and educator, is the founding principal of William McDonough + Partners, Architecture and Community Design.* ***Michael Braungart,*** *a chemist and university professor, is founder of EPEA Internationale Umweltforschung GmbH, a scientific consultancy based in Hamburg, Germany. They are co-founders of McDonough Braungart Design Chemistry, a product and process development firm.* ***Diane Dale*** *is Associate Partner and Director of Community Design at William McDonough + Partners. McDonough and Braungart's new book, Cradle to Cradle: Remaking the Way We Make Things, was published in 2002 by North Point Press.*

CAMPUS ARCHITECTURE is CAMPUS MARKETING

From Celebrity Architects to Luxury Dorms, Colleges Make Building Decisions in an Attempt to Draw Students and Support

ELIZABETH S. PADJEN

Architect Peter Kuttner is talking about trends in campus architecture: "The latest thing is 'live and learn'—putting classrooms right in the freshman dorms, so you go to class with the people you live with. My son was in one. He liked it because he could go to class in his pajamas."

Architect Chad Floyd reports on the new recreation center at Tulane (which boasts a Department of Campus Recreation "to satisfy your fitness and leisure needs"): "They have two pools—an outdoor and an indoor. Kids sit around the outdoor pool sipping piña coladas."

Perhaps you had a father like mine, who admonished me that college isn't about fun and games. Sorry, Dad. These days, college isn't just an education—it's a lifestyle.

No one knows that better than college and university administrators—especially the directors of admissions, who are on the frontline of the competition for prospective students. They know that the size of the applicant pool and the eventual admissions yield frequently depend on one factor: the campus tour. And that means that the weapon of choice in the marketing wars is architecture, specifically architecture that matches the expectations of prospective students.

"With the dramatic rise in tuition," observes James Crissman, a Watertown, Mass., architect and consultant to academic institutions embarking on building projects, "you might think the logical response would be more Spartan facilities, to show that you're holding costs down. Instead the opposite is true. Students want the most for their money."

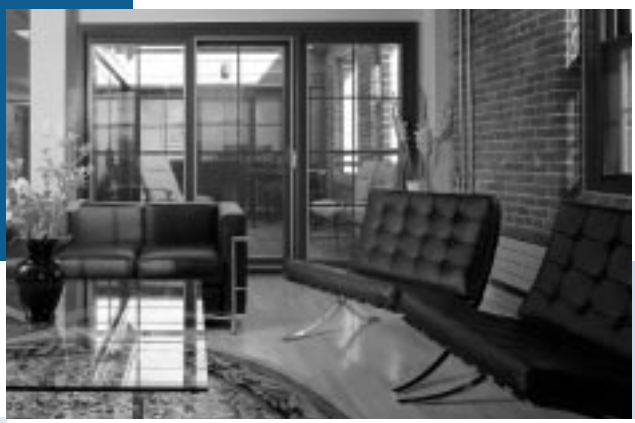
Indeed, today's students are sophisticated consumers who shop for colleges the way they shop for anything else. Colleges have responded with equal sophistication, hiring celebrity architects and focusing on facilities that offer the cushy amenities that students expect: posh dorms resembling condos; restaurant-like dining facilities with satellite "bistros"; recreation centers resembling health clubs, complete with juice bars. With the exception of an uptick in laboratory construction, the focus has been almost entirely on what might be called "lifestyle buildings," which, as Peter Kuttner, president of Cambridge Seven Associates in Cambridge, Mass., points out, also happen to be appealing "naming opportunities" for prospective donors.

Branding, lifestyle, naming opportunities … it wasn't always this way. Many New England campuses are blessed with beautiful buildings that grew from other impulses. Architecture had an unquestioned place in cultural and intellectual life; some educators also believed building design could contribute to moral as well as scholastic development—that it could even be inspirational. "Edward Thring, the Victorian headmaster of Uppingham in England, commented that 'to have a good school, a man had to have good buildings,'" notes William Morgan, a professor of architectural history at Wheaton College who has studied campus architecture. "It was a pervasive sentiment in the 19th century. Educators were very conscious of civic responsibility."

Others believed that good architecture could secure a place for their institutions in the intellectual firmament. "As president of Princeton," says Morgan, "Woodrow Wilson chose the Gothic style for the campus, saying that with that simple move, he had 'added a thousand years to the history of Princeton.'"

But "adding history" eventually fell out of fashion. Following World War II, the GI Bill opened higher education to waves of new students, and colleges needed space fast. The prevailing Modern style, a relatively less expensive style of architecture, allowed colleges to build more for less by touting the maxim that less is more. Modernism also matched the growing spirit of intellectual freedom; a progressive institution demanded progressive buildings. Like Le Corbusier's Carpenter Center at Harvard and Eero Saarinen's hockey rink at Yale, these tended to be buildings that deliberately defied the architectural traditions of the campus.

Perhaps inevitably, architectural defiance in turn fell out of fashion, following trends in design but also in response to an increasingly conservative student population. "Students are extremely conservative—shockingly so," observes Chad Floyd, a partner in Centerbrook Architects in Essex, Conn. "They are the most conservative voices on campus committees and the most determined protectors of tradition."



MIT's 224 Albany Street Graduate Dormitory designed by the Cambridge, Mass.-based S/L/A/M Collaborative includes a house master's penthouse apartment with city views. Photo copyright © by Woodruff/Brown Photographers, 2002.

The simple Vernacular-style "Out of the Way" dorm at Marlboro College, where the main academic building was once a barn and the admissions building a milking parlor. Photo courtesy of Cullen Schneider.

When the last of the baby boomers passed traditional college age, campus administrators confronted serious demographic challenges. "Marketing" took hold in educational parlance and in campus building decisions. For example, Floyd notes that prospective community college students are attracted to buildings that look corporate, suggesting the work world that some of them come from and to which many of them aspire. After nearly two decades of marketing experience, it seems that colleges and universities have learned important lessons. The difference today is that their target audiences have learned their lessons, too, and now come from a consumerist culture that makes them very demanding customers.

Colleges are quick to adopt what works for the competition. "The strength of many small colleges has been their sense of community," Kuttner notes. "Now the bigger institutions that previously promoted their academic offerings are starting to focus on community." "Lifestyle buildings" can solve that problem, instantly providing appealing communal and social spaces. Others are using architecture to stand out from the competition. The University of Cincinnati is nationally known for its collection of new buildings by celebrity architects such as Frank Gehry, Michael Graves and Peter Eisenman. Now MIT is developing its own collection: with new projects under construction by Gehry, Fumihiko Maki and Steven Holl, it seems determined to return to its postwar architectural heyday when its Kresge Auditorium and chapel by Eero Saarinen and Baker Hall dormitory by Alvar Aalto attracted international attention. But it's hard not to see a preoccupation with commissioning a new Gehry building as a somewhat more expensive version of, say, a student's preoccupation with acquiring a North Face fleece or Prada shoes. Despite protestations about pursuing good design and good value, ultimately both come down to wanting what all the other kids have.

With the growing tendency to see campuses as three-dimensional brochures and buildings as photo-ops for virtual tours on Web sites, it's refreshing to talk to Paul LeBlanc, president of Marlboro College, where there is no sports program and the 320-member student body recently voted *against* putting cable TV in the dorms. Marlboro is in the midst of an ambitious building program, with new structures by Deborah Berke, Turner Brooks, Brian Mackay-Lyons, Roc Caivano and Dan Scully—all well-known in the architectural academy, but hardly brand names. "We started by posing three questions," LeBlanc recalls. "How should a serious intellectual community approach this process? How should we respond to the Vermont ethic of small is better? How can we respect the vernacular? The goal is to build in harmony with the intellectual tradition of this place."

LeBlanc acknowledges that Marlboro, like all small institutions, is competing for students but says that marketing has not been the primary motivation. Cynics might suggest that Marlboro is only the most recent example of the famed Vermont brand extension, but LeBlanc's claim is borne out by the fact that no photos of the new buildings are yet on the college's Web site.

Marketing breeds cynicism. As the academic world emulates the business world and gets caught up in the never-ending pursuit of customer satisfaction ("to satisfy your fitness and leisure needs"), educators should look to the work of their colleagues, John MacArthur, former dean of the Harvard Business School, and Robert Edwards, former president of Bowdoin College. Both are legendary for their advocacy of architecture as a means of creating community, combining pedagogical vision with design excellence to promote a sense of community and to sustain the tradition of the "academic village." Great architecture—buildings that are inventive, that fit the needs of their occupants, and that demonstrate an enduring civic responsibility to their environment—comes from the passion of individuals. Great academic buildings are the last bastion of symbolic architecture that reflects our intellectual traditions and highest humanitarian values. After all, no one is building cathedrals anymore.

Elizabeth S. Padjen *is an architect and editor of ArchitectureBoston magazine.*

the SHAPE of THINGS to COME: a PHOTO ESSAY

Think of New England higher education and you probably think of ivy-covered brick. Or if you're feeling cynical, perhaps 1950s concrete. But the built environment of New England's college campuses is far more diverse, more complex, more daring, more educational than the stereotype. And it's changing fast thanks to profound forces such as consumerization among students, town-gown relations, historic preservation and sustainability. Following are a few examples of recent campus building projects that together offer some sense of the shape of things to come …

Learning Resource Center, Manchester Community College, Manchester, Conn.

Completed: August 2000
Architect: Centerbrook Architects and Planners, LLC, Centerbrook, Conn.

The entrance tower from the courtyard in the early evening. Photo copyright © by Jeff Goldberg/Esto.

Manchester Community College's 113,000-square-foot Learning Resource Center is at the new heart of the campus. A two-story glass bridge connects the Learning Resource Center to the Lowe Building's administrative offices and classrooms. The shiny glass and modernistic details of the two-story oval gallery express Manchester's commitment to high-tech education in support of Connecticut's economy. Splaying out from the two-story gallery are two rectangular wings in traditional red brick, containing a library, classroom and lab space, as well as faculty offices. Their flat roofs are punctuated by large clerestory windows that raise ceilings and brighten walls with natural light. Classrooms and labs contain teacher workstations equipped with state-of-the-art video and audio presentation systems, Web access, cable television, document camera and a user-friendly, touch-screen control panel. A theme throughout the facility is that every space is a potential learning space. Main pedestrian passageways are art galleries. Nooks, crannies and lounge spaces are furnished with comfortable study furniture.

Special thanks to the Society of College and University Planning (SCUP), especially Solutions Designer Marc Johns, who generously aided CONNECTION in collecting examples of interesting campus architecture. SCUP used the exercise of gathering information for CONNECTION via the World Wide Web as a test of a pilot project for collecting and sharing information about projects at higher education institutions worldwide. SCUP is online at www.scup.org. Thanks also to Capelin Communications of New York City, which helped initiate CONNECTION's arrangement with SCUP.

Barus & Holley Addition and Renovation, Brown University, Providence, R.I.

The new entrance to the engineering complex clarifies the axial strength of Manning Walk. Photo copyright © by Jeff Goldberg/Esto.

Completed: September 2000
Architect: Payette Associates, Boston, Mass.

The infill addition and renovation of Brown University's Barus & Holley building and development of a campus's central pedestrian walkway, Manning Walk, fills the courtyard formed by three existing buildings to form a coherent engineering complex. The project integrates disparate building elevations, creates a unifying entry lobby linking adjacent buildings, allows handicapped-accessible passage between existing lecture halls and applies consistent fixtures and finishes to coordinate spaces stylistically. The project also creates a "front door" for engineering while developing Manning Walk. Landscaping and an entry plaza form a focal point elevating department identity and clarifying overall campus circulation. The project's delicately inserted form increases density on a central campus while reinforcing the formal campus plan. In keeping with the Americans with Disabilities Act, a gracefully integrated ramp scheme allows access to every teaching and lab space.

Arbonies King Vlock Architects was inspired by the campus's collegiate Gothic doorways to create a playful, contemporary, skylit space in the lobby. Photo by Timothy Hursley.

Wilbur Cross Building, University of Connecticut, Storrs, Conn.

Completed: July 2001
Architect: Arbonies King Vlock Architects, Branford, Conn.

Intent on applying standards of efficiency and accessibility to the delivery of student services, UConn challenged the architects at Arbonies King Vlock (AKV) to come up with an innovative design solution for the four-story, 110,000-square-foot Wilbur Cross Building. AKV's workshops with the university community identified businesslike accessibility, efficiency, flexibility and a friendly attitude as the desired improvements to the gold-domed landmark at the center of campus. Inspired by the collegiate Gothic doorways throughout the campus, the architects created a playful and contemporary space with perforated stainless steel arches. A skylit, two-story entrance lobby replaces a labyrinth of narrow, windowless hallways. Moveable wood, fabric and glass walls can be easily reconfigured for future needs. The building was transformed into an entirely wired center, where students take care of business quickly and efficiently. Once time-consuming, disheartening experiences with student services have been eliminated by individualized, consumer-friendly systems.

International Center for Finance/Skinner-Trowbridge House, Yale University, New Haven, Conn.

The east facade of the mansion shows the restored ceremonial stairs and double-height Ionic columns of the east portico. To the left, the south portico features fluted Doric columns and stone steps with an iron balustrade. Photo copyright © by Peter Mauss/Esto.

Completion: August 2000
Architect: Helpern Architects, New York City, NY

University-sponsored institutes organized around world-class professionals and lecturers are often housed in gracious mansions that confer heritage and status on the programs. The Yale School of Management established the International Center for Finance to consolidate its prominent role in research of global finance and economics and acquired the 170-year-old Skinner-Trowbridge House for the institute's home. Originally the home of New Haven's mayor, the Greek Revival house had fallen into disrepair when Yale acquired it. The university commissioned Helpern Architects to restore it for a new mission as headquarters of the center and a grand home for distinguished visiting dignitaries. Helpern reclaimed much of the original interior, recreating and refurbishing prominent historic features on the main floor and grand staircase. The architects also extended the basement, reconfiguring portions of the house to yield offices and meeting rooms, and created an ADA-accessible entrance and elevator. Outside, the firm rebuilt the monumental steps on the streetside portico and recreated a century-old knot garden.

Williams College Unified Science Center, Williams College, Williamstown, Mass.

The state-of-the-art Unified Science Center marries new and century-old structures to bring Williams science programs into the 21st century. Photo by Frank Giuliani, courtesy of Gilbane Building Co.

Completed: December 2000
Architect: Einhorn Yaffee Prescott Architecture & Engineering, P.C., Albany, N.Y.

Complex multidisciplinary research projects like mapping the human genome sequence require adaptable, automated and spacious laboratories that simultaneously meet the needs of the biochemist and physicist. Flexible laboratories feature mobile workstations. Sophisticated infrastructure is necessary to maintain this state-of-the-art environment. Teaching and research laboratories must accommodate educators and students with private offices for professors and classrooms and libraries that complement research activities. When science faculty at Williams College compared the laboratory space in their century-old buildings to that of peer institutions, they knew changes were needed to remain competitive. Nine academic science departments and libraries were spread across four buildings. This system did not support the college's interdisciplinary programs in fields like biochemistry. Williams officials undertook the largest project in the college's history and consolidated the laboratories and libraries of all the science departments into the Unified Science Center. A 119,000-square-foot addition marries new and old buildings that house offices, classrooms and lecture halls.

Marine Science Center, University of New England, Biddeford, Maine

Completion: August 2002
Architect: Van Dam & Renner Architects, Portland, Maine

Interior hall with clerestory windows. Photo by Van Dam & Renner Architects.

Laboratory with overhead seawater system. Photo by Van Dam & Renner Architects.

The University of New England, located at the mouth of the Saco River, sought to integrate sustainable design practices in developing a state-of-the-art marine mammal rehabilitation facility combined with marine science education and research. The university's new 27,000-square-foot Marine Research and Education Center houses research and teaching laboratories with continuously flowing seawater (up to 350 gallons per minute), exhibits, a marine mammal rehabilitation facility, classrooms and faculty offices. The building was carefully sited to minimize disruption of existing trees and topography. Energy-saving elements include daylighting, sun shades, high-performance lighting and building envelope, solar pre-heat of make-up ventilation air and natural convective ventilation.

Laboratory for Complex Systems, Massachusetts Institute of Technology, Cambridge, Mass.

Completed: December 2001
Architect: Cambridge Seven Associates, Cambridge, Mass.

New hangar for large-scale and independent student projects. Photo by Nick Wheeler.

Teaching spaces are beginning to mirror modern corporate research facilities both in design and function. Barriers between faculty and students are breaking down, with open space and flexible teaching environments contributing to increased communications and opportunities for learning. At MIT, for example, a new Steelcase office system, modified for academic lab space, defines the labs, giving students and faculty the ability to quickly hang partitions, whiteboards and projection surfaces throughout the space, while providing overhead access to power and data. The renovation and expansion of the historic Guggenheim Aeronautics Laboratory resulted in new integrated teaching laboratories modeled after real-world technological and engineering processes. The highly flexible space allows students and faculty to work in modern team environments on projects of varying size and complexity. The design reorganizes the 50,000-square-foot building and its maze of corridors to ease communication between different teaching, research and lab activities as well as between students and faculty. A new 6,000-square-foot, two-story hangar and design loft supports work on unusually large-scale aerospace assignments and adds new connections to all three main student levels.

Searles Science Building, Bowdoin College, Brunswick, Maine

Completed: September 2001
Architect: Cambridge Seven Associates, Cambridge, Mass.

Much of the college and university learning experience happens in social settings. New campus buildings are facilitating these interactions by providing "unprogrammed" space outside the classrooms, fully networked for social interaction and informal learning. The infill addition at Bowdoin creates a common space and circulation spine where people from different disciplines connect with one another. The new space encourages interaction between faculty and students, creating far more space for informal learning, group work and social gatherings. The renovation of the historic 41,000-square-foot Searles Building demonstrates how older campus buildings can be successfully revitalized to accommodate the requirements of current technology, accessibility and function, while preserving their historic qualities. The renovation aims to increase classroom space, simplify circulation and integrate new technology. A 2,000-square-foot, three-story infill addition links the two wings and resolves multiple level changes within the building. By adding a new lobby at the base of the infill, and enlarging the bridge and landings, a myriad of open spaces are provided for informal gatherings, discussions and study sessions.

The new infill addition skillfully marries new to old, connecting the two wings of the building and creating and a new front entrance on Maine Street. Photo by Steve Rosenthal.

Pratt Hall, Mount Holyoke College, South Hadley, Mass.

Completed: March 2001
Architect: MDS/Miller Dyer Spears, Boston, Mass.

Main entrance facade with restored Gothic portal and sloped access sidewalk, and West facade with new connector addition. Photo by John Horner.

A comprehensive renovation of Mount Holyoke College's 1908 Music Building adds up-to-date teaching spaces while preserving the building's historic character. A glazed two-story addition provides large classroom and studio offices and presents a vibrant, contemporary image along a path to residence halls across a lake. The expanded library consolidates dispersed collections, with a wood-paneled reading room and computer areas overlooking a river landscape. The main entrance is redesigned to retain its neo-Gothic portal while providing universal access. The west entry opens into a new glazed two-story lounge outside the library and classrooms. Reorganized layout and circulation routes link detached program spaces and increase building functionality. The challenge was to meet the universal access standards of the Architectural Access Board of Massachusetts Executive Office of Public Safety while restoring the building's traditional character. The Gothic entrance portal is preserved with custom doors, the sill raised to main floor level to eliminate interior steps. A ramped corridor, divided by a half-height wall resembling a wave, connects split levels of the 1908 building and 1960 wing and provides handicapped access to an auditorium stage and backstage area. A new elevator cut through former offices serves all four floors. A program in high-tech music teaching uses state-of-the-art classrooms and studio offices with built-in media racks, audiovisual/data projection, motorized screens, sliding whiteboards and programmable lighting. A Virtual Practice Room simulates acoustics of diverse environments. New audiovisual systems, finishes, stage and window treatments complement the restored Gothic trusses and ornate woodwork of the auditorium.

STORES of KNOWLEDGE

New England Colleges Are Turning Retail Space into Classrooms

ALBERT E. NEAL

Kids are frequenting some old New England department stores again. But they're not buying CDs and jeans; they're investing in certificates and degrees. The University of Rhode Island and the University of Massachusetts Dartmouth have purchased former retail space in historic downtown buildings—and refurbished them for educational uses. Boston University houses its School of Hospitality Administration in a former Cadillac dealership. Maine College of Art, the Rhode Island School of Design and Montserrat College of Art have all converted vacant downtown stores to gallery space. After Housatonic Community College spent $27 million renovating the dilapidated Hi-Ho mall in Bridgeport, Conn., enrollment grew so fast, administrators began looking for more space—this time, in a former Sears building.

College officials find rehabilitating old downtown stores attractive for several reasons. Fixing up an existing building can be more cost-efficient than buying land and building from scratch. Town-gown relations are improved as the institution's investment helps reinvigorate the central business districts and strengthen community ties. The college can also show the community its commitment to the environment by applying sustainable architecture practices to the site. And the inherent charm and history of the buildings markets the whole institution. Plus, department stores tended to be located right smack in the middle of downtowns. So, in their new lives, the buildings offer a central location for a sometimes-overlooked student market.

But redeveloping antiquated buildings also presents challenges. Will the building meet the standards of the Americans with Disabilities Act? How will new technologies be integrated? What about preserving the building's architectural integrity? Are special permits or zoning required? Some examples:

Shepard Building, Providence, R.I.
From the 1870s to the 1970s, Shepard's symbolized the vitality of downtown Providence. Residents would meet under the Shepard Co. store clock on Westminster Street or charge inside where they shopped until they dropped. Just as the bustle of Shepard's echoed the verve of Providence, the store's 1974 closing confirmed the city's economic malaise.

The clock outside the old Shepard's department store was a favorite meeting spot in downtown Providence. URI photo by Nora Lewis.

Jump to the 1990s. The University of Rhode Island begins eyeing the deteriorated Shepard Building as the new location for its College of Continuing Education. Though the college's dean publicly voiced skepticism about the building, URI hired the architectural firm of Presbrey and Torrado and the old Shepard Building was gutted, refurbished and transformed into URI's Providence Campus at a cost of $34 million.

Today, the 272,000 square-foot building features 60 fiber-optic wired classrooms, a 30,000-volume library, a 500-seat auditorium, science and language labs, a book-

store, even a full-service restaurant and a fitness center (as well as an experimental high school).

But it wasn't easy. The building sat idle for two decades and there was no roof. "When we first turned on the heat, the floor started to move," says Director of Facilities and Operations Gary Lulli. "We had a lot of nails popping through the vinyl tile." (Six years later, the nail problem remains.)

In addition, the old store's support columns were positioned every 16 to 18 feet in each direction, which would have put them right in the middle of the classrooms, auditorium and lecture halls. "Columns in the middle of offices are great because you can use them for a chase for wiring and for fiber-optics," says Lulli, "but in the middle of a classroom they're not so good."

But security has been a nagging concern since the project's inception. Many of the 4,000 students enrolled at the college are suburban women who work during the day. Security officers are on duty 24 hours a day at two of the building's entrances. A third officer patrols the Shepard Building by foot. Still, students tell local newspapers they fear muggers as they trek from classroom to parking lot late at night.

Cherry & Webb, Fall River, Mass.

The 67,000 square-foot Cherry & Webb building in Fall River, Mass., captured the imagination of planners at two New England institutions. Roger Williams University initially expressed interest in leasing one floor of the building for corporate training programs. But city and state officials favored a University of Massachusetts Dartmouth plan to lease both the second and third floors for its Center for Professional and Continuing Studies and the rest of the building for education and research purposes.

The old Cherry Webb building in Fall River, Mass., getting a facelift. Photo courtesy of Fall River Office of Economic Development.

Restoration of the building, which had stood vacant since 1995, is part of a larger effort to revitalize downtown Fall River, including a planned $46 million courthouse across the street from the Cherry & Webb building.

The project, slated for completion in fall 2002, has highlighted the regulatory and political challenges inherent in downtown rebuilding. Officials charged that the building contractor began demolishing and stripping the building's interior and façade before securing the required permits, setting off a local political drama over the proper authority for permits and fee waivers.

The building is attractive to higher education administrators because of its downtown location and proximity to local high schools and community colleges. Fall River's economic boosters, meanwhile, see the university's presence as a way to ensure day and night student traffic, which equates to cash for the community.

UMass Dartmouth has also given new academic life to the former Star Store in nearby New Bedford. The university's arts programs share the 70,000-square-foot former store with Bristol Community College.

Sprague & Carleton Maple Furniture, Keene, N.H.

Antioch New England Graduate School prides itself as a progressive, down-to-earth institution with a genuine commitment to preserving the environment. School officials like to talk about how Antioch preserves the best of the past, while looking ahead to the future. No place is this more evident than in the school's new digs.

Established in Vermont in 1964, Antioch New England moved to Keene, N.H. in 1974 and soon outgrew its facilities. The Sprague and Carleton factory and showroom, where Frank L. Sprague and his partner William Carleton once produced and sold rock maple porch rockers and settees, emerged as an ideal location for the growing school.

The Sprague and Carleton building was an eyesore and a waste of nearly six acres of real estate. Antioch New England spent $4.7 million to gut and refurbish the building, which is twice the size of the graduate school's former site and roomy enough to house all five of the graduate school's academic departments.

"The factory was abandoned for almost nine years and the property was essentially just sitting there deteriorating," says Antioch President James Craiglow. "We were able to purchase and rehab the building for under $50 a foot, which was clearly more economical than buying land and starting from scratch."

By rehabbing the Foster Building, the Massachusetts College of Pharmacy and Health Sciences helped revitalize downtown Worcester. Photo by Steve Dunwell.

The Sprague and Carleton restoration reflects Antioch New England's "greenhouse" approach to education— cultivating students through holistic teaching practices, which address the individual in relation to the community and the community to the student. Natural light and air circulate in every classroom and workspace and the design of the building coincides with the slopes and shapes of the surrounding landscape.

Antioch New England Graduate School took the iron door of Sprague and Carleton's original wood kiln and molded it into one of the walls in the building's reception area. Other factory artifacts adorn the facility's conference rooms. Says Craiglow: "There is some virtue in preserving bits and pieces of our history because it helps to explain our roots. We sometimes forget how important that is."

Foster Building, Worcester, Mass.

The Boston-based Massachusetts College of Pharmacy and Health Sciences (MCPHS) rescued, rehabbed and refurbished the historic Foster Building in downtown Worcester to be home to its innovative, three-year doctoral program.

The building was constructed in 1898 by Albert Lowell who designed and sold women's hats and clothing from the site. The building at various times housed a skating rink, a bowling alley, office space and cigar store. By the time, MCPHS bought the neglected building in 1999, it had suffered deterioration and fire and water damage.

The architects hired to redesign the Foster building, Boston-based Steffian Bradley Associates, faced special challenges meeting modern standards. The $17.5 million renovation preserved much of the historic structure, including cast-iron pillars, red brick walls and a granite foundation. But dozens of cast-iron beams, which had been used to support the building's four upper stories, crowded a new auditorium's sightlines and had to be repositioned to support the floors in a more strategic design. Brick facades inserted over street-level windows were torn away to bring light into the lobby area.

Today, the five-story, 60,000-square foot building contains contemporary classrooms, an auditorium, library, study lounge, computer lab, teaching and research labs, student café, offices and support areas for 400 students and 50 faculty and staff. The campus is organized vertically with teaching functions on floors one through three and administrative and research functions on floors four and five. The basement houses student activities and support spaces.

The renovation of the building, renamed for Henrietta DeBenedictis, an alumnus who gave $2 million to help restore it, also allowed MCPHS to play a role in revitalizing the community.

Building Town-Gown Relations

The Foster building was deliberately designed without a cafeteria so MCPHS students would patronize local shops and restaurants. MCPHS also benefits the city by offering internships in community pharmacies and medical facilities and addressing the medical needs of urban residents.

That's the kind of benefit that should keep host communities receptive to turning abandoned stores into colleges despite the fact that colleges don't pay local property taxes. As Lulli says of URI's move to downtown Providence: "Now, you've got 5,000 people directly in the heart of downtown that you didn't have there before. You have 5,000 people who are indirectly paying for parking, they're going to eat, they might go out after work for a drink, they go shopping downtown or at the new mall."

For colleges, the biggest benefit in rehabbing downtown retail landmarks may be what it says about the institution's role in the life of the city. Says Craiglow of Antioch's move: "It made a statement that we were here to stay and that Keene was our home— our permanent home."

Albert E. Neal *was a NEBHE/CONNECTION intern during spring 2002. He earned his master of fine arts degree from Emerson College in May 2002.*

CONNECTICUT BUILDS

How One Public University Became a National Model for Infrastructure Investment

PHILIP E. AUSTIN

Billion-dollar investments in public higher education don't come easily in the State of Connecticut—or anywhere in New England. So, when in 1995, Connecticut Gov. John Rowland and the state's General Assembly approved the $1 billion comprehensive infrastructure improvement and private support incentive program known as UConn 2000, this was something bordering on the revolutionary.

Looking back after seven years of dramatic transformation, it seems as if the arguments for the initiative were so compelling that they almost made themselves. But it wasn't that simple. It took courage on the part of our elected leaders, advocacy by alumni and thousands of other concerned citizens, leadership by a committed board of trustees and quite likely the prominence of our basketball programs—including our women's basketball team's NCAA national championship—to build the political support needed to make this investment.

At the heart of the issue was a compelling need. The recessions of the early 1980s and early 1990s severely impacted Connecticut, leading to cycles of budget rescissions and endlessly "deferred" maintenance. Our main library was literally falling apart, covered in plastic wrapping to keep bricks from falling on passersby. Classrooms were in a state of disrepair. The condition of residence halls ranged from barely adequate to abysmal. Departments would try to keep candidates for faculty jobs from seeing laboratory facilities until the last possible moment for fear that the sorry condition of the labs would drive away applicants. It didn't always work.

UConn's new South Campus and Hilltop Suites feature four-person suites and a shared living area. Students in particular majors may live and study near one another in academic clusters if they choose. Photo courtesy of University of Connecticut.

But by the mid 1990s, another dynamic was emerging. The earlier recessions hastened Connecticut's transformation to a postindustrial, knowledge-based economy. For Connecticut to retain existing businesses and attract new firms, it clearly needed a public university equipped to prepare a highly skilled professional workforce and to stem a "brain drain" that had seen a higher proportion of high school graduates leave Connecticut for college than any other state except Alaska.

Members of Connecticut's baby boom generation, now sending their own children to college, were searching for value—a reasonably-priced, high-quality alternative to expensive private institutions or out-of-state colleges that were increasingly out of the reach of middle-income Connecticut families.

The media caught on to the story of UConn's dilapidated facilities, which helped generate support from public-spirited citizens with nothing to gain but an enhanced sense of pride in their state's public institutions. Thus, in June 1995, the General Assembly approved UConn 2000, providing approximately $1 billion for a 10-year construction program and committing up to $20 million (subsequently increased by a total of $167.5 million) in state funds to match the private support that would, it was believed, be a natural outgrowth of the university's move forward.

Notably, UConn 2000 gave the university the authority to implement the rebuilding program independently, with the concomitant responsibility to manage, prioritize and sequence projects. The

anticipation, now borne out by experience, was that this autonomy would be a key factor in ensuring timeliness and cost-effectiveness.

A billion dollars could have gone a long way just to fix up or replace dilapidated buildings. Instead, the university developed a master plan that set a more ambitious goal of integrating the best of the existing infrastructure with new facilities and constructing what would be essentially a new campus at Storrs—pedestrian-friendly, technologically advanced, attractive and accessible.

The university also created a new urban campus in downtown Stamford to replace an out-of-the-way facility on the city's outskirts, began construction of a new urban campus in Waterbury, built a dramatic new Marine Sciences Building in the coastal community of Groton to capitalize on the university's potential strength in a field that is vital to Connecticut's economy, and made more modest upgrades at the other regional campuses.

With more than 150 major construction or renovation projects completed or in progress, UConn 2000 is now two-thirds of the way to completion. Each project has its own special attributes, but some are worthy of particular note:

- The new Chemistry Building houses the most technologically sophisticated classrooms and chemistry laboratories on any university campus and won the 2001 Merit Award for Excellence in Architecture from the New England Regional Council of the American Institute of Architects.
- New or extensively renovated residence facilities dramatically expand the range of options available to students. Some, focused on freshmen, offer extensive programs that ease the transition to college. Others, oriented to upper-division or graduate students, offer suite-style living or modern apartments.
- The Wilbur Cross student administrative building, housed at the extensively renovated former library facility, provides high-tech, one-stop shopping for registration, financial aid, housing, meal plan and other student services.
- The Lodewick Visitors Center, financed largely through private support, has changed the way the university greets the thousands of visitors to campus and created an attractive, welcoming atmosphere for prospective students.

UConn 2000 has become a fine example of a government investment that has succeeded in meeting its objectives and fulfilling important public goals. The University of Connecticut has been transformed physically, and more importantly, repositioned in the eyes of students and their families. Once the "safety school" for Connecticut's best students, UConn is now a college of choice. Freshman enrollment at Storrs has grown by 56 percent since 1995; minority freshman enrollment has grown by 62 percent. Average SAT scores have risen significantly, and the university has recruited more than 300 high school valedictorians and salutatorians.

Other indicators also demonstrate transformation. Private support skyrocketed from $8 million in 1995 to more than $50 million in 2001, aided significantly by the state matching grant program that was initiated under UConn 2000 and subsequently extended. The university's endowment has grown from about $50 million in 1995 to about $210 million, and in 1999, the university received the largest single gift ever to a public university in New England: $23 million from alumnus Ray Neag (of which $21 million was focused on the School of Education—the largest single gift to a School of Education anywhere in the United States). Research awards, meanwhile, have climbed from less than $100 million in 1995 to an estimated $160 million this year.

This is a remarkable metamorphosis in a remarkably short time. But the job is not done. The original billion-dollar commitment met less than half the needs of a group of campuses whose infrastructure had been neglected for several decades. Despite major improvements, important needs at the University's Health Center in Farmington, at the Law School in Hartford, at several of the regional campuses and at Storrs itself remain unmet.

As of mid-June 2002, the Connecticut General Assembly was considering an extension of UConn 2000 proposed by Gov. Rowland earlier in the year. The initiative, called 21st Century UConn, is a $1.3 billion, 11-year program that would, if adopted, play as great a role as UConn 2000 in enhancing the university's appeal to students, its ability to contribute to Connecticut's economic growth and its capacity to build on a strong record of research performance. Like UConn 2000, 21st Century UConn addresses facilities needs at Storrs, the regional campuses and the law school; going beyond UConn 2000 it also would invest in the revitalization of facilities and the enhancement of research capacity at the Health Center.

State support in itself cannot make a great university; that requires a commitment by faculty, students, staff and all the internal and external constituencies that comprise an academic community. But if Connecticut's experience in the seven years since the adoption of UConn 2000 is any indication, capital investment by the state plays a major role in making a much-needed transformation possible. The University of Connecticut, long a very good regional institution of higher education, is now clearly identified as a center of excitement where all the important trend lines are pointing upward. We have every expectation that the foundation laid in the mid-1990s sets the stage for continuing progress in the years ahead.

Philip E. Austin *is president of the University of Connecticut.*

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Save the Humanities

Why a Traditional Liberal Education Still Makes Sense

JOHN C. SCHNEIDER AND SHERRY A. DARLING

The notion that a traditional liberal arts course of study is somehow out of step with modern realities and with the fundamental purposes of education is unsettling.

A February 2002 *Chronicle of Higher Education* piece on the waning influence of New England's colleges and universities suggests at one point that the undergraduate liberal arts curriculum with which the region has long been identified is out of date. Young people today focus more than ever on the careers awaiting them after college. They view higher education as job training. To stay competitive in attracting the best undergraduates from all over the country, one college official proposed, New England colleges and universities need to adopt curricula that connect more directly to what students want to be doing after they graduate.

It is true that undergraduates and their parents increasingly obsess about getting their money's worth out of education for what it can do for a lifetime of work and income. Writing in *Harvard Magazine* in 1998, James Engell, a professor of English and comparative religion at Harvard, and Anthony Dangerfield, who has taught at Dartmouth, observed that over the past 30 years, the motivation of students for choosing and attending college has shifted from an interest in learning for its own sake to a preoccupation with jobs, from building a foundation for values to equipping graduates for high wages.

Still, the notion that a traditional liberal arts course of study is somehow out of step with modern realities and with the fundamental purposes of education is unsettling. Especially so because the liberal arts are grounded in the humanities—language and literature, history and philosophy, culture and religious studies.

Engell and Dangerfield noted that colleges and universities nationally have been ignoring and downsizing the humanities. These departments find it difficult to compete on campus with those that study money, like economics or business, promise students high-paying jobs immediately after graduation, like computer science, or bring in the largest government grants and contracts, like the natural and physical sciences. More than 30 years ago, journalist and author James Ridgeway portrayed the American university as "a center for industrial activity," feeding off defense and corporate research dollars which, in turn, infects the culture of the Ivory Tower.

Enrollments in the humanities are declining, and the students that remain attracted to the humanities are not always the strongest. Kenneth Jackson, president of the Organization of American Historians, notes that the nation's colleges and universities conferred an all-time high of nearly 45,000 undergraduate history degrees in 1971—or 5 percent of the total. By 1986, the number had plummeted to 16,000, or 2 percent of the total. In 2000, history majors accounted for just 1 percent. English, philosophy, foreign languages and religion have declined as well, while computer science, public administration and business management, among others, increased dramatically.

In 1971, business majors outnumbered English majors by 78 percent. By 1994, the differential had ballooned to 300 percent.

Engell and Dangerfield also lamented that humanities scholars have not used the power of senior administrative posts—nor the opportunity of faculty meetings—to stem their disciplines' declining status on campus. We found that more than one-third of the presidents and chief academic officers at more than 20 of New England's most highly rated private colleges and universities as well as the six flagship state universities hold graduate degrees in one of the humanities. Yet, the decline is evident in New England too. In the 1970s, one-third of Harvard students concentrated in the humanities. By the late 1990s, less than one-quarter did. At Tufts University, almost 25 percent of graduating seniors took degrees in the humanities at the start of the 1990s. By the end of the decade, barely 15 percent did.

Other trends are alarming. At the University of Massachusetts Amherst, recent budget cuts have led to the closing of the foreign language lab and threats to the language requirement itself as the administration merges or abolishes several foreign language departments. Other humanities departments such as English and Theater are in danger of losing new faculty hires and graduate teaching assistants. Humanities programs are often the first to be slashed in budgetary crises, partly because university administrators woefully misjudge the relevance of the humanities and liberal arts education to *every* course of study.

Making the case

A strong liberal education enhances communications skills and encourages critical thinking. A course of study steeped in the humanities and related disciplines produces truly well-rounded people prepared for whatever the modern business and job world can throw at them. The new chief executive of IBM, Samuel Palmisano, was an undergraduate history major at Johns Hopkins. Carly Fiorina, his counterpart at Hewlett-Packard, studied medieval history and philosophy at Stanford.

Daniel A. Rabuzzi, the associate vice president at the Kentucky Council on Postsecondary Education, has written that the new knowledge-based economy with its fast-paced style places a premium on "creativity, rhetorical deftness, structured spontaneity and critical thinking—all qualities that are at the heart of liberal education." When asked how colleges could best prepare people for jobs in the technology economy, former New Hampshire state representative and high-tech executive Bill Belvin was fond of displaying a chart showing that the vast majority of people earning six figures at one hot Route 128 high-tech firm had either no college degree or degrees in "non-IT" fields from art history to music.

What's more, the humanities are not, as some may think, stuck in place. New approaches and creative scholarship have enhanced the humanities no less than other disciplines in recent years. Fresh readings of traditional texts and a focus on new texts, such as those from non-Western cultures, have enlivened the study of literature and cultural expression. Historians have adapted social science theory and methodology to the special demands of their own craft while turning to new kinds of source material, including objects of material culture, to explore the past from new perspectives and give voice to groups whose experiences were never included in the curriculum. Philosophers now engage with psychologists and neuroscientists to understand consciousness and thought while also pursuing programs to apply ethics theory to policymaking in such areas as community health and criminal justice.

It makes no sense to pit the humanities and related fields against scientific, business and technical training in the claim for relevance. The point is not the superiority of one over the other, but rather the importance of the humanities to any course of study. As colleges attempt to give students the technical proficiency required of some of today's best jobs, they should not squeeze out the humanities.

Moreover, there is another reason for colleges to value the humanities. It has to do with how they prepare and encourage students to become active and effective citizens.

Preparing citizens

Most people would like to believe that education is about enlightenment, about broadening one's awareness and ways of viewing the world, about expanding intellectual horizons and curiosity. It is also about perspective, about deepening one's understanding through a knowledge of and appreciation for what has gone on in the past and how the modern world has evolved. All disciplines contribute in one way or another to these aspects of learning, but the humanities do it in a fundamental way.

In a just-published study, political scientist Henry Milner concludes that today's young people in the United States have more formal education than older generations and are more willing to get involved in community service—a measure of social capital. But they are less politically active and they vote less. Milner says this is because they are less knowledgeable about the political world and less able to make sense of it to form opinions leading to active involvement in the democratic process. In short, social capital alone does not make for a strong democracy—knowledge, awareness and informed discourse do. Milner blames the low quality of television and other sources of information for the poor state of our civic literacy. Might it also be because more of our young people are going to college to be trained for jobs?

Colleges and universities everywhere have begun to appreciate the role they can play in encouraging civic engagement. Tufts has established a University College of Citizenship and Public Service as the centerpiece of its commitment to educating for a lifetime of active citizenship. A key strategy is to enhance the capacity of the faculty in all Tufts' schools to develop projects, teach courses and conduct research that promote civic engagement. But at its core, the University College is an enterprise in undergraduate education where the liberal arts curriculum can instill the values and perspectives that help

students understand why and how voluntarism and public service are important. The University College is not a separate program of study, nor is the intent to offer specialized degrees that might only compartmentalize the effort. Rather, the point is to let each academic discipline explore the connection on its own terms.

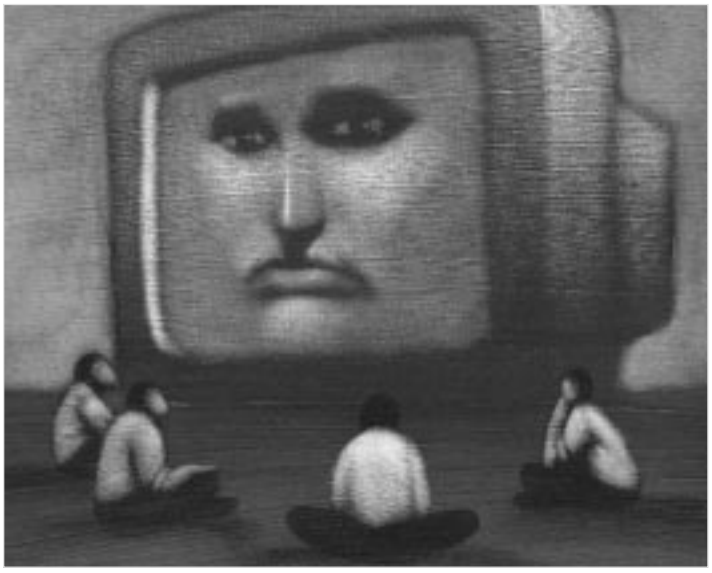
The humanities play an especially important role here in providing the historical and philosophical basis for the commitment to the community and civic engagement. Stanford education professor William Damon reminds us that civic life is invigorated because of the power of ideas, not because of social policies and requirements. Just as understanding the law deters crime more effectively than fear of punishment, so a robust civic culture will flow from respect for its virtues rather than from artificial insertions of community service into schooling or from measures that would require people to register to vote.

By providing the critical thinking skills, the historical and cultural perspective and the philosophical inquiry into human morals and behavior, the humanities help us make the informed judgments that generate interest in public issues and infuse civil society and, ultimately, the democratic process. The richness and increasing inclusiveness of humanities curricula forges a natural connection between learning in the classroom and some of the most pressing social or political issues churning beyond the walls of the university. Interdisciplinary programs to which the humanities make a strong contribution, such as women's studies, peace and justice studies, or international studies, carry with them an impulse toward civic engagement, often nurtured through class projects or program internships that involve students in the wider community.

Perhaps most of all, the humanities build the case for tolerance—the inherent respect for others that may be the single most important feature of a robust civic culture. The humanities do this because they study diversity for its own sake. Consider, for example, the way a student of marketing might think about diversity. Age, gender and other characteristics define people differently as consumers of various products. They are important for how they buy, not for who they are. The humanities, on the other hand, view the community more broadly, taking the full measure of all the parts that comprise it. This encourages students to think about what they can do for the larger community of which they are a part. People are more likely to respond to difference with suspicion if they have not been ushered into the inner life of diverse cultures through study in the humanities. Through the richness of language and literary imagination, for example, the humanities open a revealing window into the experiences of other people—cultures that students might otherwise never have come to know and therefore never have cared about.

Martha C. Nussbaum, the distinguished University of Chicago professor of law and ethics, describes the humanities' emphasis on diversity as an effort "to produce adults who can function as citizens not just of some local region or group but also, and more importantly, as citizens of a complex and interlocking world." If the undergraduate curriculum becomes more fully organized around career training, will our newly educated young people be as capable of becoming civic-minded and taking an active role in our democracy? Let New England embrace and strengthen its leadership in a humanities-rich liberal education. Our civic culture will be better for it.

John C. Schneider *is director of corporate and foundation relations at Tufts University and adjunct senior lecturer in history. He is also co-editor of the Tufts book series on civil society published by the University Press of New England.*
Sherry A. Darling *is completing her doctoral dissertation in drama at Tufts University and is an adjunct lecturer in theatre at Boston College.*



Transmission Transition

Will Faculty Learn to Love Long Distance Learning?

MICHAEL F. BEAUDOIN

The New England higher education marketplace is especially well-suited for distance learning.

In an increasingly digitized society, both providers and consumers of education are adapting to new ways of teaching and learning across time and space. The transition from face-to-face classroom teaching at a fixed time and place to asynchronous mentoring from a distance is being played out at hundreds of academic institutions worldwide. There will continue to be a market for the traditional campus-based experience for large numbers of recent high school graduates. But a growing portion of even this population will take advantage of computer-assisted courses, whether they live on campus or 1,500 miles away.

The New England higher education marketplace is especially well-suited for distance learning. With its many small rural communities, difficult driving conditions over long winter months, overflowing technical colleges and, in some states, lack of a well-developed community-college system, New England needs increased access to postsecondary education opportunities. Yet, despite heightened interest in distance education nationally and globally, New England institutions lag behind their counterparts in other regions of the country. While some have attributed this lag to the region's compact size, the more likely cause is a well-established "campus-centric" model that caters to a traditional, residential student population.

Moreover, even national surveys reveal continued reluctance on the part of many professors to use any form of technology. Only 20 percent of college faculty make use of electronic course tools made available by their institutions, according to the most recent survey of 600 institutions by the Campus Computing Project at Claremont Graduate University. The survey also found that faculty incorporate Web pages into only about one third of courses.

But what about the growing number of faculty who, by individual choice or institutional direction, are now engaged in, or at least flirting with, some aspect of teaching at a distance? Most spent some years in the more familiar role of content expert delivering lectures and dispensing assignments at the front of a classroom to a group of students assembled at a fixed time and place. While many faculty already integrate some form of instructional technology to augment their classroom teaching, others face the prospect of adapting to instructional duties that may eliminate the need for any face-to-face encounter between teacher and learners. How are they making the transition from the classroom to cyberspace?

Perceptions

I recently examined the transition and self-perception of a sample group of faculty currently teaching in distance education programs, all of whom have taught previously (or still are teaching) in traditional campus-based academic settings. The study examined and analyzed how these faculty have adapted

and adjusted to their new teaching milieu, how effective they feel they are, what tools they use, how satisfying this new role is compared to their earlier instructional tasks and what their perception is of their students' satisfaction with them and with courses delivered in a distance learning context.

About 100 full-time and part-time faculty at six U.S. institutions (two in New England and four in other regions) that offer graduate degree programs through distance education were asked to complete a 35-question survey. Only faculty members with at least two years of teaching in a classroom environment and at least one year of distance teaching experience were surveyed. Fifty faculty members responded.

Despite the adjustments involved in moving from a classroom to a distance learning format, some institutions apparently do not place a high priority on training, monitoring or evaluating faculty to make sure they function effectively in this new environment. Indeed, fully one third of the surveyed faculty reported receiving no training from their institutions to prepare them for their new instructional roles. And nearly three-quarters of respondents reported that they never saw the results of student evaluations nor receive any feedback regarding their teaching. It may be that some program administrators are reluctant to impose training on faculty for fear of offending experienced teachers.

Yet the majority of respondents have a clear sense of their new roles. Nearly three-quarters refer to themselves as mentors or facilitators of student learning, and nearly two-thirds see their main function as providing feedback. Surprisingly, even though a few express frustration that they do not feel they really contribute much to their students' learning, more than 90 percent say that their students recognize and appreciate the role they play. And nearly three-quarters of these faculty say that even those students who maintain a low profile in their courses are nonetheless learning.

It seems that most of these faculty have come to recognize that facilitating self-directed learning is as critical to students' success as disseminating content. The study also confirmed findings of other research activities which have concluded that the quantity and quality of interaction between students and faculty and between students and other students are the factors most closely associated with faculty satisfaction with distance teaching. A strong sentiment among the distance educators was that this work is very labor-intensive and that they receive little appreciation for their efforts from their colleagues and institutions. Only two respondents say they are compensated more for distance teaching than for classroom instruction.

Faculty are somewhat more satisfied once they become acclimated to teaching at a distance. Fifty-eight percent feel more positive about distance education, yet only 8 percent feel more satisfied with their distance teaching than with classroom instruction. They miss face-to-face, live contact with students. This is reflected in what they want changed to improve their new roles; most advocate increased interaction through varied media, and some want live, synchronous sessions to augment the distance instruction.

Another area for improvement is in administrative support. Just as some distant students sense an "out of sight-out of mind" attitude at their institutions, distance learning faculty, many of them adjuncts, say administrators do not respond in a timely manner to their questions or concerns about technology glitches, do not share useful information with them about program changes and student withdrawals, and relate to them as utility personnel rather than valued colleagues.

Efficacy

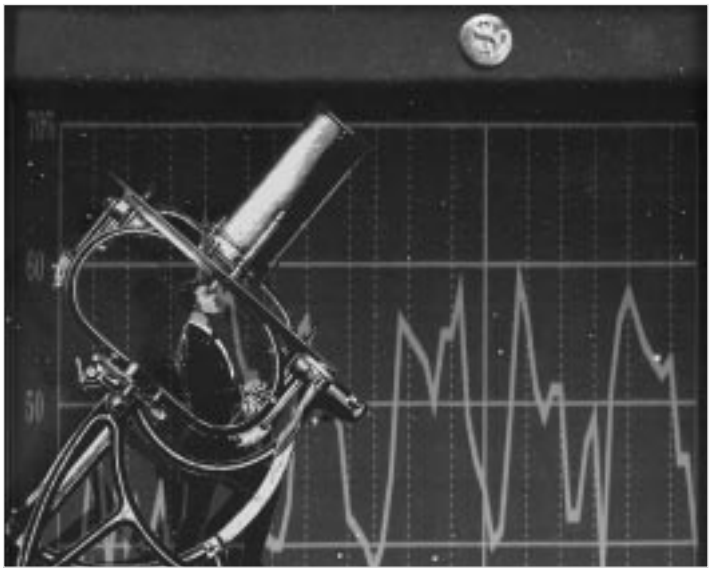
The skepticism toward distance learning by the traditional academic establishment continues despite the proliferation of innovative programs using technology to provide access to educational opportunities for those seeking anytime-anyplace learning. In 1998, 1,690 postsecondary institutions enrolled 1.6 million students in 54,000 distance courses. Yet many still believe that only fringe institutions desperate for new enrollments engage in such practices.

The *American Journal of Distance Education* and others have published substantial and credible research documenting the efficacy of this mode of teaching and learning. More than 30 years of studies comparing achievement in face-to-face settings and technology-supported environments, from telecourses through interactive television and now fully online courses, consistently and convincingly show that students in distance courses perform as well or better than residential students, and that student satisfaction is generally equal in both learning situations. Yet the argument persists that distance learning is not as good as face-to-face education. Critics, mostly faculty members who have not used the technology in their courses, maintain that teaching at a distance is too impersonal for students and therefore not satisfying.

The American philosopher John Dewey observed that a critical element of the teaching process is to create the conditions for "productive inquiry" that takes place independent from the teacher. In the distance education environment, this inquiry, however invisible, is occurring, facilitated by technology. Indeed, my research of students enrolled in an online graduate course in the fall of 2000 revealed that even those who posted comments infrequently were actively engaged in reading postings from their classmates, in completing assignments and satisfying other course objectives through their own self-directed inquiry. Just as students seem to readily adapt to an asynchronous online learning environment, so too can faculty.

With institutional encouragement and sustained support, faculty who make the transition from the classroom to teaching at a distance have an opportunity to not only foster and facilitate student learning, but also to reflect on and enhance their practice in both instructional settings.

Michael F. Beaudoin *is a professor of education at the University of New England, and has been an administrator, teacher, evaluator and scholar in the field of distance education since 1980.*



New England's Economic Outlook

A Mild Recession Followed by Slow Growth Promises Mixed Blessings for Higher Education

ROSS GITTELL

Over the next few years, no single academic program area is likely to boom in the way, for example, that e-commerce did in the late 1990s. Nor will any single industry or occupation lead the economy so much that it creates as strong pressure for new academic programs.

The 2001 recession appears to be over in New England and the nation. Like the winter of 2001 (and unlike the last recession of the early 1990s) it appears to have been relatively short and mild. The effects of September 11 sharpened the business cycle in New England and the nation and made for a v-shaped downturn in the region. The deep and prolonged recession feared after September 11 has not materialized.

Data analyzed by the New England Economic Project (NEEP) indicate that the nation experienced negative overall growth in gross output only in the third quarter of 2001. New England's period of negative economic growth (as measured by aggregated gross state product) was longer than the nation's, but still much shorter than the previous recession. The 2001 recession in New England began before September 11 and lasted three quarters from the second quarter of 2001 through the end of the year.

Moderate growth

New England's overall economic growth is expected to rise over the next few quarters but remain modest. The growth in aggregate gross state product in New England over the next five years is expected to be about 40 percent lower than during the late 1990s and just below the U.S. average of 3 percent per year. The main reason for this is the end of the information and high-technology boom and its disproportionately strong impact on the New England economy.

Information technology investment is not expected to rebound until the end of 2002. Investment in computer software and hardware will be helped by increased replacement demand and improved business confidence. The relatively short product life cycles of this equipment and leaner inventories will support a turnaround. Investment in communications hardware and infrastructure, however, is not expected to rebound until well into next year because the economic life of this equipment is longer and there is remaining inventory and excess capacity.

New England will have experienced a total job loss of 1.5 percent from the peak in the first quarter of 2001 to the expected trough in the first quarter of 2002. This compares to the regional job loss of 5 percent in the last recession. The recent decline was concentrated in manufacturing, which suffered a total job loss of 7.5 percent. In the recovery, total employment growth in New England is expected to be below 1 percent per year on average. This is one-half the rate of growth during the late 1990s, and just three-quarters of the nation's expected employment growth. The sector of the New England economy that is expected to grow fastest will be services, albeit at a rate about one third that of the late 1990s and just three-quarters that anticipated for the nation. In particular, growth in business services, including software, is expected to lag behind overall growth and put a drag on overall employment growth in New England's service sector.

While there are indicators that both the U.S. and New England economies are out of recession, five of the last seven recessions have been "double dips," in which the economy rebounded for a while only to relapse. Numerous factors could precipitate a recession relapse in 2002 or 2003. These could include a decline in investor and credit market confidence in reaction to new cases of corporate malfeasance along the lines of Enron and Arthur Anderson, or a sharp increase in energy prices related to events in the Middle East. A third risk is that consumer resiliency could finally be broken by some combination of declining equity markets, increased interest rates and persistent unemployment.

Higher-ed investment

State support for higher education, historically very low in New England, is further threatened by significant and likely growing budget deficits in all six state capitals related to the recession. Higher education tends to be used as the balance wheel in bad times to make ends meet. Of the 43 states that either cut overall spending or raised additional revenue in the past year, 29 cut higher education spending, according to a survey by the National Conference of State Legislatures. This was the most popular means of closing budget gaps, ahead of measures such as tapping reserve funds.

Lawmakers across New England are taking aim at higher education. In the past nine months, for example, Connecticut has seen a $300 million budget surplus turn to a $200 million budget gap, and Gov. John Rowland asked public colleges to plan on budget cuts of 5 percent. In Maine, Gov. Angus King asked for a midyear rescission of 2 percent in state spending on public colleges. In Massachusetts, the Legislature slashed 7 percent from the state's higher education budget, in order to help close a projected $1.1 billion deficit and about $10 million has been slashed from the state's need-based aid program for 2001-02.

In New Hampshire, Gov. Jeanne Shaheen asked state agencies to prepare for a 1 percent cut in the current fiscal year and a 2 percent reduction in the second year of the biennial budget, and more reductions are likely as business tax revenues fall below expectations. Rhode Island faces a projected deficit of $70 million in the current fiscal year, and the shortfall could grow to about $200 million for the 2002-3 fiscal year. Rhode Island higher education officials believe their appropriation might be spared, but do not expect to get all the money they are seeking in the next fiscal year because of the state's slowing economy. In Vermont, Gov. Dean has called for a 2.5 percent rescission in spending on public colleges.

Despite the forecasted economic recovery, the fiscal condition of the New England states will not improve in any significant way until fiscal 2004. The states' fiscal situations will improve with an approximate one- to one-and-a-half-year lag behind their improved economies, particularly in states with significant dependence on business taxes such as New Hampshire. This will most likely result in declining state support of public higher education institutions and scholarship money for residents. In Washington, meanwhile, rising deficits and priorities shifting to defense will mean that federal support to higher education for both student aid and basic research will likely diminish.

Endowment investment income and donor contributions are also in recession from the growth years of the late 1990s. The average rate of return for all college endowments in 2001 declined for the first time since 1984. This is in sharp contrast to 2000 when endowments of $1 billion or more posted an average return on investment of over 29 percent.

Private giving to higher education grew by over 4 percent last year, despite a weak stock market and an economy in recession. The increase, however, was much smaller than the previous year, when private contributions to higher education increased 14 percent, marking the fifth consecutive year of double-digit growth.

Silver lining

The recession and relatively slow recovery do provide some opportunity for higher education. When the economy is soft, many younger workers exit the labor market and enter colleges and graduate schools as an alternative to working or being unemployed. Colleges and universities then have the opportunity to target programs and services for these students.

The current increased interest in professional education is reminiscent of the early 1990s, when the last recession hit. Applications to law schools are up about 21 percent compared with this time last year, according to the Law School Admission Council. Sixty-five percent of the MBA programs surveyed by the Graduate Management Admission Council said applications for full-time programs were up for this academic year—the highest proportion of programs in four years. Even nursing schools (finally) have good news this year. Enrollment in bachelor's programs was up 4 percent at the schools surveyed by the American Association of Colleges of Nursing.

The aging of the New England population will also present opportunities for higher education institutions. All New England states rank high nationally in baby boomers (born between 1946 and 1964) as a percentage of their total populations and all six states have median ages above the U.S. average. In the three Northern New England states, the 45-to-64-year-old cohort will overtake the 25-to-44-year-old cohort as the largest age group in the next four years. Higher education can help aging baby boomers "retool" for new, different and better paying and more fulfilling jobs. There will also be an increasing demand among aging baby boomers—with and without college degrees—for life enrichment and "experiential" courses, whether for degree credit or not, in the humanities, arts and sciences.

Yet, over the next few years, no single academic program area is likely to boom in the way, for example, that e-commerce did in the late 1990s. Nor will any single industry or occupation lead the economy so much that it creates as strong pressure for new academic programs.

The Resource Center for Cyberculture Studies at the University of Maryland at College Park estimates that courses on the topic of the Internet increased from five nationally to more than 400 in the late 1990s. The Massachusetts Institute of Technology's Sloan School of Management now offers five courses and seminars in electronic commerce, two years after introducing its first e-commerce course. However, enrollment in Internet-related courses at MIT and elsewhere has dropped by an estimated

10 percent to 20 percent this semester. The proliferation of new courses and programs has ended.

There has been a lot of discussion about biotechnology as a possible economic driver for the region, and as a an area of increased curriculum and program opportunities for higher education. However, the reality is that the industry is very small. For example in Massachusetts, employment in pharmaceutical manufacturing and biotechnology research combined is 15,000, or less than one half of 1 percent of total Bay State employment.

There are signs that the New England economy is improving modestly but also faces significant challenges—so will the region's higher education institutions.

Ross Gittell *is James R. Carter Professor at the University of New Hampshire's Whittemore School of Business and Economics and vice president of the New England Economic Project (NEEP). For more information about NEEP, visit http://www.neepecon.org.*

Crunch Time

State Budget Woes Squeeze New England's Already-Low Public Investment in Higher Education

MICHAEL K. THOMAS

Even during the mostly good economic times from 1988 to 1997, the composition of revenues at public campuses shifted from state appropriations to tuition and fees.

By early spring, the effects of the current economic slowdown were painfully clear in New England, as budget battles brewed in every state capital. Lawmakers wrestled with mid-year cuts to fiscal 2002 budgets and still more spending reductions for fiscal 2003. How will the fiscal squeeze affect New England's historically below-average state investment in higher education—and its above-average tuition?

New England state appropriations for higher education—including support for state colleges and universities and financial aid programs—grew by 51 percent (unadjusted for inflation) between fiscal 1992 and fiscal 2002, roughly 5 percent annually. Massachusetts led the way with a 73 percent increase; followed by Rhode Island at 65 percent; Connecticut, 52 percent; New Hampshire, 43 percent; Maine, 39 percent; and Vermont, 31 percent.

During the same period, tuition and mandatory fees at New England's four-year public institutions increased, on average, by 4 percent annually (in current dollars). Massachusetts, for one, froze or cut tuition for state residents during several of those years, though mandatory fees have grown. Increases for two-year public institutions were held to even lower rates. The Maine Technical College System, for example, has frozen tuition for three years.

Yet the current fiscal environment raises great concerns about future state support and attendant tuition increases.

A recent forecast by the National Association of State Budget Officers warns that while a national economic recovery may occur, its positive impact on state budgets will be a while in coming. The report notes: "State revenue growth will lag several months behind the beginning of a national economic recovery—as much as 12 to 18 months, if the early 1990s are a reliable guide."

This is bad news for public investment in higher education and, in turn, bad news for students, for when state budgets run red, states almost invariably turn to tuition and fee hikes to make up for the loss of direct state support.

What's more, even during the mostly good economic times from 1988 to 1997, the composition of revenues at public campuses shifted from state appropriations to tuition and fees, according to the National Commission on Costs of College. Between academic years 1988-89 and 1997-98, tuition as a proportion of total education and general revenues increased by eight percentage points at comprehensive public institutions nationally, while state appropriations as a proportion decreased by over 11 percentage points.

Commenting in a companion piece to the National Commission study, Macalaster College President Michael McPherson and Williams College President Morton Owen Schapiro note that operating costs per-student grew nationally by less than 1 percent annually from 1986 to 1996. Yet, they argue, a growing proportion of the costs of public higher education was shouldered by students and their families. In 1985-86, state

appropriations accounted for 61 percent of the revenues of public colleges and universities, while tuition provided 18 percent. By 1995-96, appropriations provided just 51 percent of revenues, while tuition payments contributed 24 percent.

"The issue is much less one of rising cost than of a shifting of costs from one set of payers to another," say McPherson and Schapiro. "The burden has been shifting from taxpayers to families."

Though more recent comparisons are difficult to make due to changes in accounting by the U.S. Department of Education, state appropriations in New England, on average, made up just over 35 percent of the revenues of public institutions in 2000.

Déjà vu all over again

Decreased state support has practical consequences. Rhode Island's public institutions had to delay $3.6 million in capital projects. The University of Maine will leave numerous staff and faculty positions vacant as it cuts travel, material purchases and professional development in areas from liberal arts to biochemistry.

Fewer resources will be available to aid student learning. For example, funding for library acquisitions at Massachusetts public institutions fell from $14 million to $5 million during 2002. Libraries at the University of Massachusetts Amherst reduced book acquisitions by 15,000 from the previous year.

Bristol Community College President John J. Sbrega described how his institution has coped with the fiscal crisis: "Our success (if that is the right description) thus far stems in large measure from keeping a sizeable number of positions vacant, implementing painful reductions in administrative costs across all college operations and reaching heavily ... into the college's reserves." Sbrega likened the latter to using a family savings account to buy the weekly groceries.

Patrick Callan, president of the National Center for Public Policy and Higher Education, observed that the recession of the 1990s taught several tough lessons. First, higher education was likely to absorb larger cuts than state budget items because lawmakers figure public campuses have greater fiscal and programming flexibility than other areas, with separate budgets, revenue streams and reserves. Second, Callan argues that public sources of student aid are very likely to be reduced and states are unlikely to invest in financial aid to offset tuition increases.

Yet beyond their preoccupations with across-the-board budget cuts or

A Sampling of Higher Education Budget Cuts and Tuition Hikes

Connecticut—Fiscal 2002 State Budget Shortfall: $450 Million (3%)

Cuts to Higher Education to Balance Fiscal 2002 Budget	Change in Tuition & Fees for Fall 2002
University of Connecticut	**University of Connecticut**
• Initial appropriation of $177 million reduced by $900,000 cut and subsequent $3.5 million rescission	**In-State:** ....$4,622, up 4% **Out-of-State:** ....$14,096, up 4% **Fees:** ....$1,424, up 4%
State Universities	**State Universities**
• Initial appropriation of $189 million cut by $3.1 million • Hiring and equipment purchases deferred	**In-State:** ....$2,313, up 4% **Out-of-State:** ....$7,485, up 4% **Fees:** ....$706, up 4%
Community Colleges	**Community Colleges**
• Initial appropriation of $122 million cut by $2.7 million	**In-State:** ....$1,764, up 5% **Fees:** ....$216, up 4% **Out-of-State:** ....$5,292, up 1% **Fees:** ....$608, up 4%

Maine—Fiscal 2002 State Budget Shortfall: $58.3 Million (2.3%)

Cuts to Higher Education to Balance Fiscal 2002 Budget	Change in Tuition & Fees for Fall 2002
University of Maine System	**University of Maine System**
• Midyear cut of $2.6 million later restored	**In-State:** ....$3,991, up 5% **Out-of-State:** ....$10,767, up 5% **Fees:** ....$755, up slightly and restructured
Maine Technical Colleges	**Maine Technical Colleges**
• Governor ordered 2% cuts to operating budgets for second, third and fourth quarters • Some personnel layoffs; travel and conference budgets cut	**In-State:** ....Frozen at about $2,040, annually **Out-of-State:** ....Frozen at about $4,080, annually **Fees:** ....Vary by college

Massachusetts—Fiscal 2002 State Budget Shortfall: $800 Million (4%)

Cuts to Higher Education to Balance Fiscal 2002 Budget	Change in Tuition & Fees for Fall 2002
University of Massachusetts	**University of Massachusetts**
• Initial appropriation of $484 million cut by nearly $25 million in fall 2001, then additional $3.5 million based on early 2002 revenue receipts • 275 positions, including part-time faculty, eliminated • Seven intercollegiate sports teams at Amherst campus eliminated	**In-State:** ....Frozen at all campuses **Fees:** UMass Amherst ....$6,482, by up 13% UMass Boston ....$5,222, up 14% UMass Dartmouth....$5,129, up 24% UMass Lowell ....$5,213, up 13%
State Colleges	**State Colleges**
• Initial appropriation down $9.3 million from fiscal 2001; followed by $1.4 million reduction • Some campuses limited class offerings, closed health centers or reduced construction required by federal Americans with Disabilities Act	**In-State:** ....Frozen at all campuses
Community Colleges	**Community Colleges**
• Largest-ever enrollment increases • $5 million cut in appropriations • Library resources, scholarship reserves, reduced • Funds for Adult Basic Education and MCAS assistance to school districts cut	• Tuition not determined as of mid-June 2002
Other	
• $10 million reduction in state financial aid funds	

New Hampshire—Fiscal 2002 State Budget Shortfall: $10.8 Million (0.9%)

Cuts to Higher Education to Balance Fiscal 2002 Budget	Change in Tuition & Fees for Fall 2002
University of New Hampshire	**University of New Hampshire**
• 1% rescission (accomplished by slowing rate of draw down of state funds, allowing state to earn additional interest income)	(Projected as of May 2002) **In-State:** ....$6,340, up 6% **Out-of-State:** ....$16,040, up 4% **Fees:** ....$1,790, up 6%
Technical and Community Colleges	**Technical and Community Colleges**
• 1% rescission • Freezes on travel, equipment purchases and hiring	**In-State:** ....up $10 per credit hour

the manipulation of tuition and fees, leaders of government and higher education institutions should seize the current challenges as an opportunity to promote and implement innovative preparations for the future. As Callan notes, higher education faces important challenges that demand earnest attention and foresight, regardless of tight budgets.

Rhode Island—Fiscal 2002 State Budget Shortfall: $70 Million (2.8%)	
Cuts to Higher Education to Balance Fiscal 2002 Budget	**Change in Tuition & Fees for Fall 2002**
All Public Institutions	**University of Rhode Island**
• No rescissions as of May 2002, but revenue estimates indicated "hold-harmless" designation may change • $3.6 million in capital projects voluntarily delayed	(Projected as of May 2002) **In-State:** ..... $3,770, up 5% **Out-of-State:** .....$13,014, up 5% **Fees:**.....$1,989, up 10%
	Rhode Island College
	In-State: .....$2,990, up 5% **Out-of-State:** .....$8,700, up 6% **Fees:** .....$675, up 2%
	Community College
	In-State: .....$1,688, up 1% **Out-of-State:** .....$5,050, up 3% **Fees:** .....$250, up 32%

Vermont—Fiscal 2002 State Budget Shortfall: $23 Million (2.5%)	
Cuts to Higher Education to Balance Fiscal 2002 Budget	**Change in Tuition & Fees for Fall 2002**
University of Vermont	**University of Vermont**
• Initial appropriation of $35 million reduced by $876,000 as a result of 2.5% rescission	(Projected as of May 2002) **In-State:** .....$8,320, up 4% **Out-of-State:** .....$20,810, up 4% **Fees:** .....$50, up 8%
State, Technical and Community Colleges	**State, Technical and Community Colleges**
• Initial appropriation of $21 million, reduced by $500,000 as a result of 2.5% rescission	**In-State:** .....up 5% **Out-of-State:**.....up 5% **Fees:** .....up 3%

Most specifically, the diversity of the college-going population will continue to grow. New England's white population declined by 0.7 percent over the last decade, while the region's minority population grew by 55 percent. Clearly, larger proportions of the region's college students will come from low-income, historically underrepresented ethnic groups. This reality has enormous economic and educational implications for New England, particularly Massachusetts, Connecticut and Rhode Island. Perceptions of affordability, of the availability of financial aid and concerns about debt limit college aspirations among minority students. Despite the preeminence of New England's private institutions, over half the region's college freshmen attend public institutions. Such institutions, and in particular, the two-year colleges, are and will remain key access points for minority students.

Michael K. Thomas *is director of policy and research at the New England Board of Higher Education.*

Books

Corporatized

Andrew G. De Rocco

Higher Ed, Inc. The Rise of the For-Profit University, Richard S. Ruch, The Johns Hopkins University Press, 2001; $32.50.

This expansive essay challenges many of the fervently held beliefs of our traditional institutions, especially those in the middle and lower tiers, where a struggle goes on daily to maintain market relevance and yet retain the semblance of a scholarly community.

It is written by a loyalist, a scholar who made the transition from academic dean of what he labels middle-tier institutions. He is adept at brushing aside questions of education as an end in itself, though not without reservations, and stakes out for the reader high ground for associating employability with investment, and "product" with profit—virtues deemed to be intrinsically "American."

By for-profits, Ruch does not mean small, locally owned proprietary schools with highly focused training curricula, nor "corporate universities" or correspondence-based diploma mills. Rather, he focuses on five broadly accredited outfits granting degrees from associates to doctorates. In lieu of endowment, they have investors and they pay taxes. The five are: the Apollo Group Inc. (which operates the University of Phoenix), Argosy Education Group, DeVry Inc., Education Management Corp. and Strayer Education Inc. Ruch describes each in sufficient detail to reveal the essential contrasts between for-profits and their traditional nonprofit or public counterparts. Among Ruch's trenchant observations is the tendency of traditional institutions to be "comprehensive," often in unproductive and costly ways. By contrast, the for-profits are driven by management to be clear about what they will not do. Big library collections are not profitable enough to pursue, for example, while access to the most current information technology certainly is.

In tracing the history of the for-profit sector, Ruch reveals the long-standing tension between practical outcomes and learning as an end unto itself. In recent decades, the growth of this sector has been robust. In 1991 just one for-profit, DeVry, was listed on the stock exchange (these enterprises are publicly traded). In less than a decade, the number had risen to 40, including, in Ruch's estimation, at least 16 "major players." One particularly incisive observation concerns the market. While both for-profit and traditional institutions market exhaustively, the for-profits trust the market and base their operating credo and management strategies in that trust.

So it is not surprising that in describing the financing of the for-profit institutions, Ruch makes a clear case for the alignment of purpose with profit, both for the institution and for the "customer," namely a graduate with skills and aptitudes that ensure employability. Curricula are adapted to demand. Rapid response to the market is both a must and a norm. How often in the traditional sector can a faculty design and implement a course of study in a year or less?

On the matter of profit Ruch makes the point that in the traditional, not-for-profit sector, the equivalent of profit is couched in such language as "an excess of revenue over expenditures," an excess that is, however, sheltered from any tax burden and not slated to be returned to its stakeholders. In the for-profit world, stakeholders are replaced by investors who expect a return on their stake.

What sort of academic culture can exist in an institution driven by a profit motive? Are all the traditions lost? Well, some yes; tenure for example. And in matters of governance, senior leadership behaves as would any well-run corporate enterprise. Faculty are the instruments by which the product is delivered, in typically conventional ways. (Very little at Phoenix is done online, contrary to widespread opinion.) The curriculum is decided by management not by faculty committees and is market-driven. Yet, as Ruch points out, issues of academic freedom are not shunted aside. Faculty are expected to comply with the curricular objectives, but individual styles and approaches are not mandated. On the other hand, persistent unsuccessful performance, with no sign of improvement, is not tolerated and severance is likely.

In all this, the role of the academic dean becomes crucial and Ruch employs his experience in each sector

to compare and contrast the opportunities for effective leadership. The academic dean is at the nexus of the academic and business enterprises, a position calling for an appreciation of each culture and a sensitivity to the needs of each.

Ruch invites the reader to consider what traditional institutions might learn from the for-profit sector. There is abundant evidence that the contemporary student, whether of traditional age or older, views employability and earnings as the outcomes most closely allied with a degree—a credential of certification in a sense. In this, the two sectors share a common student ethos. But they respond differently. Ruch offers four suggestions for nonprofit institutions to more effectively serve their audience: make a dedicated response to market forces; make adaptations in organizational structure; redefine shared governance; and develop a strong consumer orientation.

In closing his cautiously provocative essay, Ruch provides a splendidly crafted excursion into the long history of what constitutes a proper education. In these closing pages, he reveals a deep understanding of higher education's history, present state and prospects. However strong an advocate he may be for the for-profit institutions being in the mix, he has not lost sight of the quest for an educational enterprise that is broadly conceived, widely available and instrumentally effective in providing more than employment skills. For anyone dedicated to the liberal arts, it is a welcome conclusion.

Andrew G. De Rocco *is former commissioner of higher education in Connecticut.*

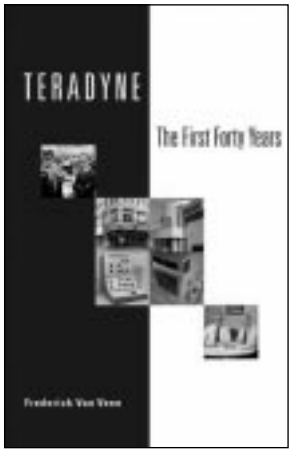
Entrepreneurs

Alan R. Earls

Teradyne: The First Forty Years, Frederick Van Veen, Teradyne Inc., 2001; $19.95.

Corporate histories are often a refuge for banalities and self-congratulation. This volume largely escapes that fate and provides an entertaining and informative inside view of one of the region's more progressive and successful employers. In addition to being underwritten by its subject, Teradyne, the author, Frederick Van Veen, was employed there for many years in a senior position. Notwithstanding these facts, the book rises above mere corporate hagiography.

Two things commend the story of Teradyne to our attention. The first is the longevity of the company—no small achievement in the hurly burly of high technology. The second is the continuity of management for so many years—without any appreciable symptom of "founders disease," the tendency for enterprises to be held hostage to limits of the skills, intellect and imagination of their original management.



As with many other high-tech successes, the story of Teradyne is, at least in part, a story of New England's academic enterprise. Founders Nick DeWolf and Alex d'Arbeloff were both products of the Massachusetts Institute of Technology. Both also had access to a degree of privilege in their upbringing. DeWolf's mother was the great-granddaughter of Civil War-era financier Jay Cooke and his father, an Annapolis graduate. The d'Arbeloff family boasted roots in Russia that passed for aristocratic in the post-Revolution exile community. But the d'Arbeloff clan was also full of entrepreneurs. Much of Alex d'Arbeloff's youth was spent moving, as pursuit of fortune shuttled the family elders between Europe, South America and the United States. Thus, d'Arbeloff was ever the internationalist, a trait that would later become manifest in Teradyne's global business expansion.

As ambitious young men in the post-War era, d'Arbeloff and DeWolf each acquired valuable corporate experience at other area high-tech startups such as Transitron—one of the most successful early semiconductor companies. They launched their company toward the end of a brief era when New England firms were among the most advanced in the new field and when Greater Boston seemed to have a chance of becoming home to the industry. Companies like Clevite Transistor, Transitron and Raytheon were breaking new ground and earning their shareholders millions. While much of the semiconductor business and almost all the "chip" business ultimately moved elsewhere, Teradyne—like those who profited selling shovels in the California Gold Rush—found ways to make money selling the tools of the trade. The company harnessed the newest technologies to solve the industry's increasingly complex and demanding test and measurement problems.

Within the industry, DeWolf had already earned a reputation as something of a wizard for the testing apparatus he had developed internally for Transitron. But, according to Van Veen, although Transitron was growing and making fantastic profits, there were few incentives (read, equity) for ambitious people like DeWolf to stay on. So, after some soul-searching, the Beacon Hill resident decided to start his own company to develop test equipment. Through a mutual acquaintance, d'Arbeloff, with experience in sales, was also brought into the company. They were assisted in their entrepreneurial efforts by monies from American Research & Development, the first non-family, venture capital fund in the world, which had been launched 14 years earlier under the leadership of Harvard Business School professor Georges Doriot.

Fortunately for the City of Boston, both DeWolf and d'Arbeloff were Hub residents and both were urbanites; they wanted to be able to walk to work. So the company was launched in low-rent space on the fringes of

downtown. Although later lauded for bringing jobs to the inner city, d'Arbeloff and DeWolf freely admitted that it was their own needs rather than altruism that kept the company rooted far from the suburban beltways that, even then, had become almost synonymous with high tech. Teradyne's principal offices remain on the edge of Boston's Chinatown to this day.

Even with the launch of the simple diode testers, which DeWolf had delivered as a first product, the company was already becoming "global," thanks in part to the fortuitous selection of a particularly skilled European sales representative.

Meanwhile, the industry continued to move at breakneck speed—almost like an arms race both in its speed and intensity and in terms of the consequences meted out to those who fell behind.

As the volume and sensitivity of discrete devices increased, traditional methods of manual component testing became inadequate. Similarly, the new integrated circuits were growing ever more complex. Teradyne was the company that seized leadership in using computers to automate both kinds of testing—lowering costs and improving accuracy in the process.

Despite Teradyne's still small size (others in the testing field like Concord, Mass.-based General Radio had hundreds or even thousands of employees) the Boston company regularly surprised the industry with an ever-expanding range of new products. The secret was a modular approach to design that DeWolf had insisted upon. This strategy allowed many new designs to be built from a small number of adaptable subassemblies and, along with other innovations, made Teradyne an instant star in the electronics firmament.

Well established by the end of its first decade, the firm went public in 1969 and rode the successive waves of growth and retrenchment in the semiconductor industry through the 1990s. It even survived a large defection of personnel determined to start a competing company in the late 1970s.

Just a few of the challenges included competition from Japan, wide fluctuations in international exchange rates, brutal and rapid shifts in demand and fierce competition nationally and internationally.

Both founders managed to be exceptional—DeWolf by leaving the company to pursue his own interests in the early 1970s, and d'Arbeloff by staying on and adapting. When the latter gave up his leadership in 1997 the once tiny startup boasted net sales of more than $1.2 billion (net sales topped $3 billion in 2000). To acknowledge their debt to academia, in 1999, d'Arbeloff and his wife Brit, gave $10 million to establish the Alex and Brit d'Arbeloff Fund for Excellence in MIT Education. Theirs was the fifth-largest gift to MIT over the prior 10 years. Unique in its focus on the process of education itself, the d'Arbeloff fund will support innovations by MIT faculty in teaching science and engineering.

While there is much that is unremarkable in this story of a high-tech success, when one considers how few of the promising technology companies of 1960 are still with us today, Teradyne's achievements become more impressive.

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

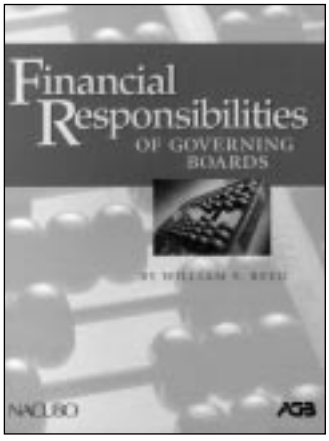
Trustee

Jane Sjogren

Financial Responsibilities of Governing Boards, William S. Reed, Association of Governing Boards of Universities and Colleges, 2001; $29.95.

Many of my students approach a course I teach on "Finance and Resource Management in Higher Education" with wariness and anxiety. And many colleagues in the academic and nonprofit communities share their predilections. Prudent fiduciary behavior and smoothed endowment payout rates, after all, are bone-dry subjects—and certainly not the stuff of the proverbial book you can't put down. But William S. Reed's *Financial Responsibilities of Governing Boards* succeeds remarkably in covering these arcane topics and others in a lucid and admirable way. The book is a small gem that is as valuable to faculty leaders, administrators and other stakeholders in institutions of higher education as it is to their board members.

Reed writes with authority and from experience. He recently stepped down as vice president of finance and administration at Wellesley College. But he continues to chair two organizations he helped establish: the Boston Consortium for Higher Education, whose members include the CFOs of 13 Boston-area colleges and universities, and School, College and University Underwriters Ltd., the nation's largest provider of liability insurance to colleges and universities.



Reed approaches his somewhat mysterious topics from the broader base of his knowledge about managing nonprofit institutions. He has a view of what makes nonprofits tick that many observers, especially those from the for-profit world, neither understand nor appreciate. So when dealing with what some view as the inefficiencies (or even poor management processes) inherent in academic institutions, Reed manages to acknowledge the idiosyncrasies of academic life and the need for practical financial management. This is important because many board members come from outside academia—as do most parents, management consultants and other stakeholders.

Reed brings an unusual ability to keep focused on institutional mission, recognize the complexity of the often-divergent perspectives of stakeholders in nonprofit enterprises, and articulate the odd combination of idealism and

practicality that characterizes colleges and universities (as well as other nonprofit enterprises). This perspective, combined with his clear writing and calm tone, permeates the book.

He begins by outlining the fiduciary responsibilities of board members, something that most members of academic communities, not just the board, need to understand. After defining stewardship and basic financial responsibilities (including references to the "prudent man" rule), he outlines how these apply to the collegiate institution and gives an example of a Statement of Activities as a nonprofit equivalent of an Income Statement. (He also includes reference to another surprisingly good book titled *Understanding Financial Statements*.) As in subsequent chapters, Reed also includes recommended readings—an example of the thoughtfulness that characterizes this book.

The next two chapters focus on the related issues of budgeting and setting tuition. The discussion of tuition is particularly relevant. The use of tuition (the equivalent of "price per unit") and tuition discounting as enrollment management tools continues to increase in private institutions as well as public ones. Reed reviews how this is done, whether to maximize revenues or adjust student body characteristics, ending with a reminder on "transparency and honesty."

A chapter on endowment management, a major aspect of board responsibility, describes in quite readable detail such nuts-and-bolts issues as investment guidelines, portfolio management and use of custodial banks and/or external investment management. Reed also presents these considerations in the context of two other concerns of colleges and universities: institutional mission and social responsibility.

In covering capital budgeting and debt and the audit process, Reed acknowledges that these are board responsibilities without losing sight of the fact that these processes affect other stakeholders as well. He reviews the concept of materiality, but also notes how some institutions augment their required financial reporting with supplementary information in order to provide context and understanding of tier institutions—an admirable and sometimes surprisingly worthwhile effort.

The remaining chapters, which deal with the prickly topics of managing employment and containing costs, should be required reading for faculty members and academic officers. These related topics, given the context of the labor-intensive operations and individual-based cultures of academic institutions, are the ones about which Reed is particularly sensitive and clear.

Though the order of the topics is distracting at times, this book is indeed a gem, a concentration of the complex, sometimes messy issues of board and financial management into clarity.

Jane Sjogren *is a Massachusetts higher education consultant and faculty member in the doctoral program in education leadership at Johnson & Wales University.*

MIDDLETOWN, CONN.—Wesleyan University received a four-year, $1.9 million grant from the Vermont-based Freeman Foundation to support study of Asia and Asian people living in other parts of the world. Among other things, the grant will help Wesleyan bring visiting distinguished scholars in Asian-American studies to campus for teaching and research, create a two-year postdoctoral fellows program and provide need-based scholarships for students to spend a summer studying in Asia.

HARTFORD, CONN.—Hartford Seminary was awarded a two-year, $50,000 grant by the H.A. Vance Foundation to strengthen its 100-year-old program in Christian-Muslim relations. The grant will support a course in Christian-Muslim relations for Christian leaders and provide scholarship money to bring two Indonesian Christian leaders to Hartford to help their American counterparts develop interfaith relations with Muslims.

COLCHESTER, VT.—Saint Michael's College began working with the Burlington, Vt., public schools on a federally funded project to train K-12 teachers in strategies to help students whose native language is not English succeed in other subjects. The program is funded by a five-year, $1.25 grant from the federal Office of Bilingual Education and Minority Language Affairs. As part of the initiative, dozens of Burlington teachers have enrolled in Saint Michael's summer institutes, which include cultural awareness training by liaison workers representing Tibetans, Vietnamese and Bosnians—Burlington's three largest refugee groups.

BOSTON, MASS.—The University of Massachusetts Boston opened a satellite campus in Plymouth, Mass., focusing on professional development programs for public school teachers, local business people and high-tech professionals. UMass Boston, which also runs off-campus programs in downtown Boston and in Westborough, Mass., projected an initial enrollment of about 300 students at the Plymouth site.

DURHAM, N.H.—The University of New Hampshire received a $7.5 million gift from Marcy Peterson Carsey, a 1966 UNH graduate and producer of television programs such as "The Cosby Show" and "Roseanne," to establish the Carsey Institute for Effective Families and Communities. The new center will link a range of existing UNH research centers focused on child development, family violence, health policy, disabilities and justice studies. The center will provide interdisciplinary training, including applied research opportunities, and share findings with relevant organizations.

NORTHAMPTON, MASS.—Smith College signed agreements with Greenfield and Holyoke community colleges to make it easier for students to transfer from the two-year, public institutions in western Massachusetts to the four-year private college. About 100 students transfer to Smith from community colleges every year, many through the Ada Comstock Scholars Program in which women beyond traditional college age, whose education was interrupted earlier in life, can pursue bachelor's degree programs at Smith. The new agreements don't guarantee admission to Smith, but offer guidelines to help community college students plan for transfer. Smith has similar agreements with Miami-Dade Community College in Florida and Santa Monica Community College in California.

PROVIDENCE, R.I.—Brown University received $15 million from the Starr Foundation to endow undergraduate scholarships. In early 2002, Brown adopted a need-blind admissions policy and announced plans to increase its endowment for student financial assistance by $100 million.

FARMINGTON, MAINE—The University of Maine at Farmington received a $1.3 million gift from former geosciences professor Bill Berry to establish the university's first-ever endowed chair, the Forrest P. Dexter, Jr., Chair in Geology. The gift will support a new faculty position and undergraduate research in the university's Department of Natural Sciences, as well as maintenance of the campus mineral collection. Dexter taught geology classes part-time at Farmington after retiring from Union College of New Jersey where he was a full professor.

NEW BRITAIN, CONN.—Central Connecticut State University introduced the first ever online master's degree program in data mining. The program is designed to prepare information technology professionals with the skills to analyze database information for decision-makers in business. Offered through the Connecticut State University's virtual classroom system, OnlineCSU, the master's program can be completed in four semesters by students who have completed prerequisite courses in calculus and computer science.

HAMDEN, CONN.—Quinnipiac University announced it will require all freshmen to have laptop computers with specific hardware configurations and software, beginning in the fall of 2003. Campus officials said laptops already have been provided to all full-time faculty who want them and distribution to adjunct faculty is underway. Many Quinnipiac faculty use the online course management program called Blackboard to post syllabi, schedules and grades and to conduct online tests, chats and discussions. Several departments are expected to introduce laptop-only sections for the fall semester. Quinnipiac will negotiate with laptop vendors and allow freshmen to place orders for laptops with the chosen vendor through a link on the university website.

NORTON, MASS.—Wheaton College was awarded a $144,677 grant by the National Science Foundation to create a digital imaging facility for researchers in all disciplines. The Imaging Center for Undergraduate Collaboration, comprised of networked computers, microscopes and specialized cameras, is designed to engage students in scientific inquiry by allowing them to create and analyze digital images.

D A T A C O N N E C T I O N

- Approximate annual spending by government at all levels on U.S. elementary and secondary education: **$400,000,000,000**
- On U.S. higher education: **$100,000,000,000**
- On education for children from birth to age 5: **$25,000,000,000**
- Minimum additional spending needed to extend access to free, part-day, part-year preschool programs to all children ages 3 and up, including those currently enrolled in child care centers: **$25,000,000,000**
- Average total savings of Connecticut single mothers who have moved from welfare to jobs under welfare reform: **$400**
- Average debt: **$4,700**
- Percentage of U.S. executives who say the average employee has too much to do in his job: **70%**
- Number of hours a minimum wage worker would have to work per week to pay the federally set fair market rent for a two-bedroom apartment in Massachusetts: **110**
- Change in hours worked per week by the average working mother in Massachusetts since 1979: **+50**
- Percentage of jobs in southern New Hampshire that pay enough to support a single parent with two small children: **13%**
- Percentage in northern New Hampshire: **8%**
- Difference in number of New England telecommunications job postings on Monster.com, February 2002 vs. March 2001: **-85%**
- Difference in number of New England Internet/E-commerce job postings: **-89%**
- Difference in number of biotech job postings: **0%**
- Enrollment at public two-year colleges nationally as a share of undergraduate total: **42%**
- Enrollment at public two-year colleges in Maine as a share of undergraduate total: **15%**
- Increase in enrollment of degree-seeking students at Maine technical colleges, 1989 to 2001: **78%**
- Percentage of Maine technical college students pursuing degrees in information technology: **15%**
- Approximate number of students from Greenfield and Holyoke community colleges who have transferred to Smith College in the past 25 years: **410**
- Higher education's share of expenses by all public charities in the United States: **11%**
- Higher education's share of expenses by all public charities in New England: **19%**
- In Vermont: **29%**
- Chance that a major Massachusetts general contractor's largest recent job was a higher education project: **1 in 3**
- Number of the 25 largest Boston law firms that are more than 100 years old: **11**
- Students per Internet-connected computer in Connecticut schools: **8.7**
- Students per Internet-connected computer in Connecticut schools with high minority enrollment: **19.8**

Sources: 1,2,3,4 Committee for Economic Development; 5,6 Yale University; 7 OfficeTeam; 8 University of Massachusetts Lowell Center for Family, Work and Community; 9 Massachusetts Institute for a New Commonwealth; 10,11 University of New Hampshire; 12,13,14 *Mass High Tech*; 15,16,17,18 Maine Technical Colleges; 19 Smith College; 20,21,22 Urban Institute; 23,24 *Connection* analysis of *Boston Business Journal* data; 25,26 Market Data Retrieval

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