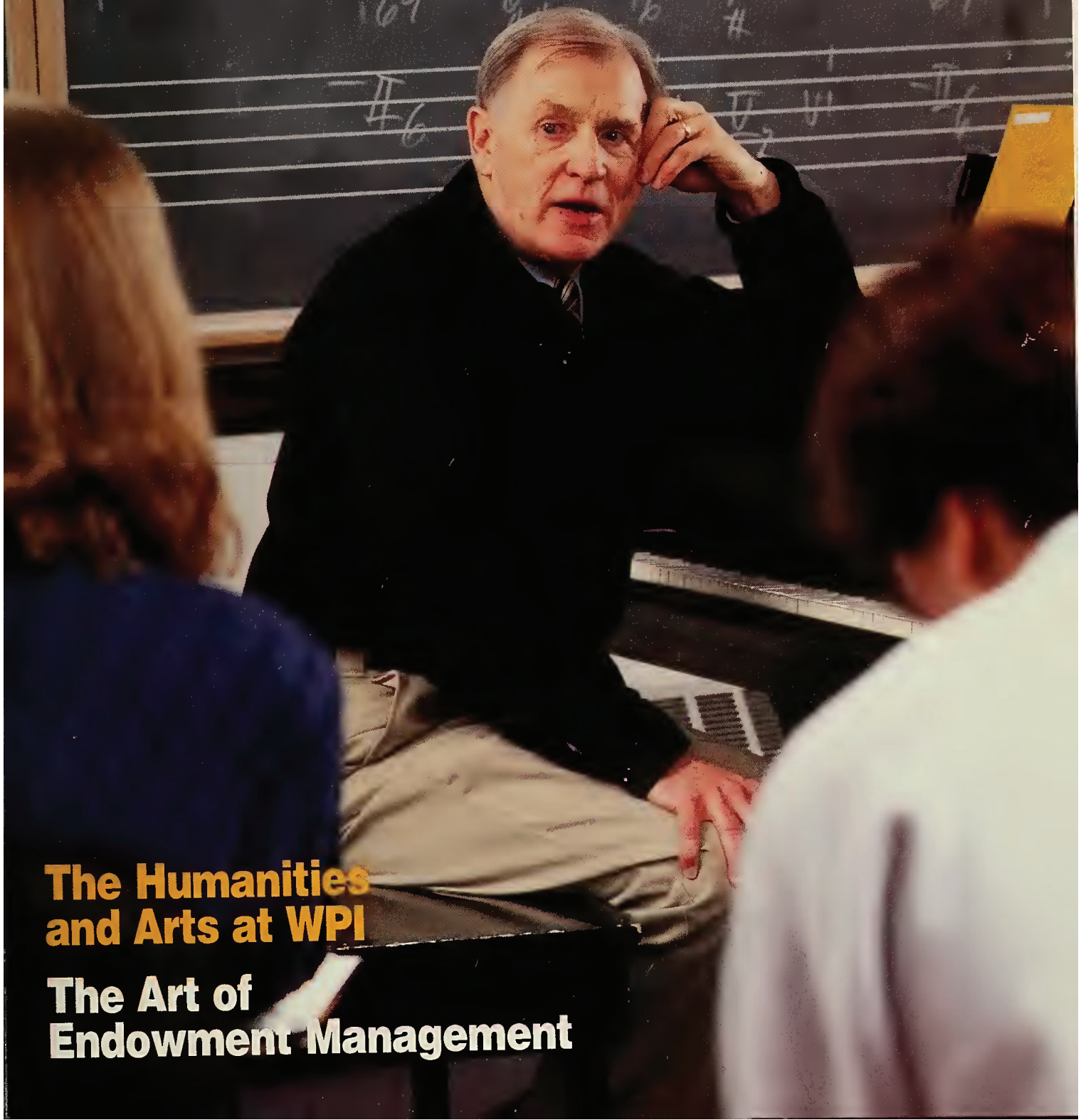


WPI Journal

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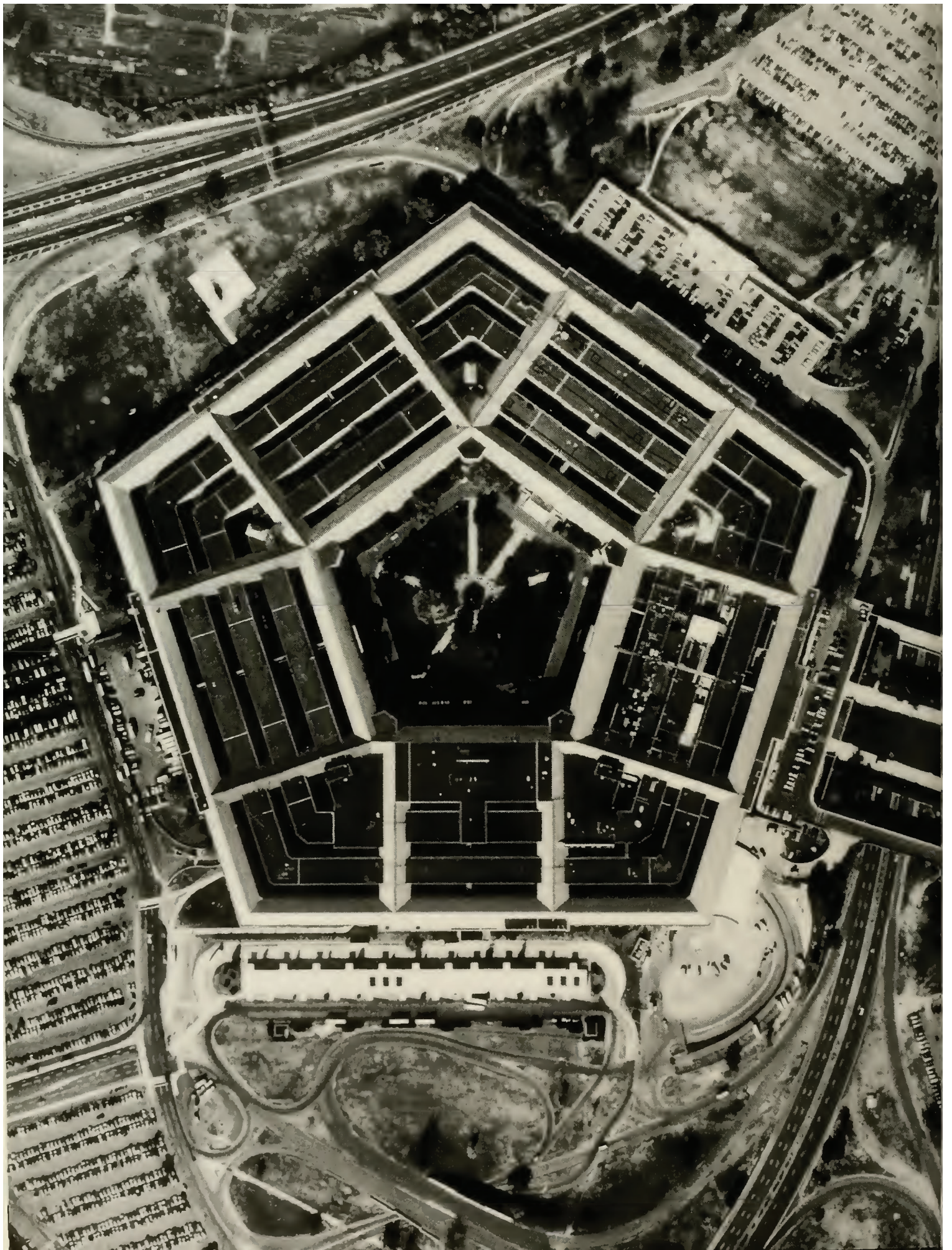
INSTITUTE

WINTER 1993



**The Humanities
and Arts at WPI**

**The Art of
Endowment Management**



WPI Journal

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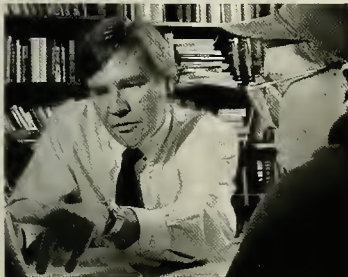
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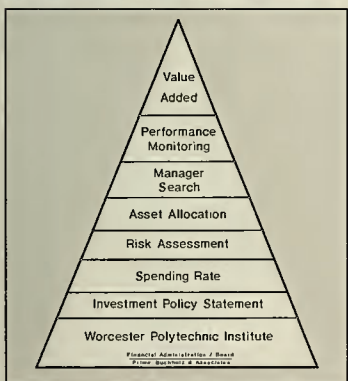
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Front Cover: Music professor David P. McKay, who will retire this year after a 37-year career at WPI, lectures students in the new music classroom in the fully restored Alden Memorial. Story on page 14. Photo by Janet Woodcock. **Opposite:** The Pentagon is also benefiting from a complete renovation, under the direction of Anthony F. Leketa '69. Story on page 22. Photo courtesy of the U.S. Army Corps of Engineers. **Back Cover:** In the shadow of the Washburn Shops, students trudge through the aftermath of a record-setting snowfall last December. Photo by Janet Woodcock.

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Celebrating Alden... The Man and The Building



George I. Alden was just 25 when he joined WPI's original faculty in 1868. He would go on to become one of the college's most renowned educators, a man whose vision not only inspired a generation of students, but helped change the face of engineering education.

Had his achievements ended there, his story would have been remarkable. But Alden, a talented entrepreneur, also helped found Norton Co., one of Worcester's most important corporations. His success in industry made him a wealthy man, and he shared his good fortune liberally with the college where his career began. His generosity continues today through the George I. Alden Trust. Over the years, his gifts to WPI and those of his trust have totaled \$8.6 million, making him the Institute's most generous benefactor.

Alden was born in 1843 in Templeton, Mass., where WPI's founder, John Boynton, made his fortune in tinware manufacturing.

His mother, Priscilla Alden, was the daughter of Silas and Mary Alden of Templeton; Silas was a direct descendent of John Alden and Priscilla Mullins, passengers on the *Mayflower*, making George Alden an eighth-generation descendent of a *Mayflower* family.

Like many youngsters of the time, he was forced to work several years to raise the funds to enter college. He graduated summa cum laude from Harvard University's Lawrence Scientific School in 1868 and joined WPI shortly thereafter. In addition to his mechanical engineering professorship, Alden was named WPI's dean of the college in 1894 and twice served the Institute as acting president.

In his *Seventy Years of the Worcester Polytechnic Institute*, Herbert Taylor described George Alden as "...a painstaking and thorough teacher, though sometimes given to sarcasm, who gave his students a grounding in theoretical and applied mechanics such as few of his generation could impart."

programs in the humanities and the arts.

But before we get to the present and future of Alden Memorial, here's a look at how one of WPI's most beautiful buildings came to be, and, more important, a look at the extraordinary man it honors. This article was adapted from material on George Alden's life written by Donald F. Berth '57, vice president for university relations, and from an essay on the history of Alden Memorial written by Anne B. Littlefield, director of major gifts and planned giving.

Alter 28 years at WPI, Alden, along with Milton Prince Higgins, the original superintendent of the Washburn Shops, resigned from the faculty as a result of a dispute with the Institute's third president, Thomas C. Mendenhall, over the shops' operation. In time the action would prove a blessing in disguise for WPI, as Alden put more of his energies into the development of Norton Co., ultimately becoming its chairman and a wealthy man.

He became a WPI trustee in March 1912 and served in that capacity until his death in 1926. The Institute honored Alden, who was for a time vice president of the American Society of Mechanical Engineers, by naming its hydraulics laboratory in Holden (to which he had been a significant contributor—both intellectually and materially) for him, and by awarding him an honorary doctorate in 1926.

When Alden began his WPI career in 1868, engineering was still very much an art. The few schools that offered instruction in engineering were groping for an educational model that in some manner blended instruction with practice. WPI's model, combining classroom time with instruction in a working shops, helped create what became known as the "shop culture," which would serve as a curricular model for several institutions—including Georgia Institute of Technology—from about 1870 to 1900.

As the field of mechanical engineering evolved, the "shop" model gave way to the "school" model, in which the element of practice was relocated from the shop to the laboratory. It was this philosophical

Editor's Note: On April 22, WPI will note the 150th anniversary of the birth of George I. Alden, the Institute's first professor of mechanical engineering. On that day, it will rededicate Alden Memorial, the building given to WPI in 1940 by the George I. Alden Trust.

Alden Memorial recently underwent a major, \$2.8 million renovation; beginning on page 14 you'll find a photo essay on its rebirth as a performing arts center. Starting on page 4, you'll also find extensive coverage of the Institute's innovative educational

change that produced the rift between Alden and Mendenhall.

Fourteen years before his death, Alden established the George I. Alden Trust. He specified that the trust's funds be used to promote education, particularly technical and professional education. Alden's daughter, Clara, who was educated at Wellesley College and held a doctorate from the University of Colorado, became an Alden trustee upon her father's death and helped administer the fund until her own death in 1945.

WPI has been the greatest beneficiary of the Alden Trust's generosity. The trust funded a new building at Alden Research Laboratories, created the George I. Alden Chair in Engineering and, most recently, supported the construction of the George F. Fuller Laboratories, among many other projects.

But perhaps its greatest gift to WPI was Alden Memorial. The idea for the building originated with WPI President Ralph Earle, who included an auditorium in his ambitious \$1 million campus expansion plan. The trustees approved the idea in 1929 and J. Cornell Appleton of the prominent Boston architects Appleton & Stearns, designers of Sanford Riley Hall (and, later, Higgins Laboratories), was chosen to design the building. The Depression put the plans on hold, but they were revived in 1937 when Earle asked Appleton to update the plans.

Appleton endowed the building with touches of beauty and elegance. This is especially true in the great hall, with its oak paneling, iron chandeliers and eight massive ceiling beams. At either end of the beams are stone figures, each a woman with a shield



Alden Memorial, seen under construction in 1939 in the photo below, provided WPI and the Alden Trust an opportunity to honor the memory of George I. Alden, opposite. Until 1967, Alden housed the Institute's central campus library, left.

President Earle's widow, Janet.

The search for funding for the building ended successfully with the George I. Alden Trust. The trustees of the fund had already developed the idea of erecting a memorial to Alden, and the new hall at WPI seemed to fit the bill. In late 1938, the trust informed WPI it would fund the entire project, and the college responded by naming the building for Alden.

Earle died shortly thereafter, but work on Alden Memorial continued. R.L. Whipple Co. in Worcester won the bid to construct the building, and on June 26, 1939, excavation began for the foundation. (The Class of 1942, which recently provided funds for a new

plaza adjacent to Alden, beat the contractor to it by four days with its own informal groundbreaking ceremony.)

A 75-man crew worked 150 days straight with no time lost due to inclement weather, finishing the roof before winter descended. Work continued through the coldest months and the building was ready in time for the 1940 Commencement, thus beginning its history as the heart of campus activity.

From 1940 until the late 1960s, the great hall hosted virtually all important college events, including honor society pledgings, academic awards ceremonies, concerts, dances, lectures and plays. A general assembly of the entire college community was held there weekly, providing a forum for the discussion of important issues of the day. The Vietnam War was hotly debated there in the 1960s.

With the start of the WPI Plan in the early 1970s and the concurrent growth of the campus population, assemblies became a thing of the past. The completion of Gordon Library in 1967 and Harrington Auditorium in 1968 freed up room in Alden for new uses, and the building became a home for the Institute's active music and drama programs. With its recent renovation, Alden Memorial is even better suited for this role, one destined to keep it at the center of campus life.

representing religion, science, music, architecture, knowledge, the arts, sculpture or drama. They were carved by Thomas Miln of Berlin, Mass., whose work can also be seen on the U.S. Treasury and National Archives buildings in Washington, D.C. The windows in the great hall and two in the tower are fitted with stained-glass medallions. The creation of Wilbur H. Burnham, who also worked on the National Cathedral in Washington, the medallions tell the story of American history.

In addition to the great hall, the building was to house a central library with room for 50 percent more books than the original facility in Boynton Hall. There was also to

be a room that the Institute's new president, Wat Tyler Cluverius, said would be used "for cocktail parties, tea parties, and other social gatherings." Cluverius initially intended that the room be named for Clara Alden, but when she declined, it was named instead for



Enriching Life... And Making a Living

BY BONNIE GELBWASSER
AND MICHAEL DORSEY

THE FRAMERS OF THE WPI PLAN KNEW THAT THE HUMANITIES MUST BE GIVEN FAR MORE THAN A TOKEN ROLE IN THE EDUCATION OF SCIENTISTS AND ENGINEERS. WHAT THEY CAME UP WITH MORE THAN TWO DECADES AGO TRANSFORMED HUMANITIES EDUCATION AT WPI AND SET AN EXAMPLE FOR OTHER ENGINEERING EDUCATORS TO EMULATE.

More than 125 years ago, when John Boynton laid down the Institute's philosophical foundation, he wrote, "The aim of this school shall ever be the instruction of youth in those branches of education not usually taught in public schools, which are essential, and best adapted to train the young for practical life."

Like Boynton, Ichabod Washburn, whose gift of the Washburn Shops helped frame WPI's "Two Towers" approach to education, insisted that the new school not be confined to the "theories of science, but as far as possible to the practical application of its principles which will give the greatest possible advantages in the affairs of life." Such a balanced curriculum, Washburn noted, would "add to their personal independence and happiness, while it renders them better and more useful citizens."

But in 1868, as the college began life as the Worcester County Free Institute of Industrial Science, it was clear that the balance of the theoretical and the practical that Boynton and Washburn embraced would not, to any appreciable degree, include the humanities and the arts. In fact, for most of the Institute's early years, instruction in the humanities was limited to a smattering of classroom hours taught by part-time instructors.

The picture brightened in 1872 when the

Department of English and Modern Languages was created, funded by a gift from board president Stephen Salisbury II. The new department offered students instruction in English composition and French. Some 32 years later, the Class of 1879 Prize, which now honors outstanding projects in the humanities, was established to recognize the best essays written in composition class each year.

For the most part, that is how humanities instruction at WPI would remain for decades. An optional course in the history of civilization and science was launched in 1934, literature courses were added to the standard offerings in English composition in the 1940s and, in 1959, following a two-year study of the Institute's academic programs, an effort was made to broaden still further the humanities curriculum.

Then came the 1960s. On campuses across the nation it would be a decade of change and growing social awareness, as colleges searched for ways to better prepare students to understand their role in—and responsibilities to—society. At WPI, that search brought on a period of curricular experimentation. One notable experiment was an interdisciplinary program, begun in 1964, that allowed students to earn a bachelor of science degree in either humanities and technology or humanities and science. But for the humanities, the real shake-up was yet to come.

The 1960s culminated in the WPI Plan, an initiative that would catapult the Institute to the forefront of engineering education reform. In drafting the Plan, the faculty and administration carefully evaluated what worked and what didn't in a WPI education as it then existed. They set as their fundamental purpose "to impart to students an understanding of a sector of science and technology and a mature understanding of themselves and the needs of the people around them." They envisioned "a WPI education that should develop in students a strong degree of self-confidence, an awareness of the community beyond themselves, and an intellectual restlessness that spurs them to continued learning."

One of the major issues facing the Plan's framers was how great a role the humanities should play in a technical education. "We decided that a strong humanities component, coupled with the superb technological education our students receive, would make our graduates among the best prepared of any university to succeed in whatever careers they chose," says William R. Grogan, dean emeritus of undergraduate studies and a member of the committee that created the Plan.

To meet that objective, the committee crafted the Humanities Sufficiency program, a radical new way of introducing students of engineering and science to scholarship in nontechnical disciplines (see page 9). The Sufficiency became one of the four pillars of

the Plan (since then, one of those four original degree requirements—the Competency Exam—has been replaced by distribution requirements).

But the Plan was merely a blueprint. To bring it to life, some quite fundamental changes had to take place in the organization of the Institute and in the way it carried out its mission. Few academic disciplines at WPI have experienced that wave of change so completely—or have been so completely transformed by it—as the humanities.

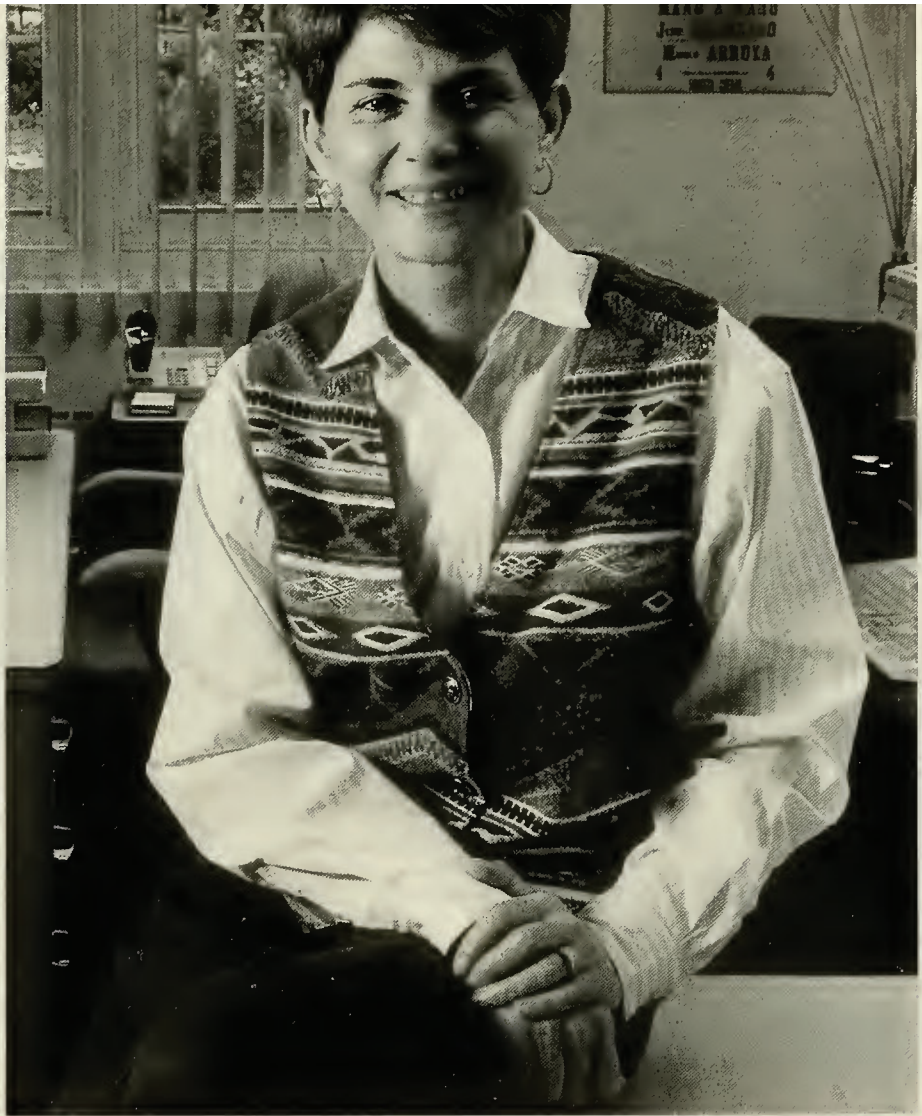
A major step along the road of change was taken in the mid-1970s with the creation of the Humanities Department. Until then, courses in art, English, French, German, history, music and philosophy were taught by the Department of English and History and the Department of Foreign Languages. The Humanities Department united these disciplines under one umbrella and also provided a new home for the decade-old humanities major program.

Since its inception, the department has received a number of program development grants from both public and private agencies. In particular, grants from the National Endowment for the Humanities, the Rockefeller Foundation and the Andrew W. Mellon Foundation have proved instrumental in developing and maintaining a broad and diverse humanities curriculum and in establishing programs and standards for student work in interdisciplinary areas.

Individual disciplines within the department have also benefited from outside support. For example, in 1991 the Fred Harris Daniels Foundation earmarked a two-year, \$50,000 grant to enrich the department's art history and architecture, foreign language, and music programs. The grant has already been used to establish an electronic music laboratory in Alden Memorial (see story, page 14) and to enlarge the department's slide collection in art history and architecture. The remainder of the grant is being used to create a modern language laboratory, to be housed in Gordon Library.

Under the direction of history professor JoAnn Manfra, who has served as chair since 1983, the Humanities Department has become one of WPI's largest (second only to Electrical and Computer Engineering). The highly accomplished humanities faculty includes 25 tenured and tenure-track professors who teach nearly 120 courses in art history and architecture, English (including literature, communications and drama/theatre), history, languages, music, and philosophy and religion.

Recognized for their scholarly accomplishments in a wide variety of fields, the



JANET WOODCOCK

WPI's distinguished Humanities Department, the Institute's second largest, plays a critical role in fulfilling the goals of two of WPI's three undergraduate degree requirements, notes JoAnn Manfra, who has served as department chair for the last decade.

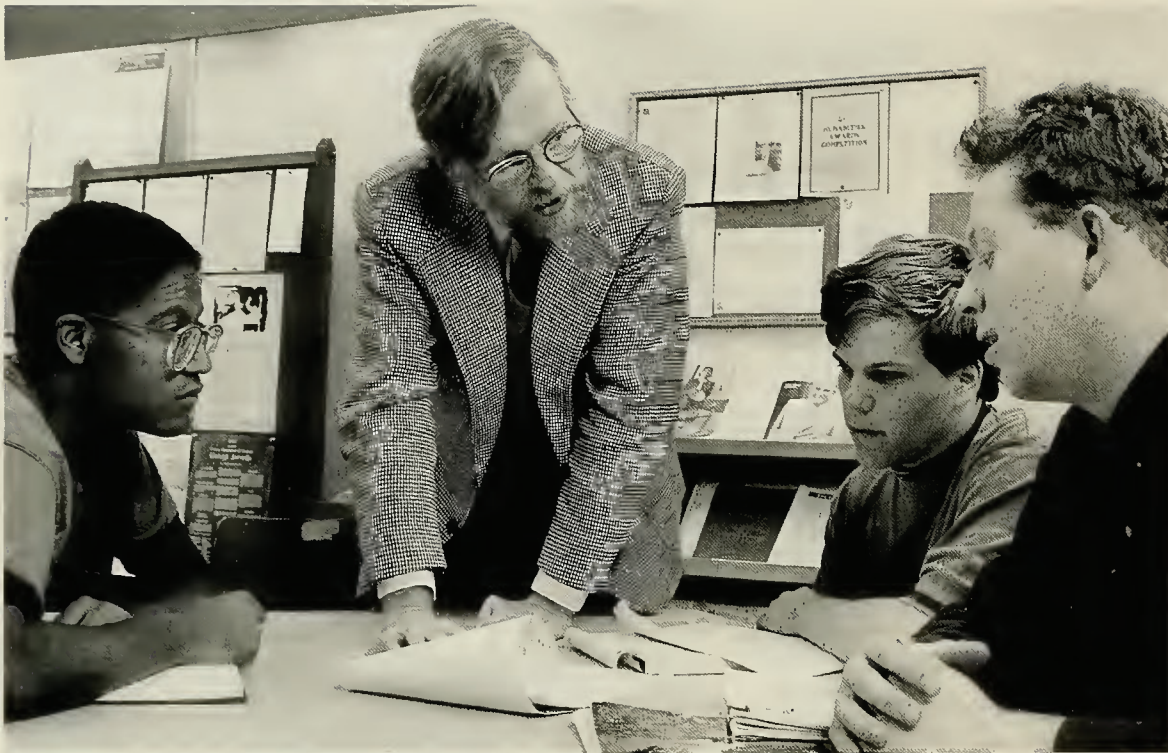
humanities faculty in 1992 published six books and 24 scholarly articles, presented 52 papers at professional meetings, produced 10 creative works, and received several research fellowships and grants. Three faculty members—David P. McKay, professor of music, Thomas A. Shannon, who holds the Paris Fletcher Distinguished Professorship in the Humanities, and Michael M. Sokal, professor of history and former executive secretary of the History of Science Society—are among the recipients of WPI's Board of Trustees' Award for Outstanding Creative Scholarship.

The size of the faculty and the large number of humanities courses reflect the important role played by the department in meeting the goals of the WPI Plan. In particular, the Humanities Sufficiency places a significant demand on the department's resources. Under the Plan, every undergraduate (there are now some 2,700 enrolled)

must complete a Sufficiency, and every Sufficiency is advised by a humanities faculty member.

In addition to advising Sufficiency projects, the humanities faculty also plays an important role in the Interactive Qualifying Project, another undergraduate degree requirement. This exercise requires students to explore some aspect of the relationships between science, technology and society. The projects themselves often involve real-life issues that may confront students in their future careers or personal and civic lives as adults.

"By its very nature, the interactive component of the IQP is flexible enough to afford all humanities faculty—whatever their areas of expertise or interest—an opportunity to advise these student projects," Manfra says. "In fact, the faculty has worked with a wide variety of programs and institutions to develop IQP topics and programs."



JANET WOODCOCK

Bottom, David B. Dollenmayer, associate professor of German, is using part of a grant from the Daniels Foundation to develop a new language laboratory. Above, W.A. Bland Addison Jr. (standing), associate professor of history and advisor to humanities majors and double majors, meets with, from left, double major Bryant O'Hara '92, humanities major William L. Schongar '94 and double major Ian K. Cote '95.

Many humanities faculty members have advised IQPs at the Institute's residential project centers in Washington, D.C., London and Venice, Manfra says. Others have worked with IQP teams closer to home through the Living Museums Program. Among the institutions that have participated in that program are Old Sturbridge Village, the Higgins Armory Museum and Mechanics Hall. "In one way or another," Manfra adds, "all of our faculty members have contributed to the intellectual content of this unique degree requirement."

The important ties between the liberal arts, engineering and the sciences, which have become evident through the IQP, also form the intellectual foundation for the humanities major and double major, Manfra says. Five students are currently enrolled as humanities majors at WPI. They specialize in one liberal arts discipline—literature, history, or philosophy and religion—and they complete their Major Qualifying Project in that discipline. Recent examples of humanities MQPs include a modern version of the legend of Faust, written by Kelli Sue Clark '92, who specialized in literature, and an examination of the political implications of Buddhism by Glenn W. Flaherty '91, whose specialty was philosophy and religion.

To broaden the context of their chosen specialty, humanities majors also take a cluster of courses in a related area of the liberal arts. And like all WPI undergraduates, they complete an IQP and a Sufficiency project, the latter in one of the engineering or science disciplines or in management.

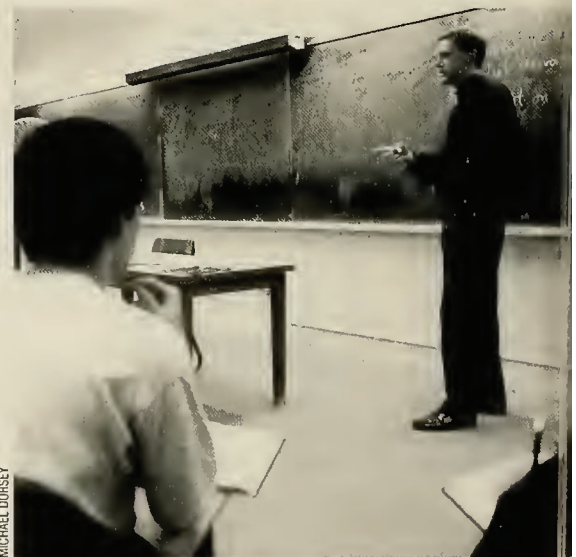
A growing number of students—15 at present—are pursuing double majors, which allows them to combine their abilities and interests in engineering, science or management with a carefully planned program in the humanities. Double majors must satisfy the degree requirements of both major programs, including the completion of two MQPs.

"Individual and societal concerns are likely to result in increasing demands for specialists equipped with the type of background possessed by a WPI major or double major," Manfra says. "Many fields, including medicine, law, industry, commerce and public service, will be open to those who have acquired both the traditional skills of humanistic education and technical knowledge."

While not every WPI student graduates with such a diverse combination of talents and interests, each will have the opportunity to gain a rich perspective on the world and his or her role in it, much as the

Institute's founders had hoped they would, thanks to the dramatic changes humanities instruction has undergone at WPI over the past two decades.

Notes W.A. Bland Addison Jr., associate professor of history and advisor to the humanities majors and double majors, "At WPI, students can develop analytical thinking, writing and expressive skills—and obtain the professional, scientific and technical training to enable them to find jobs—at an institution celebrated for its engineering and scientific accomplishments."



MICHAEL DORSEY

A Delicate Balance

In a world where engineers must understand humanistic issues and nonengineers must be technologically literate, how well does a major or double major in the humanities prepare WPI students for future careers? Let these graduates and current students tell the story. Their successes are testimony to the value of the humanities in engineering education.

Testimony is something **Judge Paul A. Fritzsche '72** knows all about. After receiving his bachelor's degree from WPI in humanities/technology (with an emphasis on history), Fritzsche graduated from the University of Maine School of Law, then worked as a legal assistance attorney. He has been a Superior Court judge in Maine since 1986.

"My unusual undergraduate education proved particularly helpful during my five years as a public advocate, when I represented consumers in public utility regulatory proceedings," Fritzsche says. "The mathematics and science courses I took provided a good background for the engineering, technical and economic issues I dealt with. My humanities courses helped me better explain the issues and the policy choices to the press and to the legislature."

The dual grounding in humanities and science he received at WPI continues to serve him well, Fritzsche says. "As a judge, I deal with a wide range of issues—often involving science and technology—such as product liability, medical malpractice, blood testing, and electronic monitoring of prisoners. These and other issues pertaining to public policy and economic regulation confirm that my WPI education prepared me well for my career."

"Science and math without humanities only produces an empty technician," says **Dr. Nancy Berubé '75**, assistant professor of medicine in the University of Massachusetts Medical Center's Department of Family Practice. "Rather than being mutually exclusive, the sciences and the humanities feed

and nourish one another. I think it's important to have a balance."

As an undergraduate, Berubé, who received her bachelor's degree with distinction in humanities in 1981, was active in theater at WPI, and worked at Old Sturbridge Village, where she did historical interpretation and acted in OSV's drama program. She drew on her experience at the village for her Major Qualifying Project, a dramatic interpretation of the diary of a 19th century shoemaker.

"I had always intended to go to medical school," says Berubé, who earned her M.D. at the University of Massachusetts Medical Center and now works at an inner-city family health center run by the university. "I'm a big supporter of nonscience majors going into medicine. In order to be a good physician you have to be able to listen to people—to have them tell you what they feel is wrong.

"I think of science as being able to observe something and express it in your own terms," she adds. "The humanities teaches you a different way of doing that. Studying at a school of science and technology gives you a unique perspective on the humanities because it implies you are expected to become proficient in some aspect of the sciences; it gives students a more balanced approach to the humanities."

After earning his degree in humanities/technology with distinction in 1975, **Steven W. Harvey** worked as a district manager for a small record company and participated in a demonstration project that applied an HMO model to providing care for families covered by Medicaid. In 1981 he enrolled at the University of Pennsylvania's Wharton School, continuing his interest in the public sector by working for Philadelphia's finance director. After receiving his M.B.A. in 1983, he worked briefly for Standard and Poors rating municipal bonds. Today he is senior analyst for all of Fidelity Investments' municipal bond funds, with nearly \$13 billion under management.



Paul A. Fritzsche '72 says his WPI humanities degree helped prepare him for a career as a judge.

"I continue to find my WPI background invaluable in my day-to-day activities," he says. "My work demands a pretty good grasp of engineering matters as it deals most often with the financing of large public construction projects. I believe, however, that the key to a municipal bond's credit quality—and to its value as an investment—is local or statewide politics; this is the area where my training in the humanities has been particularly useful.

"The ability to communicate, to write well and to get to the point quickly and clearly are also essential to my daily business. I owe my communications skills largely to the individual attention I received from the humanities faculty at WPI."

Like Berubé, **William Katzman '92** became involved in theater as an undergraduate. Before coming to WPI, Katzman had been active as an actor and mime with school or professional theater groups for several years. "I knew I couldn't support myself as an actor," he says. "I came to WPI



MICHAEL OUBSEY



JANET WOODCOCK

Left, an interest in the theater drew double major William Katzman '92 to WPI. Above, Kim Philipp '93 will turn her dual major in humanities and electrical engineering into a career in patent law. Below, dual major Raymond Bert '93 served a year as co-editor of the student newspaper.

because it was a small school where I could have a strong major in physics and a strong minor in drama. When I realized I'd probably end up taking almost every drama course the college offered, I decided my transcript might as well reflect that, so I became a double major."

A winner of WPI's Salisbury Prize, Katzman was a member of Masque and MW Repertory Theater, Etc. and a founder of the improvisational group Some Assembly Required. He also wrote three plays as an undergraduate; two were performed as part of New Voices, WPI's annual festival of new plays. For his Major Qualifying Project he wrote an 81-page script for a comedy video. "It was a pseudo-documentary about a person trying to get a film produced," he says.

Since last June, Katzman has been enrolled in the Math, English, Science, Technology Education Project at the University of Massachusetts. The intensive 15-month program offers paid internships in teaching and industry. At the conclusion of the program, Katzman will receive a master's degree in education and will be certified to teach high school physics. Graduates are asked to make a commitment to teach for a minimum of three years after they complete the program.

"You benefit from coming out of an engineering school with a humanities degree,"

he says. "A lot of companies want humanities majors for business positions. At WPI, you get some technical elements because the projects involve technology. It isn't easy. You have to be able to do this stuff. They don't teach 'Calculus for Poets!'"

While the Institute attracts a few students who enroll specifically to be humanities majors, most, like Nikolai A. Yurkanin '95, switch their major to humanities from engineering or science. Yurkanin, who says he was heavily involved in the science program at his high school in Holden, Mass., and won awards at science fairs, came to WPI to study engineering, but had a change of heart after taking introductory courses in science and math.

"I really enjoyed my humanities courses—especially 'Light and Vision,' which examines the arts from the perspective of physics, chemistry and biology. I thought, 'Wow, I wish I could do that!'"

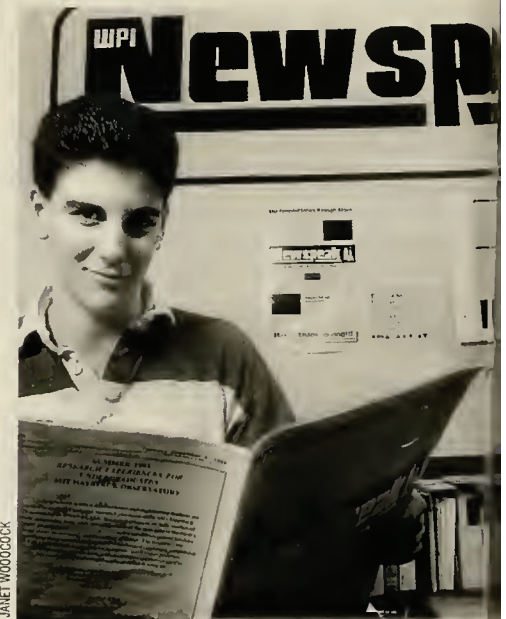
One of the advantages of being a humanities major at WPI is the opportunity to get a feel for science and technology as well as liberal studies, notes Yurkanin, who says he aspires to design exhibits for the Smithsonian Institution after graduation. "You get a really good perspective when you take the kinds of courses available at a school that specializes in science and engineering."

For William L. Schongar '94, the humanities proved an attractive option after he realized that his original career choice, aerospace engineering, wasn't for him. "After a year and a half, I knew I didn't want to crunch numbers the rest of my life. My mother is an English teacher and I like

to write, so I decided to major in the humanities."

Schongar, who calls himself a medievalist, completed his Interactive Qualifying Project at the Tower of London. After surveying visitors to gather information that will enable the administrators of the tower to improve their displays, Schongar decided he'd like to create exhibits for the Higgins Armory Museum in Worcester. "I like to teach people, and one of the best ways to do that is to write about what they are going to see, giving them information to work with."

Raymond R. Bert '93 and Kimberly S. Philipp '93 both became double majors after discovering the range of courses offered by the Humanities Department. Bert, who is majoring in mechanical engineering and hu-



JANET WOODCOCK

manities, says that while he's always had an interest in the humanities—particularly writing—he enrolled at WPI to study engineering.

As a sophomore, he fulfilled his Sufficiency requirement with a project on Stephen Crane. "That's when I learned about the humanities major," he says. "I like the idea that it's somewhat free-form, with everything leading you toward your MQP."

His focus in the humanities being nonfiction writing, he joined the staff of *Newspeak*, the student newspaper, during his junior year. After serving as associate editor, he became a co-editor in January 1992; he completed his term in December.

Bert's mechanical engineering MQP focused on resident stress effects on the fracture toughness of ceramics; for his humanities MQP he is assembling a portfolio of his own original news articles. "People are surprised when they hear I'm doing a double major—and that one of those majors is in a nontechnical field," he says. "But majoring in the humanities and mechanical engineering doesn't pose a particular challenge for me. It allows me to study two things I really enjoy."

Though he plans to work in materials science after graduation, Bert says, "I'd like to see myself as some sort of writer someday, perhaps as a free-lancer for a newspaper."

With her dual major program, Philipp is studying history and electrical engineering. The daughter of an electrical engineer, she enrolled at WPI with the intention of following in her father's footsteps. "I'd always had an interest in history and law and I originally planned just to do a regular Sufficiency in those areas," she says. "I decided on the double major after I took a legal history course with Professor Manfra, who talked about the humanities major in class."

Philipp incorporated her growing interest in law and the legal aspects of history into her Interactive Qualifying Project. Working at the Washington, D.C., Project Center for the United States Patent Office, she and her teammates researched maintenance fees applied over a 12-year period.

As she approaches the completion of her dual-degree program, Philipp has decided she won't be a second-generation electrical engineer after all. After graduation she plans to take her law boards and apply to law school to become a patent attorney.

—BONNIE GELBWASSER

The Humanities: Up Close and Personal

It seems that for as long as colleges and universities have been preparing young men and women for careers in science and engineering, educators have been discussing how best—and how extensively—to expose these technically oriented students to the arts and humanities. It was a subject that stirred debate 100 years ago when the American Society for Engineering Education was founded, and it is one that still has people talking and writing today.

Despite all the debate, most educators agree that to be fully prepared to meet the demands of their professions, scientists and engineers need much more than an introduction to the humanities and the arts. "It's part of our culture, our intellectual heritage and our environment," notes Lance Schachterle, associate dean of undergraduate studies and professor of English.

"It is critical for all students—regardless of their professional background—to be well-grounded in these fields, just as it is critical for students in the humanities to be well-grounded in science, math and technology. It's fundamentally important to intellectual development and to stimulating students' native curiosity to provide them access to all the achievements of our culture—scientific, artistic and otherwise."

Schachterle also notes that from a practical view, a firm foundation in the humanities can give a scientist or engineer an edge should he or she—as many technical professionals do during their careers—enter the world of management. "It is still typically the case that people in high government positions and those high on the corporate ladder have backgrounds in the humanities,"

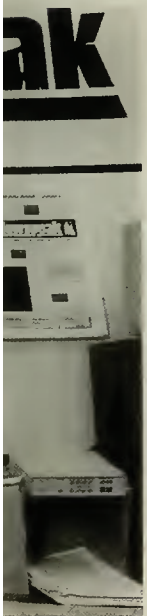
he says. "If people trained in science and engineering are to rise equally high, they must know something about the intellectual substance of their competition."

Surprisingly, considering all the years of soul-searching about the humanities, most U.S. engineering programs have settled on a fairly standard and prosaic approach to the field. Most adhere to guidelines published by ABET, the Accreditation Board for Engineering and Technology, which stipulates that accredited programs require students to take a total of one-half year's worth of courses (usually selected at random) in both the humanities and social sciences.

And that was how the humanities was handled at WPI up through the late 1960s, when the faculty and administration began a critical appraisal of the WPI curriculum that ultimately resulted in the WPI Plan, a dramatic departure from the traditional "boot-camp" approach to engineering education. One of the innovative elements of the Plan was a novel way of introducing students to the humanities and arts called the Humanities Sufficiency program.

While most engineering schools have settled for a "Chinese menu" approach, in which students fulfill set distribution requirements by choosing one or more courses (usually at the introductory level) in several areas of the humanities, the designers of the Plan, through the Sufficiency, developed a different model, one that emphasizes depth rather than superficial exposure to the entire range of disciplines.

"The Sufficiency degree requirement is designed to offer students a 'sufficient' liberal arts experience," notes JoAnn Manfra, head of the Humanities Department. "Its goal is to provide students with a more than





JANET WOODCOCK

According to a study designed by James Hanlan, associate professor of history, the Humanities Sufficiency provides WPI students with a worthwhile intellectual experience that few, if any, of the Institute's competitors can match.

passing acquaintance with a field unrelated to engineering or science. More profoundly, perhaps, the Sufficiency program attempts to demonstrate that being educated means embracing valid, intellectually vigorous ways of examining knowledge in which there is a role for ambiguity—both 'factual' and 'moral.' In other words, the Sufficiency experience provides a healthy dose of disciplined thinking about uncertainties."

To fulfill the Sufficiency requirement, students must take five thematically related humanities courses and then complete an original project that draws on the material in those courses. The combination equals about a half-year of work—the amount ABET requires engineering students to devote to both the humanities and social sciences. WPI students must also take two courses in the social sciences and complete the Interactive Qualifying Project—the equivalent of another three courses.

Students may not work in teams on their Humanities Sufficiencies, which are usually done during the sophomore year, so every student must be individually advised by a humanities faculty member. On average, each humanities professor advises 26 Sufficiencies a year.

Since the range of topics for the Sufficiency can be as broad as the disciplines that make up the humanities and the arts, the department has endeavored to provide considerable diversity in its course offerings, Manfra says. Students may supplement the department's offerings by taking

courses at other colleges in the Worcester Consortium for Higher Education, including such noted liberal arts institutions as Holy Cross College and Clark University.

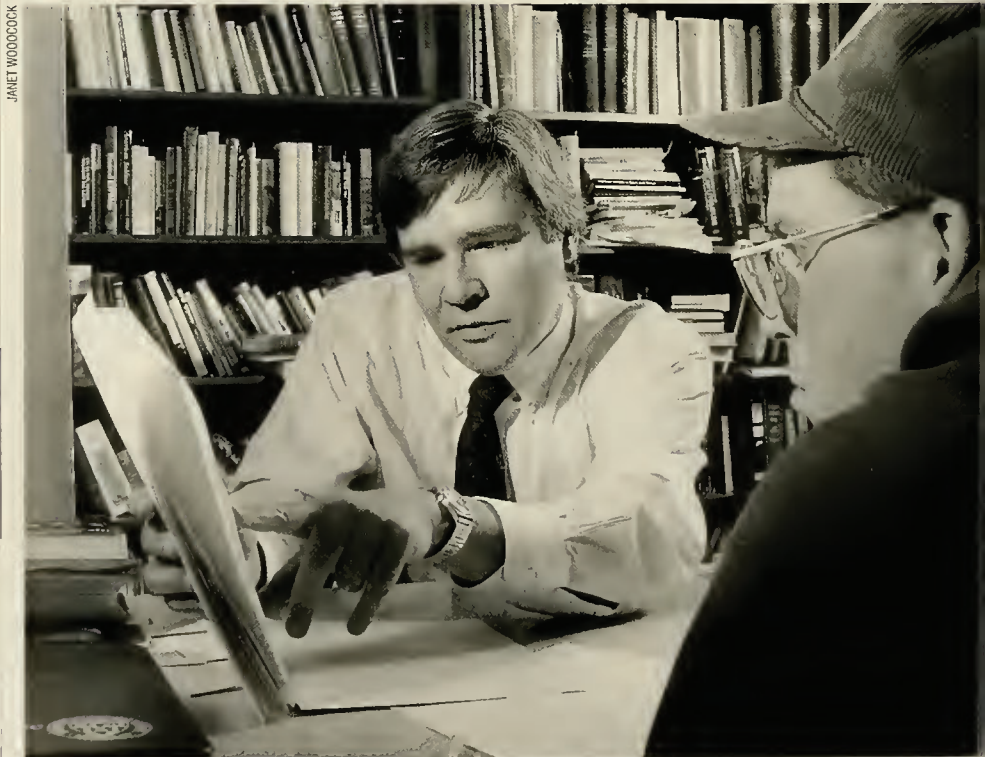
A student generally begins work on the Sufficiency by developing an idea of what he or she would like to accomplish in the final

project. The possibilities are surprisingly broad. Often the final product is a paper or critical essay, but students may also choose to write an original work of fiction such as a short story, a collection of poems or a play, or create an original musical composition. Students may also undertake a musical or dramatic performance and then write an essay about their experiences.

Some students complete the Sufficiency by taking six courses in a foreign language or by taking part in the American Studies Seminar, a series sponsored each fall by the American Antiquarian Society in collaboration with five Worcester colleges and universities. Seminar topics focus on areas that let students make full use of the extensive holdings in American history, literature and culture housed in the society's headquarters, located adjacent to the WPI campus.

A student develops and hones his or her theme in consultation with a faculty advisor; the advisor continues to work closely with the student as the Sufficiency progresses. With a theme in mind, the student then chooses the five courses he or she thinks will provide the proper intellectual underpinnings for the project. Although these courses may fall within a single area of the humanities, interdisciplinary work is encouraged. The only requirement is that material presented in the courses be related to the Sufficiency theme.

There are no hard and fast rules for mak-



JANET WOODCOCK

English Professor Kent P. Ljungquist, left, and Philip E. Marks '93 review a draft of Marks' Sufficiency project on literary impressionism in the works of Stephen Crane.

ing these choices; often the courses chosen present a surprising and thoughtful tableau. Here are two examples from projects completed in recent terms:

"Childe Hassam:

An American Impressionist"

A look at the works and influence on the world of American art by Hassam, a major American painter.

By Julie A. Driscoll '94

Advisor: David M. Samson, assistant professor of art history/architecture

Courses taken:

- Introduction to Art History
- Topics in 19th and 20th Century Architecture
- Modern Art
- Introduction to Painting
- Light and Vision

"U.S. Policy Towards Korea: 1945-1950"

Looking at American and Soviet interests in Southeast Asia, this study outlines U.S. policies that led to the Korean conflict.

By Won Tae Yang '94

Advisor: James P. Hanlan, associate professor of history

Courses taken:

- Introduction to Philosophy and Religion
- American History: 1877-1920
- The Shaping of Post-1920 America
- Introduction to the Study of Foreign Policy and Diplomatic History
- American Foreign Policy from Woodrow Wilson to the Present

Does the Sufficiency accomplish its goals? To answer that question, last June six humanities faculty members sat down to read and critique nearly 300 Sufficiencies completed during the 1991-92 academic year. "The reviewers were generally impressed with the quality of the student work," says James Hanlan, who designed the study and analyzed the results of the evaluations. "While a few papers could be described as run-of-the-mill, most were clearly worthwhile intellectual experiences of the sort few, if any, of our competitor colleges offer their students."

The Sufficiency Review Committee made some recommendations for strengthening the program, nearly all of which have been implemented, Manfra says. "This is a strong program, but we didn't just design it and leave it alone. Our faculty are continually revisiting the Sufficiency program to find ways to enable it to fulfill its objectives."

Recently, the humanities faculty developed a new off-campus option for the Sufficiency program. It will allow under-

graduates to complete work toward their Sufficiency during a seven-week period outside the bounds of the campus. A student writing about the French Revolution, for example, might study original documents and visit historic sites while he is in residence at the University of Marne-la-Vallée in Paris, with which WPI runs an exchange program. A playwright might travel to the Edinburgh Arts Festival in Scotland to experience the leading edge of theater, or even to see her own play performed.

"Sufficiency projects undertaken in international settings will encourage students to immerse themselves in the intellectual traditions of other cultures," Manfra says. "Similarly, projects done at off-campus project centers in the United States will introduce students to cultural diversity here at home."

Another measure of the success of the Sufficiency program is the fact that ABET, the major accrediting agency for all engineering colleges, has recently revised its guidelines for humanities education, notes Francis C. Lutz, dean of undergraduate studies.

"In the most recently published criteria for evaluating engineering programs, ABET made a point of emphasizing that the courses students select must provide not only breadth, but depth," he says, "and not be limited to a bunch of unrelated introductory survey courses. It's taken more than 20 years, but it looks like the profession may finally be recognizing that our approach does a much better job of preparing students to be solid professionals and competent citizens."

—MICHAEL DORSEY

Helping Students Find the Right Words

Anyone who's ever struggled to compose a thank-you note or a thesis can appreciate Fowler's words. But for WPI students, finding the right words has gotten a bit easier, thanks to the efforts of the Humanities Department and other educators at the Institute, who've worked over the last five years to develop a variety of writing education and tutoring programs.

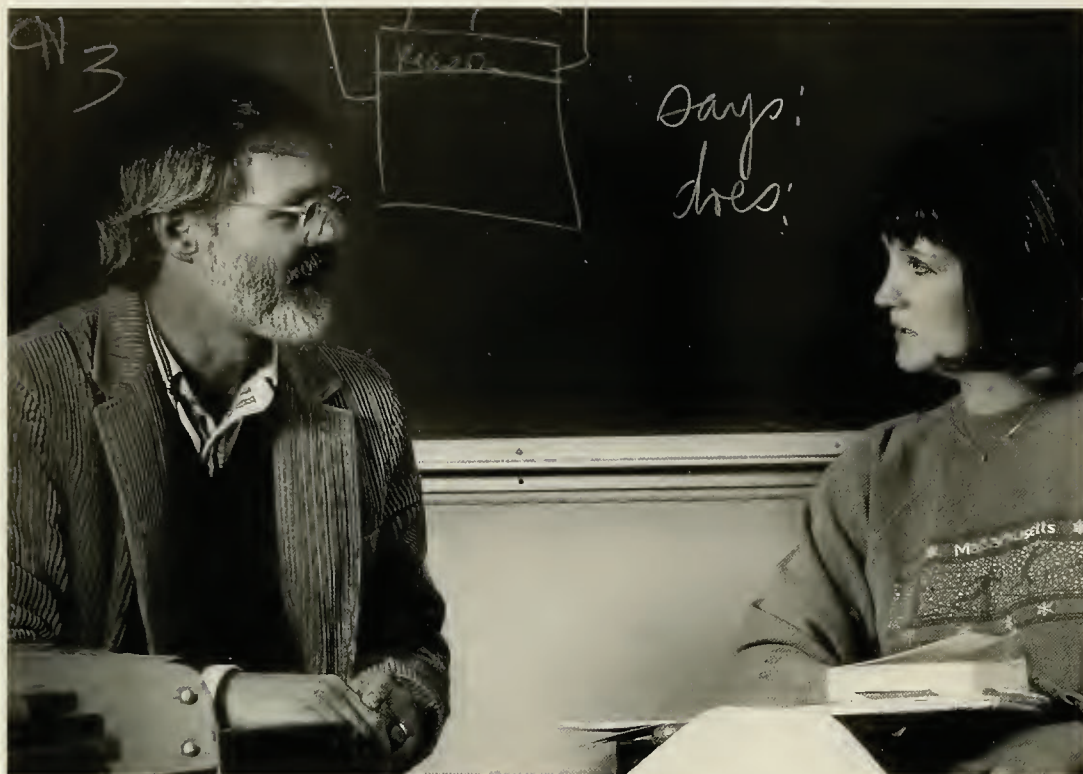
The process began in 1988 when John M. Trimbur, associate professor of English, was hired to develop a writing program and expand the Institute's course offerings in writ-

ing. A writing specialist with a background in rhetoric and composition, Trimbur asked William R. Grogan, now dean emeritus of undergraduate studies, to form a committee to oversee the writing program.

Today, the Writing Advisory Committee promotes the importance of oral and written communication and develops programs to integrate writing across the entire undergraduate curriculum. Trimbur chairs the committee, whose members are Herbert Beall, professor of chemistry, David DiBiasio, associate professor of chemical engineering, William Farr, assistant professor of

*"Writing is easy.
All you do is stare at a blank
sheet of paper until drops
of blood form on your forehead."*

—GENE FOWLER



JANET WOODCOCK

John Trimbur, associate professor of English, discusses a writing assignment with humanities major Teran Sacco. A writing specialist, Trimbur directs a variety of programs aimed at preparing some WPI undergraduates for careers in writing and helping all students communicate more effectively.

mathematical sciences, Thomas Keil, professor of physics, and Judith Miller, associate professor of biology and biotechnology.

Here are some of the programs that the committee now helps oversee:

Writing Across the Curriculum does just what its name implies: it aims to make writing (and speaking) an important part of every course taught at the Institute. To date, the program, which was initially funded with a grant from the General Electric Foundation, has been implemented in lower-division mathematics and science courses. It encourages students to use writing to promote learning and to connect writing and critical thinking.

"We assumed that students in their first two years at WPI receive practice in writing in their humanities courses," Trimbur says. "But to prepare them to do the technical or scientific writing called for in WPI's required projects, we needed to develop more opportunities for them to write as part of their math and science assignments."

Trimbur says the Writing Across the Curriculum project has been successful in increasing the number of faculty presentations and publications on the use of writing in the teaching of mathematics and science. For example, Beall and Trimbur have developed a booklet of reading and writing assignments called *Reading and Writing in Chemistry* and have conducted faculty workshops to assist other faculty members in

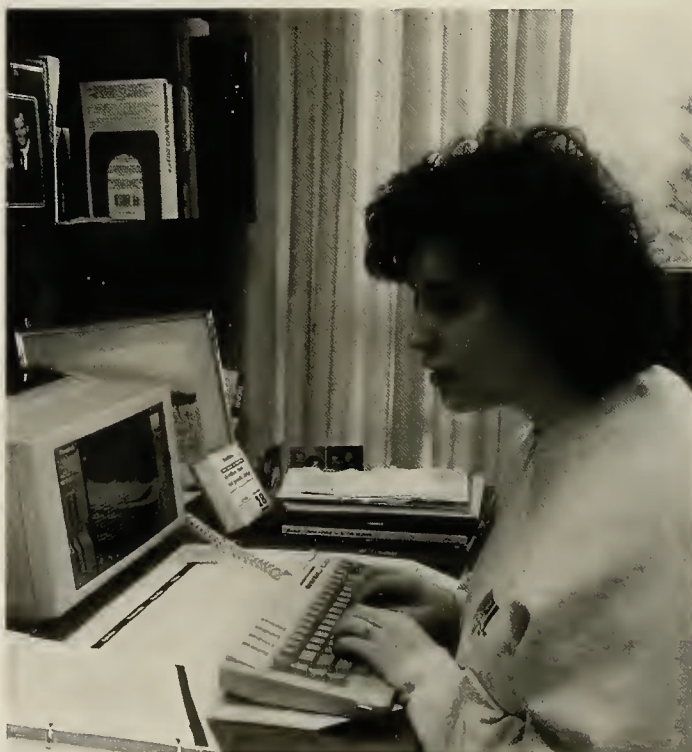
assigning writing projects to their classes and responding to the work their students do.

Last spring WPI, Clark University and Holy Cross College sponsored the Second Annual Writing Across the Curriculum Conference, the theme of which was "Science and the Postmodern World." Also last year, Beall organized WPI's Sixth Annual Conference on Chemical Education around the theme, "Writing as a Tool to Teach Chemistry."

Tutors at WPI's **Writing Resource Center** offer writing assistance at no charge in any academic area—from papers to project reports—and are available to help students with any other writing or writing-related work, such as resumes or graduate school and job applications.

The center,

located in Salisbury Laboratories, was established in 1975 to assist students with project work; it gradually evolved into a resource used primarily by international students. Since 1991, when Barbara L. McCarthy was



MICHAEL COURSEY

Technical writing major Renée LaFountain says her WPI education gave her an excellent grounding in both writing and science.

named director, the center has broadened its scope to meet the writing needs of all WPI students.

Last spring, Trimbur and McCarthy inaugurated an independent study titled "Peer Tutoring in Writing." Those who complete the course are offered jobs at the center. "The philosophy behind peer-tutor training is that students respond better to suggestions from fellow students than from faculty," says McCarthy, who notes that tutors also hone their own writing skills by teaching others. "The increasing numbers of undergraduates who take advantage of our services appear to bear this out.

"This is not a drop-off editorial service," McCarthy adds. "Although most students come to the center for help with a specific assignment, we don't just correct their writing. We want them to become writers, and we encourage them to interact with us. Professors are demanding improved writing skills in the papers they assign and in the projects they advise. Instruction in writing can benefit all students, not just those for whom English is a second language."

WPI's **Technical Writing** major is administered by the Institute's Interdisciplinary Studies Division. Its current directors are Trimbur and Stephen J. Weininger, professor of chemistry.

It was Barbara O'Toole '88 who blazed the trail for today's technical writing majors. In her third year as a mechanical engineering major, O'Toole decided that her interests lay more in writing about technology than in developing technology. Trimbur developed an intensive technical writing program for O'Toole, who graduated as an interdisciplinary major. She is now employed as a technical writer at Stratus Computer Inc. in Marlboro, Mass.

"I document communications software and hardware," she says. "The manuals I write consist of programmers' guides, network and configuration and administration guides, and general product bulletins. I also use a lot of my computer-aided design course work as I produce graphics and illustrations for these manuals."

Technical writing became an official major in 1990; 15 undergraduates are currently enrolled in the program. Majors take half their courses in writing and half in a technical or scientific concentration. The writing concentration consists of all three of WPI's

writing courses—Elements of Writing, Nonfiction Prose and Writing in the Professions—plus three independent studies—Composing Theory and Research, Rhetorical Theory, and Peer Tutoring in Writing.

"Because of the interdisciplinary nature of the program, our students have a strong technical and scientific background," Trimbur says. "They are well-prepared to work in a variety of areas, including publishing, science journalism, or hospital or museum public relations."

Senior Renée LaFountain of Gansevoort, N.Y., is one of the new crop of technical writing majors. Like O'Toole, she didn't start out to be a writer. "I came to WPI for the science, math and engineering programs and ultimately decided to major in biology," she says. "By the time I realized biology was not where I wanted to spend the rest of my life, I had become quite involved in the school. For me it was just a matter of finding a program that fit."

LaFountain, who plays piano and trumpet, is president of WPI's student jazz program. After completing her Humanities Sufficiency requirement on jazz in the 1950s and her IQP on transgenic animals and their use in research, she realized how much she had enjoyed writing and organizing the projects. When she learned she could complete the degree requirements for a technical writing major and still graduate on time, she made the switch.

Trimbur says WPI is particularly well-equipped to educate students like LaFountain. "Most technical writing programs come out of English departments," he says. "While those students take the same number of



MICHAEL DORSEY

From top, in WPI's Writing Resource Center, writing tutor Kathleen M. McKenna '94 reviews a paper with Ly C. Chhem '95 while center director Barbara L. McCarthy, instructor of communications, reviews a tape of a public speaking assignment with Alex Cardenas '96, a native of Panama.

courses in writing as ours do, they don't have nearly the depth in a technical or scientific field. We've had a lot of positive feedback from employers, who tell us that our students are much more fluent in engineering and science than those who've been educated at liberal arts colleges."

"I'm still a scientist at heart," says LaFountain. "When I learn about something going on in biological research, for example, I understand it from a scientist's perspective. The challenge for me as a technical writer will be to take that highly scientific information and translate it into terms the average person can understand."

As she starts to look for a job, LaFountain says she feels "really marketable. I have a strong science background and I can write. I believe I can compete favorably against technical writers who are humanities majors and who've only taken introductory science courses, as well as against scientists who've never learned about writing. It's the best of both worlds."

—BONNIE GELBWASSER



Alden Reborn

For 50 years, Alden Memorial has served as a social and cultural center for the WPI community.

After a yearlong restoration, this gem of a building has emerged as a modern center for the performing arts.

Now, from early morning until late at night, the halls are alive with the sound of music—and drama.

By MICHAEL DORSEY



PHOTOGRAPHS BY JANET WOODCOCK



November 19, 1992. 7:30 p.m.

Backstage in Alden Memorial, students line up before long, lighted mirrors in two new dressing rooms, putting on stage makeup and getting into costumes. In a half hour they'll be on stage, as a high-tech explosion of lights, video projections, music, sound effects, fog and smoke heralds the opening of an imaginative production of Shakespeare's *The Tempest*.

November 24, 1992. 7:00 p.m.

Walking down the corridor of Alden's lower level, a visitor is enveloped by the sound of young voices. Lining the risers in the Janet Earle Room, the 50 members of the Men's Glee Club practice a demanding arrangement of *Greensleeves*. Across the hall in the Perreault Chamber Rehearsal Room, the Women's Chorale warms up with a medley of Christmas songs.

December 1, 1992. 1:45 p.m.

In Alden's new music classroom, Professor David McKay is reviewing a lesson for students in his course on the fundamentals of music. Seated at the piano, McKay guides the class through the finer points of harmony.

December 3, 1992. 7:35 p.m.

As late arrivals search for seats on the floor of the great hall and in the balcony, the Concert Band strikes up a festive tune, beginning the annual holiday concert that will showcase most of WPI's 15 musical groups.

Some 52 years after it was built, Alden Memorial has gotten a new lease on life. Designed to fill the need for a multipurpose auditorium on campus and to provide a home for a central library, the building has been transformed into a modern and elegant center for the performing arts.

The transformation, in the planning stages since 1984, began just after Reunion in 1991 and was completed in time for Commencement in 1992. In addition to these activities, the renovated building has since hosted numerous events and meetings, including a special series of concerts and plays designed to showcase its new spaces and facilities. The various events were sponsored by the Applied Music Division, Masque (the student dramatic arts society) and the Social Committee, or SocComm.

But despite the nearly constant activity in Alden since it reopened, the building will not be officially rededicated until April 22, 1993, the 150th birthday of its namesake, George I. Alden (see Advance Word, page 2). On that day the members of the newly formed George I. Alden Society, a recognition group that honors alumni and friends who have included WPI in their wills or estate plans for at least \$25,000, will enjoy a dinner and an address by Richard H. Gallagher, president of Clarkson University, former WPI provost and a pioneering researcher in the field of finite element analysis. Donors to the restoration, special friends and selected members of the WPI community will also be invited to the event.

The \$2.7 million restoration, designed by the firm of Shepley, Bulfinch, Richardson and Abbott in Boston and completed by general contractor Cutler Associates in Worcester, was largely funded by a \$1.6 million grant from the George I. Alden Trust, which gave the building to the college in 1940 as a permanent memorial to Alden. Other generous gifts were received from the Surdna Foundation, the George C. Gordon Trust, the Daniels Foundation, and a number of alumni and friends (see box, page 21).

The Alden Memorial project combined careful restoration of what has been called one of the most beautiful college buildings in the Northeast, with the creation of new spaces and facilities for music and theater. Even before entering the building, one notices a major change: a new, spacious freight elevator that serves each of its four levels and the stage. A small extension was added at Alden's southwest corner to accommodate the elevator; due to a careful choice of brick and the reuse of original limestone cornices and moldings, the extension's facade is nearly impossible to distinguish from the original construction.



Opposite, under the direction of Margaret M. Konkol, the Women's Chorale performs during the annual holiday concert in the fully restored great hall of Alden Memorial. Above, Erica A. Curran '96 and Byung S. Yun '93 take advantage of new private rehearsal rooms.

Adjoining the extension is a new loading dock that makes it easier to deliver supplies and equipment to the building, a handicapped access ramp, and a new plaza linking Alden to the adjacent Sanford Riley Hall (see photo, page 15). The Class of 1942 earmarked \$100,000 of its 50th anniversary gift for the construction of the plaza and used another \$25,000 to set up an endowed fund that will ensure the plaza's maintenance in the years ahead.

Entering Alden on the main level, a visitor might almost fail to notice the results of the restoration, for in many ways the foyer and great hall look much as they did when the building was completed in 1940. But a more careful examination reveals the products of a loving



Above, Susan Vick, professor of drama/theater, gives the cast and crew of *The Tempest* some final comments in the greenroom before the curtain rises on dress rehearsal night. Opposite, from left, graduate student Andrew L. Hansford, Kristi J. Henricksen '94 and Hollybeth Normandin '94 in a scene from *The Tempest*. Below, Douglas Weeks, director of applied music, directs the Concert Band as it performs in the new Lora E. Spaulding Recital Hall, one of the new performing arts facilities in Alden.

restoration: the refinished marble staircase, the new hardwood floor, the plaster ceiling that replaced the old pressed-straw tiles, the refinished oak paneling and ceiling beams, and the carefully cleaned and restored iron chandeliers and stained glass window medallions.

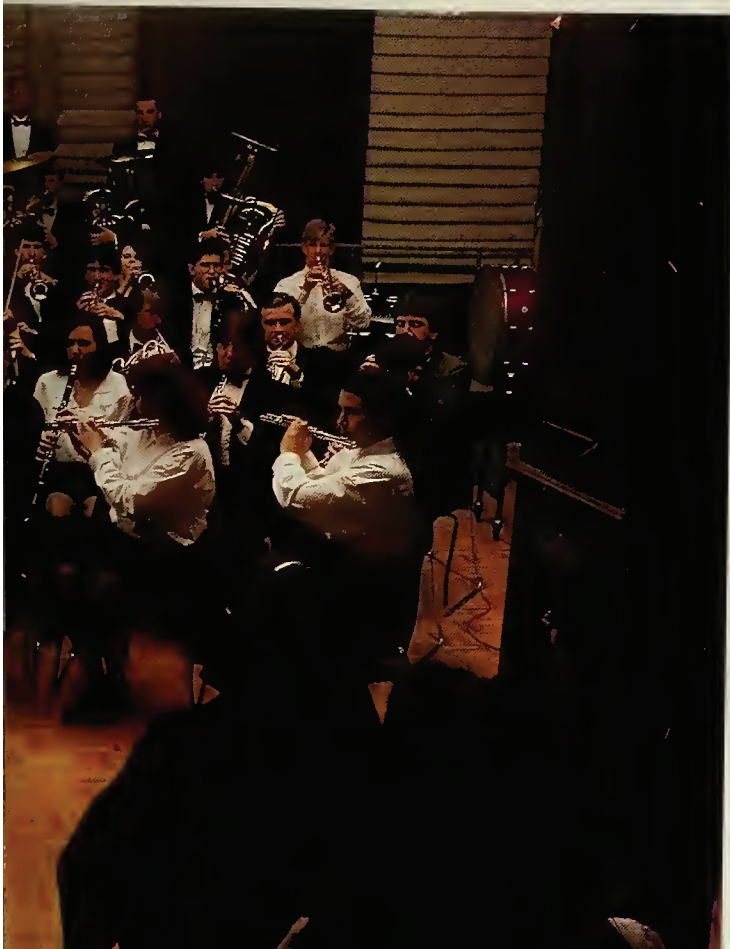
The great hall is also brighter, thanks to new lighting fixtures (these include new sconces that illuminate the stone carvings at each end of the ceiling beams). Like the rest of the building, the hall has also benefited from upgrades to the plumbing, heating and ventilation systems. There are also new stage and window curtains, new seating for 600 on the floor and 100 in the balcony, new sound-absorbing panels at the rear of the auditorium, a new acoustic shell with an adjustable ceiling, and a new electronic dimmer system and sophisticated pulley system for the stage.

Behind and adjacent to the stage are two new dressing rooms, a room for use by caterers (the auditorium will continue to host dinners and other catered events), and a fully restored greenroom, which serves both as a theater classroom and a place for performers to relax before going on stage.

One floor up, the offices of the music and theater faculty—in rooms that were originally rented to bachelor professors—have also benefited from a thorough face-lift. But to see the most dramatic evidence of the building's transformation, one must travel down to the lower levels.

On the ground level, a once dark, musty storage area has been turned into a brightly lit and well-





equipped scenery construction shop. This level also serves as storage space for the lighting and audio equipment used by Lens and Lights, a student group that provides lighting and sound services for the campus community. The scene shop is served by the new elevator, making it possible to bring flats and other set pieces right to the stage; previously, it was necessary to either build sets on the stage or carry the pieces up two long flights of stairs.

The floor just below the auditorium, long used as practice space by the college's musical groups, has been beautifully redecorated and rearranged to create a highly functional music education, rehearsal and recital center. With the addition of a set of risers, the Janet Earle Room has become the primary choral rehearsal room. Nearby, what was once an unfinished storage room has been turned into a music classroom.

The former Alumni Conference Room at the southeast corner of Alden is now the Ina Perreault Chamber Rehearsal Room. At the southwest corner, in a room that once served as a librarian's office, is a new computer-assisted music laboratory equipped with Macintosh computers, synthesizers and recording equipment. Adjacent to the front stairwell are an office and three new private rehearsal rooms, where students can practice their instruments without disturbing other building occupants.

The centerpiece of this new music center is the Lora E. Spaulding Recital Hall, located in what was originally the college library. In addition to a new wood floor, elegant curtains and refinished woodwork, the addition of risers, sound-absorbing panels and a grid of spotlights make this an ideal performing space for chamber groups. Lora Spaulding, the daughter of Ralph Spaulding '09, left the Institute a major unrestricted bequest in 1989, part of which was used to create this hall.

With its new look and new spaces, Alden is now home to the college's music and drama programs—both educational and extra-curricular. (It has also attracted the attention of regional performing arts groups—the Worcester Orchestra will hold a concert in Alden in May.) The Institute's five full- and part-time instructors of music—Douglas G. Weeks, administrator of applied music, Louis J. Curran Jr., associate professor of music, Richard G. Falco, director of jazz studies, Margaret M. Konkol, director of the Women's Chorale, and David P. McKay, professor of music—teach a wide range of courses in music theory and history and advise dozens of student projects each year, including Humanities Sufficiencies that focus on music or include a musical composition or performance.

Nearly all of the music faculty members also direct music groups. In recent years these well-traveled groups have made tours of Canada, Europe, Russia and Africa, in addition to their regular performances at WPI and at other colleges and universities. In 1992, for example, the Concert Band, Brass Ensemble, Stage Band and Jazz Ensemble toured Egypt, a trip that included a breakfast performance before the Sphinx and the Pyramids of Giza for the French and American ambassadors, the governor of Cairo and the mayor of Giza. At the same time, the Men's Glee Club performed in Great Britain, singing at Oxford University, Worcester Cathedral and before over 1,000 people in the Bethlehem Chapel in Rhos, Wales, where they were the guests of the Orpheus Male Choir, one of the most outstanding choral organizations in Great Britain.

A total of 215 students participate in the college's musical groups, Weeks notes. In addition, a number of Men's Glee Club alumni perform with female singers from the WPI community and other colleges as the University Chorus. "WPI's music groups enjoy a long and



Left, Louis J. Curran, professor of music, leads the Men's Glee Club through a rehearsal in the refurbished Janet Earle Room, which now serves as the primary choral rehearsal room. Below, clockwise from bottom, Matthew J. Calistro '96, Jason E. Macierowski '96 and Theodore L. Dysart '94 use the synthesizers and Macintosh computers in the new Computer Music Laboratory.

distinguished history," he says, "but I think it's safe to say that their popularity today is unprecedented. With the restoration of Alden, we now have a beautiful performing arts center that will enable us to further expand our programs and reach new levels of excellence."

Equally as popular as the college's music programs are its continually growing programs in theater. Under the direction of Susan Vick, professor of drama and theater, Masque, one of the oldest student clubs at WPI, mounts a major production each fall.

In 1992, the Masque production of *The Tempest* played to record houses four nights running. In fact, on Friday and Saturday nights, after the regular seats on the stage were all taken (to create a more intimate experience, audience members sit on an extension of the stage at Masque productions), latecomers willingly filled the balcony to watch the play from a less than perfect vantage point.

Enthusiasm for the dramatic arts at WPI seems to grow in intensity each year, says Vick, who notes that about 125 students were directly involved in the production of *The Tempest*, while many others in several student organizations served as ushers, ran a cafe and performed music before the show.

Helping fuel that excitement is an annual festival of original, student-written and -directed plays called New Voices. Now gearing up for its 11th season, New Voices was launched by Vick as a response to a ground swell of interest in playwrighting among WPI students. Now, each January a team of five student dramaturges reviews some 50 scripts submitted by members of the WPI community (mostly students) to choose 15 or so for the April production. Ultimately, more than 400 students will be involved in the 1993 New Voices as directors, actors, stage managers, crew members, publicists, and so on, Vick notes.

Excitement about theater at WPI has grown to the point where one dramatic arts group can no longer contain it, Vick says. Since 1989, MW Repertory Theater, etc., WPI's version of an "off-Broadway" theater group, has been producing two plays a year at various locations on campus. Chain Link Fence, an improvisational theater group, also performs regularly. Another student group mounts productions during the summer months, and the members of Alpha Psi Omega,



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THE SURDNA FOUNDATION
• Computer Music Laboratory •

THE DANIELS FOUNDATION
• Equipment for Computer Music Lab •

MARY KNIGHT,
WIDOW OF FREDERICK H. KNIGHT '28
• Music Classroom •

INA W. PERREAULT,
LATE WIFE OF RAYMOND J. PERREAULT '38
• Chamber Rehearsal Room •

JOSEPH GLASSER '35
• Performers' Dressing Rooms •

LILLA MOLDER
• Practice Room •

RICHARD PROUTY
• Practice Room •



Members of several WPI musical groups pose before the Sphinx and the Pyramids of Giza during a 1992 tour of Egypt, one of several overseas trips made by the Institute's music and theater groups in recent years.

the dramatic honor society, help in all of these productions.

Like the Institute's music groups, Masque has also developed a distinctly international flavor in recent years. Since 1988, the group has made frequent treks to the Fringe, part of the Edinburgh Arts Festival in Scotland, the largest gathering of its type in the world. In the summer of 1991, Vick and 30 students performed two plays from the annual New Voices festival for audiences at the Fringe.

"This is one of the best things we've ever done," Vick says. "It is exciting for students not only to experience the best the world theater has to offer, but to see their own work with an international perspective."

The growing interest in activities, courses and projects that revolve around music and theater has led many at the Institute to wonder how those interests might intersect with other academic programs. "As we search for ways to develop our curriculum to respond to what the real world is doing—particularly the downsizing of the defense industry—it

will be increasingly important for WPI to provide programs that combine the study of an appropriate technology, like electrical and computer engineering, with a rich immersion in music and theater, leading to careers in growing fields like the media and the arts," notes Lance Schachterle, associate dean of undergraduate studies and chairman of the Interdisciplinary Studies Division.

Currently, a committee of faculty members from the Humanities, Electrical and Computer Engineering, and Computer Science departments is just beginning the process of looking into the feasibility of major or double major programs that combine music and technology.

Notes William R. Grogan, dean emeritus of undergraduate studies, who is assisting the committee, "Music is becoming an amazingly sophisticated field. It not only involves electrical engineering, which plays a role in audio and electronic sound reproduction, but computer science, since so much of music is now reproduced and transmitted digitally.

"The average electrical engineer does not have much background in music, nor does the average musician have much background in computer and electronic technology," Grogan adds. "Someone conversant with both areas could have quite an interesting career."

At WPI, such a major or dual-major program would build on a great deal of existing student interest, notes Louis Curran. "It would be a natural for the Institute," he says. "So many students already have synthesizers or computers that reproduce music, and many more are highly into audio. And, our computer music courses are always oversubscribed."

"We have, through the humanities and arts program at WPI," Schachterle adds, "the opportunity to show that both sides—technical and humanistic—are creative, that both sides can be well-developed, and that a combination of those two can provide an increasing number of students with exciting career opportunities."

Restoring a Legend

As resident program manager for the Pentagon Renovation Program, Tony Leketa '69 is responsible for one of the largest construction projects ever undertaken by the U.S. Army Corps of Engineers.

BY RUTH TRASK

Fifty years after it rose from the site of a former military depot in Arlington, Va., in one of the most massive and ambitious construction projects undertaken in modern times, the Pentagon is getting a much needed overhaul. Among the most easily recognized buildings in the world and the hub of the nation's defense programs, the Pentagon has fallen on hard times in recent years.

After nearly five decades of neglect, the aging heating and refrigeration plant is no longer up to the task of heating and cooling the building's 6.5 million square feet of floor space. Its interior walls are riddled with holes made by roving utility carts. Even the building's massive reinforced concrete facade is cracking and spalling in places. The renovation program is being managed by the U.S. Army Corps of Engineers. It is one of the largest jobs ever undertaken by this, the largest construction organization in the world.

The resident program manager for the \$1.4 billion project is Anthony F. Leketa '69, an engineer with the Army Corps of Engineers. Leketa is no stranger to huge construction projects. In the late 1980s, he headed the \$1.3 billion Fort Drum Expansion Program in New York, which included the largest military construction contract awarded since World War II.

"Fort Drum was a civil engineer's dream," says Leketa, whose management of the mammoth project earned him the

Wheeler Award, the highest honor given by the Society of American Military Engineers, and the Army's Meritorious Civilian Service Award. "Now I'm working on the Pentagon. That's pretty exciting stuff for a former Worcester boy who once played with a \$1.50 Erector set."

Leketa describes the Pentagon project

as his "second once-in-a-lifetime challenge." While supervising a staff of 165 on the construction of Fort Drum, he had the opportunity to build a city on 7,000 acres of virgin woodland. Like the Pentagon construction program (see related story, page 25), the Fort Drum effort was marked by a relatively short but intense



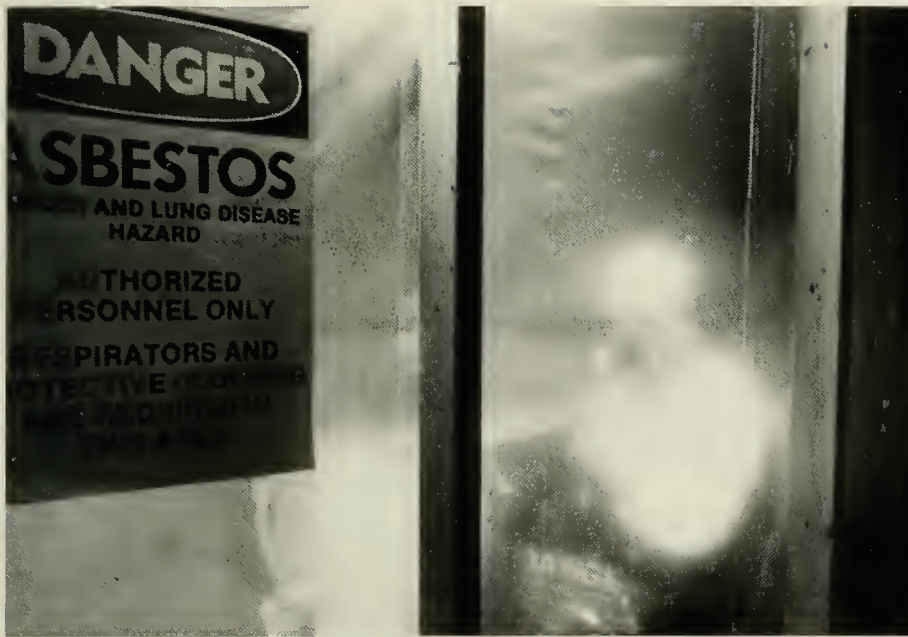
Anthony Leketa on-site at the Pentagon.

PHOTOS COURTESY OF U.S. ARMY CORPS OF ENGINEERS

period of design and construction. Just three years elapsed from the start of design work to the time soldiers moved in in 1987.

The army post, which can accommodate 10,000 soldiers and 25,000 civilians and family members, contains 35 miles of new roads, 20 barracks, 3,950 housing units, child development and youth activities centers, a fire station, a safety and law enforcement center, chapels, a heating plant, a bowling alley, a shopping mall and more than 100 other buildings.

"Building a shopping center in the middle of Washington, D.C., is an everyday occurrence," Leketa says. "But there was



A major challenge facing the engineers planning the Pentagon Renovation Program is the large quantity of asbestos used in the building's construction.

nothing like that at Ft. Drum. We started from scratch." As project director, Leketa was required to address concerns from citizens in adjacent Watertown, N.Y., whose population doubled following completion of the construction program.

He also monitored the potential environmental impact on Lake Ontario, which lies just 25 miles away, making changes as necessary to comply with environmental regulations. The proximity of the post to Canada mandated additional considerations in the environmental area, especially with respect to emissions from the facility's coal- and wood-burning heating plant.

The Fort Drum "new city" project gave Leketa the opportunity to build something major from the ground up. He says he felt a great sense of accomplishment when it was over. "I loved that job," he says. "It meant working a zillion hours, but it was one of the most exciting assignments I've ever had—until now. The Pentagon renovation project tops everything."

The renovation of the five-story Pentagon, the largest low-rise office building in the world, is providing Leketa an entirely different set of challenges. Consider the magnitude of the project: the Pentagon covers 34 acres, has three times the floor space of the Empire State Building, and is twice the size of the Chicago Merchandise Mart. The Capitol Building could easily fit into any one of its five wedge-shaped sections. It contains more than 17 miles of corridors and has nearly 8,000 windows. It supports an office population that fluctuates around 25,000.

It is a self-sustaining community. Besides its own heating and refrigeration plant, it

has medical facilities, a shopping mall, dining and athletic facilities, a post office, a library, a police force, and easy access to the Metrorail and Metrobus systems.

Recognizing the building's continuing decline and the need to have an efficient, logically arranged administration building for the nation's armed forces, the government decided to renovate the Pentagon in the early 1980s. In 1988 the Department of Defense commissioned the firm of Howard Needles Tammen & Bergendoff to develop a renovation concept. The firm evaluated nine possible strategies, ranging from renovating the entire building all at once to breaking the project into 150 increments of 44,000 square feet each. Ultimately, it was decided to renovate the building in five approximately equal wedges, to be completed one wedge at a time. The basement will be renovated separately.

The major goals of the 10-year project are to provide safer working conditions (the building is woefully deficient in complying with current life safety codes), a modest increase in administrative space, better traffic flow inside and outside the building, better organizational alignment and security, enhanced communi-

cations, and a marked increase in energy efficiency.

In 1989 the Defense Department named the Corps of Engineers the design and construction agent for the program; the day-to-day activities are being managed by the Corps' Baltimore District, where Leketa is currently assigned. He says the major challenges the Corps faces revolve around the fact that the building has never had a major face-lift. In addition, there have been few changes to adapt the structure to current codes and to the changing nature—and electrical demands—of office work.

"These demands are overtaxing the original utility systems, resulting in increasingly frequent power outages," he says. "It is now common for 20 localized power outages to occur each day during the summer; this rises to 30 to 40 during the winter. The original heating and refrigeration plant is virtually out of service, as the boilers and chillers are inoperable. The distribution of heat and air-conditioning is equally unreliable, and steam and chilled water are furnished by packaged rental boilers and chillers."

In constructing the building's interior, the architects chose to use extensive amounts of asbestos-laden material. Asbestos is found in floor tiles, mechanical equipment insulation (including ductwork made of asbestos board to conserve metal for the war effort), the finish coat of all ceiling plaster, and some interior walls.

Under Leketa's direction, the entire building will be demolished to structure and completely rebuilt. In addition, all



A view of the Pentagon's deteriorating heating and cooling plant.

mechanical, electrical and communications systems will be replaced, a brand new HVAC system installed, all asbestos removed, all windows replaced, and the exterior given a face-lift.

But the renovation won't just overhaul the building's physical structure. Since it opened at the height of World War II, the Pentagon has become an increasingly complicated and congested warren of offices, corridors and stairwells. Related offices are now often located at distant corners of the building and traffic patterns can be confusing for those not familiar with them.

As part of the renovation, space assignments will be reorganized so tenants with similar functions will share the same or adjacent space. This should eliminate a great deal of corridor traffic, Leketa says. The second floor will become the primary level for horizontal circulation in the building; new passenger elevators (the building currently has no passenger elevator service) will introduce vertical circulation, with tenants being organized around their own vertical circulation systems. A corridor management plan will be developed to separate service and pedestrian traffic between office and service elevators.

The Pentagon project also includes some aesthetic changes and the construction of an extension to the building, parts of which are listed on the National Registry of Historic Places. The 500,000-square-foot extension, called the Pentagon Maintenance Facility, will be built at the Mall Entrance. It will house light industrial functions such as the maintenance shops, the Defense Protective Services, the three Pentagon medical clinics and the loading dock.

The basement/mezzanine level will be

completely renovated, adding about 200,000 square feet of usable space. New two-story, secured access points will be built at the main entrances and atriums will be created at the five inside corners of the building.

"The building itself appears to be basically structurally sound," Leketa says. "But there is significant cracking of concrete at the inside light wells and along the interior drive, which will have to be repaired. Also, the athletic club and basement floor slabs show signs of settling."

Improvements will also be made to the area around the building, including extensive site work, parking lot resurfacing and bridge restoration. Vehicular traffic patterns, especially in the south parking lot, will be updated to meet the demands created by the presence of nearby Interstate 395 and the addition of Metrorail and Metrobus service.

The renovation will be accomplished in eight phases, Leketa says. Throughout the process, the Pentagon, which is the center of the nation's military capability, must remain operational. To that end, Leketa's team must find temporary accommodations—either inside the building or elsewhere—for occupants. Leketa is supervising all design and construction activities from a new modular office complex at the north end of the Pentagon's north parking lot. His staff, which currently numbers 30, will grow to about 70 before the project is done.

Leketa's office recently awarded the first major construction contracts: for a new \$71 million heating and refrigeration plant and a \$6 million classified waste incinerator upgrade at the existing heating plant. The heating and refrigeration plant will provide 240,000 pounds of steam per hour and

37,500 tons of chiller capacity for cooling. "Currently," he says, "we are overseeing design contracts for the Mall Terrace extension and the basement renovation. We are also involved in more than 100 planning and development studies."

Prior to heading the Pentagon and Fort Drum projects, Leketa served as area engineer with the Northeastern Area Office of the New York District Corps of Engineers located at Fort Devens in Ayer, Mass. At Devens he was responsible for administering more than \$100 million in construction contracts for the U.S. government and supervising the activities of 50 engineers dispersed over nine field offices in the six New England states.

The projects he oversaw included a major rebuilding of Loring Air Force Base in Caribou, Maine, and the renovation of the Fargo Building (now known as the Barnes Building) in downtown Boston. The Barnes project was a total renovation of a 600,000-square-foot, nine-story structure.

A registered professional engineer in Massachusetts, Leketa didn't start out as a civil engineer. At WPI, he earned a bachelor's degree in chemical engineering and later earned a master's in civil engineering (water resources and sanitary engineering).

An active member of the Army Corps of Engineers for 10 years, he served as a captain on tours of duty in Korea and Germany. He graduated from the Army Command and General Staff College and is currently a lieutenant colonel in the Army Reserve in command of a military police battalion at Fort Eustis in Virginia. He was recently selected to attend the Industrial College of the Armed Forces at Fort McNair in Washington, D.C.

Leketa's memberships include Scabbard and Blade, Chi Epsilon (the civil engineering honor society), the American Society of Civil Engineers, the Society of American Military Engineers, the Reserve Officers Association and the U.S. Army Engineer Association. At one time he was a partner in his own business, Associated Building Inspectors. When he's not on-site at the Pentagon, he relaxes with photography, running, tennis and racquetball.

With one of the biggest construction projects in recent memory in full swing, there's little time for recreation. But that's no problem for Leketa, who says he thrives on the huge responsibilities his work for the Corps of Engineers brings him. "My idea of hell would be sitting at a desk doing design calculations," he says. "If I couldn't get out there and see what's going on, it would drive me crazy. The renovation of the Pentagon represents a monumental challenge, and I'm tremendously excited about being in the thick of it."



Leketa, far left, meets with some of the 30 staff members who currently report to him to review the myriad details of the complex renovation project.

Rome Wasn't Built in a Day, but the Pentagon Nearly Was

By ANTHONY F. LEKETA '69



Conceived over the course of a weekend in July 1941 and approved by Congress a month later, the Pentagon, the world's largest low-rise office building, was built in just 16 months by construction teams working around the clock.

The Pentagon. Mere mention of the name conjures up images of staff officers holding classified documents under their arms, hurrying to the offices of high-ranking generals. And the appearance of national media personalities reporting from the Press Room enhanced the impression of the Pentagon's power and importance during the Persian Gulf War. After the White House and the Capitol Building, the Pentagon is probably the most important building in the U.S. and probably the most easily recognized.

When war broke out in 1939, tremendous demands were placed on the War Department, which was then housed in several dispersed, overcrowded locations in the Washington, D.C., area. Lt. Gen. Brehon B. Somervell, commanding general, services and supply, is credited with the idea of consolidating the mushrooming department in a single building. And so, in the summer of 1941, the Pentagon was conceived.

Somervell called Lt. Col. Hugh J. Casey and George E. Bergstrom, president of the American Institute of Architects, into his office on the evening of Thursday, July 17, 1941. He directed them to produce, by 9 o'clock Monday morning, the basic plan and architectural perspective for a four-story, air-conditioned building to house 40,000 people.

Somervell received his plans on-time; they called for a reinforced concrete struc-

ture of 5.1 million square feet. Most interior space would be open, and only senior officials would have private offices. Parking was provided for 10,000 cars. The building would solve wartime space problems for many government agencies competing for room in Washington, and it was estimated that War Department productivity would increase by 25 to 40 percent.

The first site selected was the Washington-Hoover Airport on the Virginia bank of the Potomac; it was immediately ruled out because it was in the Potomac's floodplain. The next site considered was Arlington Farms, a 6.7-acre plot adjacent to Arlington Cemetery. It was bounded by five roads, and when Bergstrom and Casey fitted their concept to the site, a building with five sides seemed best.

The concept didn't have universal support and there was considerable debate in Congress about the need and scope for such a building. Nevertheless, the project was authorized on Aug. 25, 1941. But before construction could begin, the location was changed again. President Roosevelt objected to the Arlington Farms site and directed that the new headquarters be built farther south in an area then used as a military depot. Somervell kept the design concept and directed that construction start immediately.

The most amazing statistic of the origi-

nal project is the time it took to be built. A peak labor force of 13,000 workers took 16 months, working around the clock, from the date working drawings and specifications were started in September 1941 to completion in January 1943. That period included a late change to the plans that added a fifth floor and extended the construction schedule two months.

The chief of engineers at the time was Maj. Gen. Eugene Reybold, but the construction was completed under the direction of the deputy chief of construction, Col. Leslie R. Groves, who later headed the Manhattan Project. The contractor was a joint venture of John J. McShain of Philadelphia and Doyle and Russell and Wise Contracting Co., both of Richmond, Va. The chief architect/engineer was George Edwin Bergstrom, among whose accomplishments was the Hollywood Bowl in Los Angeles.

The Pentagon was designed for efficiency, not beauty. Roosevelt conditioned his approval of the project on a guarantee that no marble would be used in its design. The only significant ornament on the building's exterior is a commemorative cornerstone at the Mall Entrance—a limestone plaque listing the key participants in the building construction.

The architectural style used has been described as "starved classicism" and "government international." The Pentagon is a practical building. Its design and construction emphasized the conservation of critical war materials, particularly copper and steel. The low structure allowed reinforced concrete to be substituted for a steel frame; the mile-round perimeter wall is also made from reinforced concrete faced with Indiana limestone. It has been estimated that enough steel was saved in the construction of the Pentagon to build a battleship.

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INVESTING THE FUTURE

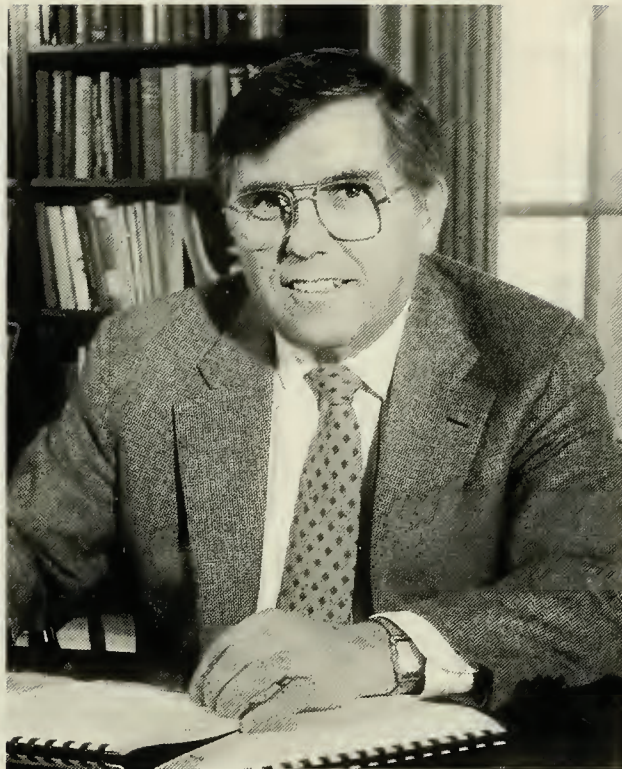
In recent years, WPI has taken a long, hard look at how it manages one of its most vital resources. Out of that self-examination has come a comprehensive strategy for investing the endowment, a strategy that reflects not only the need for greater endowment growth as the Institute plies the uncertain financial seas of the decade ahead, but the critical role endowment earnings will play in WPI's ability to grow and change as higher education—and society itself—evolve.

BY DIANE BENISON

If they think about it at all, most people tend to envision an endowment as a large pool of money, passively invested. Until recently, that was largely true.

In its simplest form, an endowment is a permanent fund, the earnings from which are used to provide ongoing financial support to an institution. Unlike the reserve account a business might set up or the savings account an individual might establish, an endowment is not intended to be a cushion against bad times or a source of financial reserves. Rather, it is a permanent working asset that will continue to generate funds for current operations as long as the institution exists.

In higher education, endowment is usually made up of two components: true endowment and various funds functioning as endowment. True endowment consists of endowed funds that donors have designated for specific programs or purposes. The second component, sometimes called board-designated or quasi-endowment, consists of funds placed in the endowment—usually at the election of the board of trustees—to be invested and used as if they were part of the true endowment. About 40 percent of



JANET WOODCOCK

WPI treasurer Robert W. Gailey drafted a formal investment policy with the objective of enhancing the return on WPI's endowment assets while protecting the endowment's purchasing power.

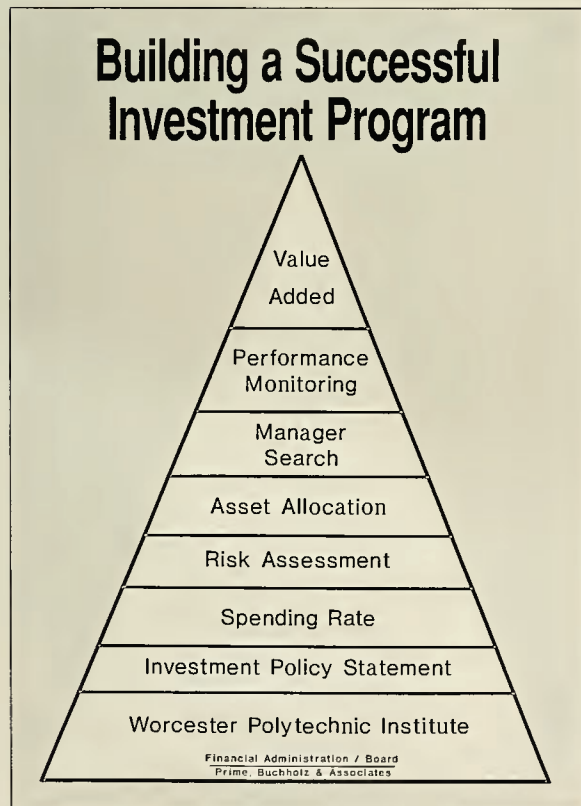
WPI's \$118 million endowment is true endowment; the remainder is board-designated, according to Robert W. Gailey, treasurer and vice president for business affairs.

Because they have not been restricted by a donor, quasi-endowment funds can be withdrawn and spent at the discretion of the trustees. In practice, though, boards are usually unwilling to treat quasi-endowment as a savings account because of the value of having the predictable income these funds generate. As RPI president Roland W. Schmitt said in a recent talk at WPI, "Finances cannot make a university great, but their lack can most assuredly keep one from becoming great."

A predictable income stream from endowment is one of the four principal sources of revenue for most colleges and universities. The others are tuition, gifts and research funding. As many colleges struggle to rein in tuition increases, as a poor economy and changing national priorities put the squeeze on corporate and individual gifts, and as federal and state research funding becomes scarcer, the importance of predictable endowment earnings has never been greater.

As they are at most colleges, endowment earnings are added to the college's general fund to be spent on current programs and activities. At WPI, a large and growing portion of those operating funds is spent on student financial aid. During the fiscal year that ended June 30, 1992, for example, when about \$4 million in endowment earnings were applied to the general operating funds, the Institute provided students with nearly \$10 million in financial aid from its own funds.

"Clearly," notes WPI President Jon C. Strauss, "without those endowment earnings—including about \$1.5 million derived directly from endowment funds restricted to finan-



cial aid—WPI would be hard-pressed to provide that level of financial assistance to its students—and far less able to compete for talented young men and women.”

“I think institutions like WPI do very well to have endowment as part of their financial skeletons,” notes former WPI treasurer Joaquim (Joe) S.S. Ribeiro '58, who is currently principal of Jefferson Financial in Jefferson, Mass. “A good solid endowment is part of your balance sheet. But its value lies not only in the fact that it generates funds; it also gives the institution a sense of steadfastness and strength. And it gives people who are dealing with the institution the feeling that it is here to stay.”

The fiduciary responsibility for WPI's endowment has always rested with the Board of Trustees. During the Institute's early years, the board delegated that responsibility to various trustees or administrators. Often, the task of prudently managing the endowment funds fell to a single individual, generally the Institute's treasurer. That manner of handling endowments was neither uncommon nor unreasonable, for until recently the financial markets were simpler than they are today, with far fewer options for investing money.

At some point, as the board began to implement a committee system, oversight of the management of the endowment became an official function of the Budget and Finance Committee. In practice, however, it was still often a one- or two-person job.

That was how things were in 1964, when John E. Hossack '46 joined the board. Like his father, Archibald Hossack '12, John Hossack spent his entire career with American Appraisal Co., the international real estate and asset appraisal firm headquartered in Milwaukee. And like Archibald Hossack, who was a WPI trustee for more than 10 years, serving for much of that time on the Budget and Finance Committee, John would spend many years on the trustees' budget oversight committee.

When Hossack was named to the committee in 1966, most of the endowment funds were being managed by local banks. Believing that bringing more diversity to the endowment management team would result in greater security for the funds and a greater likelihood of endowment growth, he advocated moving some of the endowment funds out of Worcester and into the hands of other investment managers. His arguments were persuasive, and the board soon voted to do just that.

That decision marked the start of an era of great change for the management of WPI's endowment, although Hossack, who became chairman of the Budget and Finance Committee in 1971, says he couldn't have foreseen then how far-reaching that change would ultimately prove. For no one, Hossack notes, could have predicted the extent to which the world of investment would evolve, nor could they have foretold the financial crunch that would bring the management of college and university endowments to prominence just a few decades down the road.



A WPI trustee since 1964 and the first chairman of the board's Investment Committee, John E. Hossack '46 has long been an advocate of the need to protect the endowment principal from erosion by inflation.

From the beginning of his tenure on the Budget and Finance Committee, Hossack was a strong proponent for the need to protect the endowment's principal from erosion by inflation. “WPI should have a goal of earnings—plus inflation,” he says, “and the inflation portion should be plowed back into endowment to preserve its purchasing power. If you don't do that, you're just gradually eating your cake.”

At the recommendation of Hossack's committee, the Institute established a formal “spending rule,” sometimes called the “spending rate.” A spending rule defines exactly how much of the earnings from endowment may be used each year to meet current operating expenses. WPI's spending rule sets that amount at 5.5 percent of the average market value of the endowment—and its accumulated income and gains—for the previous two years.

For example, if the total endowment were valued at \$100 million in one year and \$110 million in the following year, its average market value for those two years would be \$105 million. According to the spending rule, in the third year the Institute could remove 5.5 percent of that value, or \$5,775,000, from the endowment and add it to the income side of its restricted and unrestricted budgets. The spending rule allows WPI to make reasonable predictions about how much money will be available from the endowment each year, Gailey says, making the budgeting process more orderly.

WPI's 5.5 percent spending rate is slightly higher than the average of the rates adhered to by the country's more

From a \$100,000 Seed, A \$118 Million Oak Has Grown

It may not seem like a great deal of money today, but when John Boynton turned over his founding gift of \$100,000 to the trustees of the new Worcester County Free Institute of Industrial Science in 1865, it was nearly everything he had amassed during a long and successful career as an entrepreneur and bank president.

In accepting Boynton's fortune, the trustees took on a lofty responsibility, for that gift would become the seed for the Institute's endowment. Through prudent investment and the addition of many more gifts, that \$100,000 seed has become a mighty \$118 million oak.

That growth didn't happen overnight, of course. As the graph on this page shows, the majority of the ascent has occurred only within the last few decades. In fact, as recently as 1964 the fund stood at about \$18 million, one-tenth of its current value. Four major fund-raising campaigns since then—the *Centennial Fund* (1964 to 1967), the *Plan to Restore the Balance* (1972 to 1977), the *Capital Program* (1980 to 1983) and the *Campaign for Excellence* (1985 to 1990)—have helped provide momentum.

During the 1980s endowment growth was aided by a robust economy that yielded high returns on all types of investments. That positive environment plus the great success of the *Campaign for Excellence*, which exceeded its \$52.5 million goal by 21 percent, enabled the endowment to surge from \$38 million as the decade opened to more than \$100 million as it closed.

The success of recent years is in sharp contrast to the endowment's first few decades. In those early years, persistent debt and frequent deficits plagued the college. A treasurer's report from the early 1880s notes a \$15,100 shortage in the endowed funds due to heavy drafts made upon them.

Generous gifts from Ichabod Washburn, Stephen Salisbury, David Whitcomb and George Hoar, along with an appropriation from the state, helped the endowment grow to just over \$379,000 by the end of 1882. The following year the Institute launched a \$110,000 campaign to build the fund; in the end, half that much was raised, largely through a few major gifts.

For many years the Institute depended on regular state grants to fund its operations and enlarge its endowment. But in 1917 the state legislature passed the "Anti-Aid Amendment," which called for the end to general state grants to private educational institutions. By the time these allocations ended in 1921, the Institute had benefited from more than \$800,000 in state funds.

To replace the state money, WPI needed to increase its \$1.1 million endowment by \$1 million. But that would just maintain the status quo; to pull itself out of a period of stagnation and prepare for the future, the college would need an additional \$1 million.

A fund-raising campaign was launched, which drew support from nearly 90 percent of alumni. A major incentive was a challenge grant of \$350,000 from the General Education Fund, created by John D. Rockefeller with the intention of increasing teachers' salaries across the country. To receive the funds, the college had to raise \$650,000—a goal it ultimately achieved.

About \$375,000 was accrued via a novel fund-raising vehicle called the industrial sustaining scholarship. Through this program, a company, with a gift of \$10,000, could create a scholarship that gave it the right to name an employee or the child of an employee on a yearly basis to attend WPI tuition free.

In all, more than \$1.5 million was raised in the brief campaign. While well short of the \$2 million goal, the drive got the Institute out of trouble, bridged the gap created by the loss of the state grants, and brought the value of the endowment to more than \$2 million by 1922.

But more important, the campaign highlighted the vital importance of the endowment to the ongoing success and continuing growth of the Institute. It also set a new standard for financial support for alumni and friends of the half-century-old institution at the same time it laid the groundwork for the next 75 years and the next \$116 million of endowment growth.

—MICHAEL DORSEY

WPI's Endowment: 1865 to 1992 (in millions)

Methods for reporting the value of the WPI endowment have varied over the years. The values used in this graph for the years 1953 to 1992 are market values. The figures for the years 1936 to 1952 are book values. The values for the years prior to 1936 were taken from a graph in Herbert Taylor's *Seventy Years of the Worcester Polytechnic Institute* and are most likely book values.



1865 1870 1875 1880 1885 1890 1895 1900 1905 1910 1915 1920 1925 1930 1935 1940 1945 1950 1955 1960 1965 1970 1975 1980 1985 1990 1992



William F. McCarron, left, and James R. Buchholz of Prime, Buchholz & Associates Inc., which serves the Institute as an independent endowment management consultant.

than 3,000 institutions of higher education. Like other colleges and university divisions that specialize in science and engineering, WPI has higher operating expenses than most liberal arts colleges due to the high cost of buying and maintaining the state-of-the-art laboratory and computer equipment needed to teach students and conduct research in technical disciplines.

Until recently, the spending rule was applied only to board-designated endowment. But in 1992 the administration recommended—and the trustees approved—applying the rule also to the true endowment, where it can legally do so. When donors stipulate that all income from their gifts be spent for specified purposes, the trustees have no choice but to comply. Only about 2 percent of the restricted endowment is covered by such stipulations, Gailey says. Over time, he notes, inflation eats away at those funds, diminishing their purchasing power. Because it is based on the need to account first for inflation, the spending rule will now help preserve the real value of the remainder of the true endowment over time.

Formalizing the spending rule and diversifying the management of the endowment were important first steps toward a comprehensive strategy for growing the endowment in a sound and secure manner. The stage for the next move down that path was set in the late 1970s and early 1980s. As the endowment enjoyed a steady rate of growth, consideration was given to the idea of separating its management from the other duties of the Budget and Finance Committee. With the increasing size of the endowment (see graph, page 29) and the growing complexity of the field of financial management, it was becoming clear that the endowment required more time, attention and input—and from a wider circle of people.

For while the creation of the Budget and Finance Committee had, in theory, spread the responsibility for super-

vising the endowment management over a reasonably large team, in reality that oversight responsibility still generally defaulted to just two people: Hossack and David E. Lloyd (then the Institute's treasurer), the two men who had the greatest interest in—and accountability for—the endowment.

By the mid-1980s, when the *Campaign for Excellence*, the Institute's most recent fund-raising drive, was launched, the idea of creating a separate entity to oversee the investment of endowment funds had earned the general support of the board, of the Institute's new president, Jon C. Strauss, and of Ribeiro, its newly installed treasurer and vice president for business affairs.

Strauss had been a chief financial officer at the University of Pennsylvania and at the University of Southern California at Los Angeles. When he came to WPI in 1985 he had a deep understanding of the role endowment plays in the long-term welfare of a college or university. Ribeiro, who had worked with endowment-like funds at several non-profit organizations in Worcester, also held strong views on the importance of managing the investment process. While Hossack, Strauss and Ribeiro were not always in accord concerning technical aspects of investing, they shared a passionate belief in the importance of protecting the endowment from erosion by inflation.

In 1986 the Board of Trustees created the Investment Committee—separate from Budget and Finance—to have fiduciary oversight over the management of endowment funds. Hossack served as its chairman until September 1992, when he turned the reins over to F. William Marshall Jr. and assumed the post of vice chairman.

As the *Campaign for Excellence* concluded on Nov. 11, 1990, adding about \$15.4 million of its \$63.7 million total to the endowment, Gailey, in consultation with the Investment Committee and Strauss, was deeply engrossed in the

work of writing a policy that established clear investment objectives and goals for WPI.

In separate interviews, Hossack, Strauss, Ribeiro and Gailey expressed similar sentiments about endowment management, sentiments that are reflected in the policy Gailey drafted. All noted that preserving the endowment's purchasing power is essential. But they also stressed the need to take more risks to produce a better return on endowment investments.

Strauss, who calls a strategy that encompasses both objectives "prudently aggressive," believes that the significant growth of the endowment during the 1980s (see graph below) may have created a false sense of security. "If you see that we've got a \$118 million endowment today and compare it to the \$50 million endowment we had just 10 years ago it looks pretty dramatic," he says. "But when you look at it in the context of an operation of our size, with a \$75 million operating budget and a \$150 million physical plant, it doesn't seem all that large." It is also important, Strauss notes, to compare WPI's endowment to those of other high-quality colleges and universities (see table).

A fundamental issue that faced Gailey and the Investment Committee as the policy was being drafted was how much of the endowment should be invested in three broad classes of assets: equities (stocks), fixed-income instruments (bonds and U.S. treasuries, for example), and specialized investments (such as real estate and venture capital). The resulting investment equation, they knew, would have to meet Strauss' prudently aggressive test.

The members of the Investment Committee decided the Institute would need a disinterested advisor if it were to effectively monitor and hone this and other investment practices and strategies. They realized that for the most part, the outside managers then employed to manage endowment assets could not act in that capacity, since some were also responsible for investing part of the WPI portfolio, while others were hired solely to provide comparative reports on the performance of the various managers.

Endowment Growth 1975 to 1990

for WPI and 12 Other Private Colleges and Universities

	Market Value of Endowment (in millions)			
	1975	1980	1985	1990
<i>Liberal Arts Colleges</i>				
Bowdoin	39.1	49.9	94.8	151.7
Bucknell	28.0	37.5	62.2	98.2
Colgate	23.8	34.5	69.8	136.0
Middlebury	31.0	62.0	128.4	227.8
Mt. Holyoke	41.4	58.2	96.8	180.0
Trinity	29.7	43.0	74.1	137.4
<i>Engineering and Science Institutions</i>				
Caltech	142.1	198.4	275.9	467.0
Carnegie-Mellon ...	103.4	119.2	193.5	299.2
Lehigh	53.2	61.9	130.1	260.4
Rensselaer	78.2	93.6	144.6	230.2
Rochester Institute of Technology	63.1	59.5	91.2	165.8
Rice	187.1	342.1	609.3	1,068.6
WPI	25.2	38.1	64.9	98.3

Source: Council for Financial Aid to Education

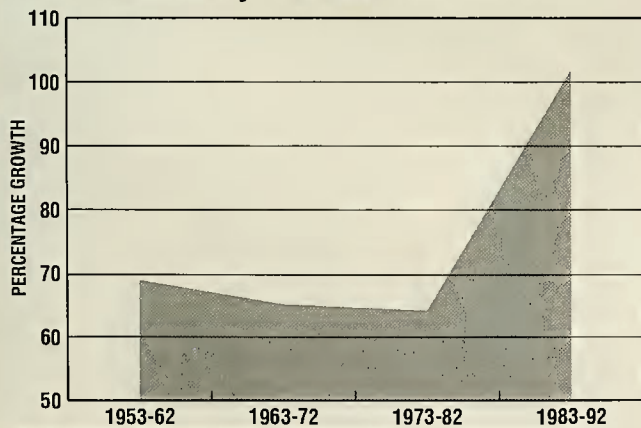
One exception was the firm of Prime, Buchholz & Associates Inc. of Portsmouth, N.H. Prime, Buchholz was then providing quarterly reports to the Institute on the performance of its endowment investments. Because of the company's expertise and experience with college endowments, WPI in the spring of 1991 chose the firm to act as its independent endowment management consultant.

With a staff of six professionals, Prime, Buchholz is a small, highly focused specialist. Now in its fifth year, the firm is a consultant to 48 nonprofit institutions that collectively hold more than \$3 billion in assets; 60 percent of the firm's revenue is derived from its work for colleges and universities. Founders Jon L. Prime and James R. Buchholz are former university chief financial officers; each, in fact, once served as the CFO at Rochester Institute of Technology. Prime was also vice president of Swarthmore College and St. Louis University, while Buchholz is former vice chancellor of Washington University in St. Louis and vice president of the University of Missouri System.

"There's been an evolution in the history of the way boards have managed endowments," Buchholz says. "Many years ago they were primarily focused on the maintenance of nominal value. But as inflation started ravaging institutions in the '60s, '70s and '80s, they became more and more interested in the maintenance of the real dollar values."

Buchholz says there wasn't much known about the performance of endowment funds in higher education until the mid-1980s when the first substantive report on the subject, *Improving Endowment Management*, was published by the Association of Governing Boards. Jon Prime was a principal contributor to that study, which measured the endowment performance, over five years, of 23 sample institutions and

**Growth of WPI's Endowment,
Decade by Decade: 1953 to 1992**



then compared those figures with national averages for colleges and universities.

The study found considerable variation in performance among the institutions studied. When the authors dug deeper to find the causes of that variation, they discovered that the better-performing endowments were "more disciplined, more systematic—they worked harder at it," Buchholz says. The authors listed six major characteristics that distinguished the more successful funds. At those institutions, the fiduciaries had

- articulated what they were trying to accomplish and written down their objectives.
- set a spending rate that took into account the need to maintain the purchasing power of the fund.
- decided how much volatility they were comfortable with.
- looked at historic rates of return for different classes of assets and decided how much of their funds would be allocated to each.
- chosen managers only after they'd decided on asset allocation, and selected those managers based on excellence, not on historic affiliation or proximity to the institution.
- and measured progress toward their own objectives and compared their performance to that of other institutions doing similar things with their investments.



NEIL MORUM

An endowment says an institution "is here to stay," says former WPI treasurer Joaquim Ribeiro '58.

Providing a Framework for Investing

Editor's Note: On May 15, 1991, the Board of Trustees approved a formal policy to guide the Institute in investing the assets that collectively make up the endowment. The board had previously passed a separate policy providing guidance on considering social concerns in making investments. Both policies are reprinted here in their entirety.

Investment Policy

By resolution, the Board of Trustees of Worcester Polytechnic Institute, on recommendation of the Investment Committee, has adopted the following investment objectives for the Institute's endowment:

Investment Objective

Recognizing the significance of the Institute's endowment in providing a critical margin of financial support for its long-term academic programs and general operation, the Board of Trustees assigns a high priority to the productive management of endowment assets. As a minimum, it is the objective of the Institute to preserve the real principal value of its endowment. It is hoped that prudent investment management and continuing development efforts will enhance growth beyond this minimum objective.

The endowment is to be managed for

total return, with a stated percentage of total market value used annually towards the Institute's budget. Such a policy will allow for the greatest investment flexibility, and for growth over the long term of the endowment's contribution to the Institute's operations.

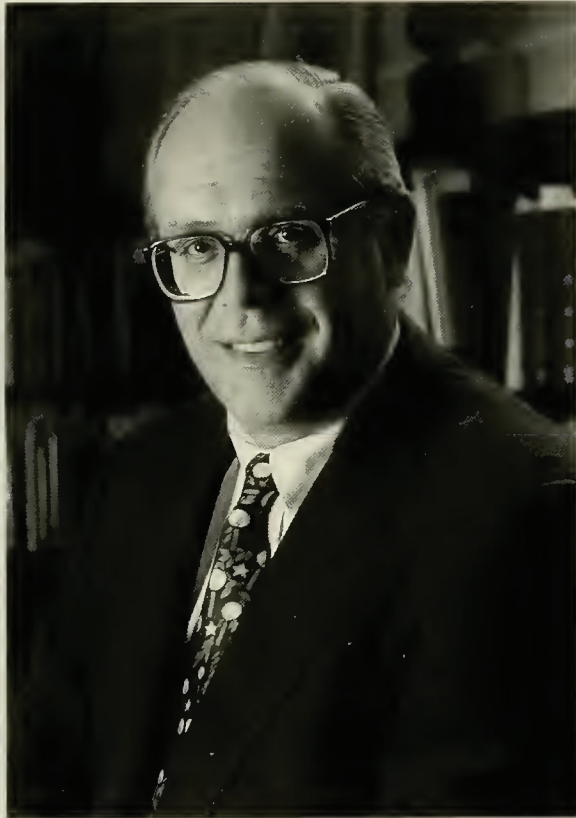
Asset Allocation and Spending Policy

As the maintenance of the endowment value in both real and nominal terms is best accomplished by a significant equity allocation in the overall portfolio, it is expected that the long-term asset allocation of the endowment will be approximately 60 percent equity, 35 percent fixed-income, and 5 percent specialized investments. The Investment Committee may authorize asset allocation as deemed prudent. It is recognized, however, that variation from the long-term policy reducing equity exposure can be detrimental to the university's long-term objec-

tives of spending and endowment growth.

The spending level from endowment assets is critical to the long-term maintenance of real endowment value. Therefore, the Institute adopted a policy of spending 5.5 percent of the average unit market value at close (June 30) for the previous two fiscal years. Such a policy allows for reasonable predictability of income available for current operations; allows for a gradual, steady growth of the endowment's support of the Institute's operation; and minimizes the probability of invading endowment principal over the long term.

As a general objective, the Investment Committee expects this spending rule to be funded by no less than 85 percent from earnings. Therefore, the sale of securities will not be necessary for more than 15 percent of the spending rule.



JANET WOODCOCK

Investment Committee chair William F. Marshall is helping chart a course for the endowment's future.

That was precisely the kind of methodical approach Gailey had outlined in the Institute's new policy statement (see box below). The statement was adopted by the trustees in May 1991, shortly before Prime, Buchholz came on board as an independent consultant. Since then, the firm, along with the Investment Committee and the administration, has been working to implement the policy.

Over the long term, the policy calls for the allocation of 60 percent of the endowment assets in equities, 35 percent in fixed-income vehicles and 5 percent in specialized investments. The Investment Committee has been working to realign existing endowment investments to meet those goals. At the end of 1992, the endowment was about 54 percent invested in the equity sector, 40 percent in the fixed-income sector and 6 percent in specialized investments.

Each broad asset class can be further divided into a number of investment categories, all of which have associated risks and potential for return. "There's no single formula for spreading assets among different classes—one guaranteed to eliminate risk and produce high returns," Gailey says. "But like any investor, WPI, by understanding its own tolerance for risk, applying judgment and paying attention to historic performance trends, can make informed decisions."

Investment Management Evaluation

The Investment Committee is authorized to engage investment managers for the direct management of the Institute's endowment assets. By such action, the board expects to acquire expertise in investment management, which will benefit the Institute's long-term endowment growth. Secondly, such delegation will provide for continuity in endowment management despite periodic personnel changes in board or Investment Committee composition, which will enable emphasis upon long-term objectives rather than short-term or ad-hoc decisions.

The investment managers will have discretion with regard to individual asset selection, although portfolio variability of return should be minimized through prudent diversification, both among individual assets and by asset class. The Investment Committee will review the investment manager's time-weighted returns vs. stock and investment style. Over a typical market cycle of three to five years, the investment manager is expected to outperform the broad market indices (i.e., S&P 500, Shearson Lehman Government/Corporate Bond Index, etc.) and exceed the median of comparable investment universes. Investment

performance data will be provided to the Investment Committee through quarterly reports and meetings with the investment manager as deemed necessary.

Policy on Investments and Social Concerns

The investment of institutional funds to reflect social, moral or political interests has become an issue of widespread concern throughout the United States. Universities, in particular, have struggled with the question of what is appropriate in this regard while still recognizing their basic long-term responsibilities as educational institutions. Answers are not easy; the whole subject is complex and highly controversial. Summarized below is a statement of policy on this issue:

1. Worcester Polytechnic Institute, through its Board of Trustees, has fiduciary responsibility for the assets of the Institute and the investment of Institute funds. It has been, and remains, policy that this fiduciary responsibility is best satisfied by investing funds to maximize their total return and then employing this return to promote the primary purposes

of the Institute. This policy recognizes the Institute's basic responsibility to its primary functions of teaching and research; it also respects the special fiduciary and ethical responsibility of the Board of Trustees for prudent investment of Institute funds for the educational purposes of the institution.

2. The Institute, as an investor and shareholder, supports affirmative action, equal opportunity and similar policies reflecting societal values. The Institute recognizes that, as an institution in society devoted to the search for and teaching of truth, it bears a responsibility in its investments to attempt to influence corporations engaged in practices contrary to the self-evident truths of individual human liberty and/or the good of mankind.

3. Ownership of investments and action on shareholder resolutions will be considered case by case by the President's Advisory Committee on Investments and Social Responsibilities to encourage corporate responsibility to employees, customers and society in general. The recommendation of the advisory committee will be transmitted to the trustee Budget and Finance Committee for review and possible action.

In 1992 the Investment Committee focused a good deal of its energies on the equity category, studying different models for selecting the best mix of stock classifications for WPI. One characteristic they chose for sorting out potential stocks is called "market cap," or the dollar value (capitalization) of each stock. The market cap is calculated by multiplying the number of outstanding shares by the current market price of a single share.

Large-cap stocks—those issued by big companies—tend to pay regular dividends and exhibit less volatility in price. Small-cap stocks, issued by smaller "growth companies," offer investors the

greatest potential for price appreciation, but tend to plow their profits back into the business rather than paying dividends. For investors who wish to shield their money from the ups and downs of the U.S. economy—and benefit from growth in other countries—international stocks offer a good alternative.

With those categories in mind, the committee, under chairman Marshall's direction, began a review of current fund managers and a search for new managers

with specialized skills in each asset class. "Historically, the cocktail wisdom among fiduciaries was that manager selection was where 90 percent of the value was added,"

Buchholz says. "But the research now is rather conclusive that the majority of the return is driven by asset allocation. Of course, you have to be properly represented by investment managers capable of making the best possible day-to-day buy-and-sell decisions, but asset allocation is going to determine the outcome.

"The highest and best service a board can give an institution is making policy decisions—about what they're trying to accomplish and which assets are going to do that for them," Buchholz adds. "So, in a way, this kind of discipline, which colleges have increasingly been following, enhances the board's role and its effectiveness by getting the board members focused on policy."

Buchholz says his firm believes that any investor's best opportunity for long-term capital appreciation lies in having a substantial portion of its assets invested in diversified stocks. "Years ago diversification meant that rather than having 10 equities in the account, you had maybe 20, 30 or 40, and that instead of 10 bonds, you had maybe 20 or 30. Now we're talking about multiple asset classes that move across time at different tempos, and about having multiple economies represented in a portfolio."

Two decades ago, the U.S. economy represented about two-thirds of the world's capitalization; now it's one-third, he says. That change reflects the growth in other econo-

mies around the world, rather than the shrinking of the U.S. economy. Because of that shift, American investors are no longer insulated, as they once might have been—or thought they were—from the impacts of world events, a strong argument for "enhancing our concept of diversification," Buchholz says.

"With diversification, you're seeking to put dissimilar ingredients into an overall structure, so that when volatility strikes one asset class, it won't necessarily hit the others. You don't want asset classes moving in the same direction at once. If one is heading south, you want to have another one headed north."

Investment Committee chairman Marshall, who has been a bank president and a chief executive officer, says he shares Buchholz's views on the importance of sound policy and discipline. "Next to the students and the faculty," he says, "the endowment is the college's most important asset because it provides for today and ensures that there will be a tomorrow. People and organizations that have contributed their money to WPI have a right to know that it's going to be managed wisely and carefully."

The product of that wise and careful investing should be a "performance that is considerably superior to the major indexes," Marshall says. [WPI uses the Standard & Poor's 500 Index to measure the performance of its equity managers and the Lehman Brothers' Government Corporate Intermediate Bond Index as a yardstick for its fixed-income managers.] "I am purposely setting a high standard of performance. And I know the committee is excited about the prospect of what that standard can mean for WPI."

Marshall has scheduled six meetings in 1993 for the Investment Committee, though the group may well try to squeeze in a few more, he notes. Since each meeting runs about three hours, that represents a major commitment of time and energy for trustees who sit on the committee, especially those who must travel to Worcester from some distance. It also represents a financial commitment, since WPI does not reimburse its trustees for their time and travel expenses.

Marshall, an alumnus of Washington University who became involved with WPI when he was president and chief executive officer of Shawmut Worcester County Bank, says, "I believe strongly that education is our future. So this is an opportunity for me to make a contribution by helping an outstanding educational institution."

That's a common sentiment among the trustees with which he works, Buchholz says. "The intent of these boards is to do good—to add value," he notes. "What has become evident in the last 15 or 20 years is that those that are successful in the area of investments rely on something more than just the intent to do good. It's increasingly apparent that there's a discipline they can follow that will enhance the probability of long-term success. That's the track WPI is on."

A former newspaper editor, Diane Benison has written several articles for the Journal. Her most recent stories explored the world of total quality management.

Next to the students and the faculty, the endowment is the college's most important asset because it provides for today and ensures that there will be a tomorrow.

The Endowment: Some Cold, Hard Facts

While it is gratifying to see the rapid growth of the WPI endowment—particularly in the past two decades—and to have played a role in that success during the most recent decade, there are several points I'd encourage readers of this magazine to keep in mind:

First: It's dangerous to measure one's progress against oneself. For example, our \$118 million endowment, compared solely to its value in times past, might suggest that WPI is rich. But it is essential that we index that value against the endowments of peer institutions with whom we compete for students (see table).

Prospective students—and their parents—have become considerably more discerning over the years. There was a time when most colleges, including WPI, attracted students from within a relatively small radius of their campuses. Transportation was a more important limiting criterion than creature comforts (read campus center, athletic/exercise facilities, modern residence halls, and so on).

Today, what most people educated in that era would call "frills" figure more prominently in the attractiveness equation. And for all but a relative handful of students, WPI is, in fact, a "home away from home." (Something on the order of 5 percent of our students commute these days.) Building and operating such facilities places a growing burden on our operating budget and depends mightily on income earned through endowment—especially unrestricted endowment.

Second: It is common knowledge that historically, most engineering and science students have come from families with modest financial resources. In generations past, this often meant children of industrial workers—skilled and unskilled. More often than not, many of those parents had little or no college education.

While the level of formal education possessed by our WPI parents is far greater today than it was a generation ago (virtually all are college educated; nearly a fifth of WPI's current freshmen have par-

ents who are school teachers), their relative financial position is unchanged. What all this translates into is that today's students must acquire increasing levels of "outside" financial support if they are to come here—or to an institution like WPI.

Indeed, virtually all private engineering and science institutions (Cooper Union and Rice University are notable exceptions, with both offering "free" or substantially reduced tuition due to the scale of their endowments) find that about seven out of every 10 of their students require aid—and lots of it! To put this issue in a context we can all understand, it costs WPI on the order of \$10 million in financial aid to support its current undergraduate population.

If that cost were to be met strictly with earned endowment income (while still protecting the endowment principle from erosion by inflation), we would need an endowment on the order of \$150 million right now. But that, of course, would also mean that anything else we did—building or substantially modifying facilities, starting new programs, enhancing maintenance allocations (much needed)—would have to come from on-going, pervasive fund raising. So, unless there is a marked change in the mix of high-need to no- or little-need candidates seeking a science and engineering education and who could be attracted to WPI, our resource base is going to be pressed to more than its limit.

Third: The maintenance of currency in science and engineering programs is a very expensive business. And while the same can be said for medical education, a willingness to pay for a high-quality private undergraduate education is invariably bal-

anced against the debt one must acquire to obtain it and one's ability to pay that debt back with undue pain. It is clear that the realized (or perceived) material gains from careers in science and technology do not match those of careers in medicine.

The way we go about the business of educating scientists and engineers must be examined with an eye to cost containment. Like the overwhelming majority of our nation's hospitals, too many technical colleges and engineering and science colleges within universities are headed for financial ruin. We must apply far more ingenuity to tackling this issue than has been demonstrated in the last 20 years.

How we deliver our science and engineering programs must become as important an exercise as fund raising for them has been these past several years. The question is how to do it in a way that will leave these programs as the world's pacesetters—a position they've enjoyed for four decades.

Believe me—WPI has a long way to go before it can claim to be "rich."

—DONALD F. BERTH '57

Berth is vice president for university relations.

The WPI Endowment

A Comparison to Representative, Principally Science and Technology Institutions

	Endowment (in millions)	Total Enrollment	Endowment Per Student (in thousands)
Caltech	546	1,861	293
Carnegie-Mellon	313	7,261	43
Harvey Mudd	77	578	133
Lehigh	279	6,732	41
MIT	1,442	9,628	150
RPI	237	6,614	36
Rice	1,140	4,239	269
Stevens	47	3,114	15
WPI	107	3,902	27

Source: *Voluntary Support for Higher Education 1991*, Council for Aid to Education

The Rewards are Great— and Immediate— for Town Manager Norton Bonaparte



As town manager of Glenarden, Md., Norton Bonaparte tries to take the politics out of local government and see that the promises of elected officials are kept.

I like the idea of being able to make things happen for the public good," says Norton N. Bonaparte Jr. '75, town manager in Glenarden, Md., who says he discovered

his passion for public administration while a civil engineering student at WPI. "My studies were focused on urban planning," he says. "But I soon discovered it was the urban environment—not planning—that piqued my interest."

Deciding to follow a career in public administration, Bonaparte earned his M.P.A. at the Cornell University School of Business. Early on he worked in Washington, D.C., on an internship at the International City Management Association. For four years he was an administrative assistant in the office of the city manager in Grand Rapids, Mich. And in 1988 he was named town manager in Glenarden. He says it was the right move. "Every morning when I wake up, I can hardly wait to get to the office."

Bonaparte says it is the duty of a town manager to make sure politicians'

promises are kept. He says the council-manager form of government evolved in the early part of the 20th century in response to widespread corruption at the local government level. Today, he adds, city or town managers are seen as people who can take the politics out of the management of government.

"When you look at what gets a person elected," he says, "it's everything from giving good speeches to kissing babies to having a firm handshake. But those things have nothing to do with running a government."

In Glenarden, as in many towns and cities, the government is set up similar to a business, Bonaparte notes. In a business, the stockholders elect a board of directors which, in turn, appoints a president to run the company. In government, the elected officials set policy and establish an agenda;

they then hire someone to manage the day-to-day operations of the government.

As town manager, Bonaparte says he is the chief administrator of the government. Most govern-

ment departments, including the police and the public works department, report to him, and it is his responsibility to prepare a budget for the council's approval and then to implement that budget through his administration of the various departments. In essence, he adds, he is the practical arm of local government, and Bonaparte says he thrives on being the muscle, helping to turn political rhetoric into practical reality.

Bonaparte starts flexing his muscles daily at 8 a.m., a half hour before the town offices open. Always on a tight schedule, he meets frequently with city and business leaders and citizens' groups to address their concerns, and attends meetings aimed at facilitating action within the community by combining the efforts of businesses, schools and neighborhood groups.



Bonaparte, shown here at a town meeting with Glenarden Police Chief M.A. Lewis, left, and Mayor Marvin Wilson, says he enjoys the opportunity his job affords him to make a real difference at the local level.

"At WPI," Bonaparte says, "I was chief justice of the Campus Hearing Board. That was a valuable experience, because it taught me to listen to and take into consideration the various sides of each case. That's a lesson I use all the time in my job today."

Part of his job involves overseeing the operation of 10 town departments that are responsible for everything from filling potholes to supervising major renovations in community buildings to maintaining town equipment. While he spends most of his time helping his department heads solve problems and set goals, he also takes responsibility for seeing that the local population is served as efficiently as possible.

"I note trends in population and try to make certain we have enough resources for the young and the elderly, as well as other groups," he says. "Finding the best ways to adjust and anticipating changes

in demographics and social trends are important concerns for a town manager."

Because much of his time is spent speaking and writing, Bonaparte says the most important skills a town manager can have are the ability to get along with people and to communicate well through the spoken and the written word. An understanding of mathematics is also useful for deciphering computer data, and a knowledge of politics can be helpful, although the post, itself, he notes, is technically nonpolitical.

Bonaparte says he likes to believe what he does each day makes a difference. The advantage of working at the local level, he notes, is that results can be seen right away. If the streets get plowed, a town manager is a hero. If they don't, he or she must have a thick skin, because the phone will ring off the hook. "Unfortunately," he says, "people may not tell you you're doing

a good job, but they'll let you know right off the bat if they think you aren't."

Although his decisions may, on occasion, invite criticism, Bonaparte enjoys working in local government because it is the closest a public servant can get to the people. "It's my goal to make things better," he says. "I've worked on the state and federal levels and the local level is the most immediately rewarding."

Bonaparte unabashedly infects his staff with his enthusiasm for professionalism. "I tell them our role is to serve, but not as servants," he says. "I explain that while it is said residents pay our salaries, I prefer to focus on the fact that they pay us to perform services. Our residents are our customers, and they want things to work properly."

Before deciding to accept the town manager's post, Bonaparte drove around Glenarden on weekends assessing the residents' attitudes about their town. "I could tell people took great pride in the area by the way they kept up their yards and houses. It made me want to become a part of it," he says.

Glenarden, once strictly residential, now has several commercial areas. "We stand for quality of service to the residents, no matter how the character of the town changes," Bonaparte says. "Glenarden is small, but has the same problems as larger municipalities because it is part of the Washington metropolitan area. So far, the town has met change well. I take great pride in that."

—RUTH TRASK



