University of Houston Cullen College of Engineering

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Spring 2002

A Salute to UH Engineering

Dean's Message

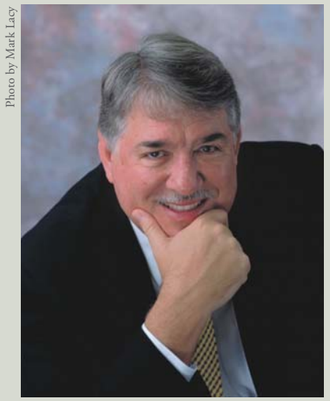

Photo by Mark Lacy

This issue of *Parameters* commemorates the 60th anniversary of the Cullen College of Engineering.

As we look back and see how far we have come, we truly do have cause to celebrate. We have a first-rate, multidisciplinary engineering college with internationally renowned faculty and a diverse student body. Some of our programs have already attained the highest levels of academic excellence, and the work we are doing today is preparing us for even greater success in the future.

From our admittedly humble beginning 60 years ago, we have grown into the largest engineering school in the fourth-largest city in the nation. We began with classes held in post-war barracks and a faculty of only five full-time members. Today, our two buildings are home to more than 90 faculty members and 2,200 students. With more than 13,000 alumni to date, the college now plays a vitally important role in educating engineers in Texas. This year, our anniversary provides us with an opportunity to reflect on how we became who we are today.

Our college is named after the University of Houston's most important early benefactor, Hugh Roy Cullen, and he shapes our identity, even today. Mr. Cullen was a self-made oil tycoon who struck many a gushing oil well by drilling deeper in places experts considered hopelessly devoid of potential. He was inspired by the work of his grandfather, Ezekiel W. Cullen, who wrote the legislation creating a system of public education for the Republic of Texas in 1839. Mr. Cullen believed in giving opportunities to those who had few or none, and that was his intent for our college and our entire university.

We are still delivering on Mr. Cullen's promise, still fulfilling his vision, and we are extremely proud of our heritage. Today the Cullen College of Engineering provides a Tier One education to first-generation college students, working students and underrepresented groups that might never have had this kind of opportunity for advancement and success.

We are proud of our rich tradition and of our accomplishments. Our programs have ranked in the top 10 nationally, our faculty has placed five members in the National Academy of Engineering and our students have access to quality programs that are consistent with the best in the nation.

Many individuals and organizations have helped pave the way for our success. Through the years, we have been blessed by strong support from alumni, good friends in the business sector, strong university support and visionary state lawmakers. And we are thankful.

The college has certainly come a long way in 60 years. With this anniversary celebration, we offer our heart-felt gratitude to those who have made it all possible.

Raymond W. Flumerfelt
Dean

pa·ram·e·ter
Pronunciation: pə-ˈram-ə-tər
Function: noun
Etymology: New Latin, from para- + Greek metron measure
Date: 1656

1: a. an arbitrary constant whose value characterizes a member of a system (as a family of curves); also: a quantity (as a mean or variance) that describes a statistical population
b. an independent variable used to express the coordinates of a variable point and functions of them—compare PARAMETRIC EQUATION
2: any of a set of physical properties whose values determine the characteristics or behavior of something *<parameters of the atmosphere such as temperature, pressure, and density>*
3: something represented by a parameter: a characteristic element; broadly: CHARACTERISTIC, ELEMENT, FACTOR *<political dissent as a parameter of modern life>*
4: LIMIT, BOUNDARY—usually used in plural *<the parameters of science fiction>*

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Original Photo by Mark Lacy

A Salute to UH Engineering
Sandy Geffert, a graduate of the Cullen College of Engineering and a master's student in the Department of Mechanical Engineering, is one of the best martial artists in the world. Sandy won three medals for the USA at last year's WKA World Championships. Her commitment to excellence, both in martial arts and in engineering, is exemplary of the spirit that has driven 60 years of accomplishment at the college.

College Hosts 500 High School Students at Open House

A record 500 high school juniors and seniors met with University of Houston Cullen College of Engineering faculty and discovered the advantages of earning an engineering degree from UH at the college's Open House on Nov. 1.

Students participated in hands-on activities in many of the labs, including changing the colors of water in tank reactors, screaming in an acoustic chamber designed to measure sound levels, analyzing rocks for oil content, machining a wax UH logo using computer-aided manufacturing and automatic data collection, and viewing a video of a zero-gravity flight experiment.

Students also used light-scattering probes to investigate protein solutions at the molecular level, watched waves being generated in a wave tank through glass sidewalls and observed wave interactions with an array of porous cylinders, and visited computer simulation labs and computer-aided design facilities.

In addition to campus tours, students talked with engineering faculty about the various programs offered at UH to enhance their engineering learning experience. For more information on future Engineering Open Houses, contact Tiffney Rodriguez, recruitment manager, at 713-743-4216 or e-mail tctrimble@uh.edu.

Keh-Han Wang, associate professor of civil and environmental engineering, shows high school students how waves are generated in a wavetank at the college's Open House.

UH System Board Gives Green Light to $51 Million Science, Engineering Building

A $51 million construction project at the University of Houston for a new Science, Engineering and Classroom building—which will provide a pedestrian "gateway" to the west side of campus—was approved by the UH System Board of Regents on Feb. 26. The 200,000-square foot facility will consist of 11 classrooms, a 550-seat teaching theater, and science and engineering research labs.

"This new building will greatly enhance our scientific and engineering research and teaching capabilities, which are a major component of our goal to be recognized among the top tier research universities not only in Texas, but in the nation and the world," says Arthur K. Smith, chancellor of UH System and president of UH.

The 2001 Texas Legislature approved funding for the project with consolidated revenue bond proceeds.

Construction is tentatively scheduled to begin in July 2003 with completion scheduled for the summer of 2005. A site under consideration for the building is the area just west of Science and Research I and II and south of the Houston Science Center.

A final determination on location of the new facility will be made as architectural plans are drafted and approved by the Board of Regents later this year.

Premiere of 'Drainage Forum: The Allison Experience' OnDemand

The broadcast premiere of the Cullen College of Engineering's fall program "Drainage Forum: The Allison Experience" is available online through OnDemand on The ResearchChannel.

Tropical Storm Allison hit Houston in June 2001 with great force. The deadly storm dropped 30–40 inches of rain on coastal Texas and Louisiana, hitting Houston with 19.58 inches of rain in a 24-hour period. The storm killed 41 people in six states and caused $5 billion in damage. UH alone suffered $125 million in damage. This program examined the force of the storm, how Houston's emergency management faired, and what can be done to better prepare this city and any city for a similar storm in the future.

The Drainage Forum brought together experts from the professional engineering community, weather experts, and federal and local agencies to discuss the impact and lessons learned from Allison.

Speakers in the broadcast include Arthur K. Smith, UH president; Steve Fitzgerald, Harris County Flood Control; Bill Read, meteorologist for the National Weather Service; Charles Penland, civil engineer; Gary Green, Harris County Flood Control; and Neil Frank, KHOU-TV chief meteorologist.

View the program at www.researchchannel.com/programs/uh/drainage.html (runtime: 01:28:30).

UH Scientist Aids EPA on Environmental Test for Synthetic Drilling Fluids

Deborah Roberts, associate professor of civil and environmental engineering, is working with the oil industry and the Environmental Protection Agency (EPA) to ensure that synthetic-based fluids used to lubricate oil-drilling equipment are environmentally safe.

An EPA ruling published in 2001 says that synthetic-based drilling fluids can be used in drilling operations in the Western Gulf of Mexico if the fluids meet certain guidelines and pass tests indicating they are biodegradable and non-toxic.

EPA guidelines regulate how and how much water-based and petroleum-based fluids can be discharged into the water, but until the 2001 ruling there were no specific guidelines covering synthetic-based fluids. Companies must now apply for updated general permits that incorporate the new SBF regulations.

Roberts helped develop the biodegradation test cited in the ruling. The EPA and oil industry representatives from the American Petroleum Institute worked together to develop the regulation.

"The EPA ruling establishes restrictions on the discharge of synthetic-based fluids, or SBFs, into the Gulf in order to reduce the potential for adverse environmental impact, while allowing the industry to continue to benefit from their use," Roberts says. "This test determines whether a particular compound will biodegrade sufficiently in the Gulf. Basically, if the microbes in the Gulf sediments eat it, it's OK to use."

The EPA estimates that compliance with the rule will result in a reduction of nearly seven million pounds of discharged pollutants a year, and a significant savings in operating costs with no adverse economic impacts to drilling operators.

In 1998, members of the American Petroleum Institute approached Roberts about developing the biodegradation test. Until then, the only tests available for biodegradability were geared toward sewage or sediments in the North Sea, where conditions are very different from the Gulf of Mexico.

The next step for Roberts is to gather more data from deep-sea sediments and develop a more accurate model to predict how long it takes various compounds to biodegrade under various environmental conditions. In April and May, the Minerals Management Service plans cruises in the Gulf to gather deep-sea sediment samples.

"It's challenging to gather samples from far offshore in the Gulf where these rigs are operating, and it's hard to do good science when you're at the bottom of the ocean," Roberts explains. "The EPA test is a fair approximation of Gulf conditions, but the goal is to correlate the data from near-shore and deep-sea sediments and develop a clearer picture of what's happening in the deep Gulf."

Photo by Jonathan Cobb

Chellam Claims NSF Career Award for Research on Water Purification Using Membranes

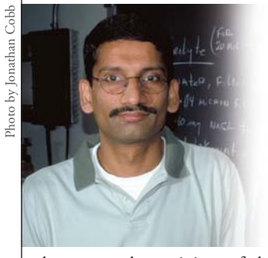


Photo by Jonathan Cobb

Shankar Chellam's dedication to solving the worldwide issue of water decontamination has been rewarded with a $375,000 research grant from the National Science Foundation.

Chellam, an assistant professor of civil and environmental engineering since 1999, has been named a recipient of the CAREER Award, NSF's most prestigious accolade for new faculty members. The CAREER award recognizes scholars that are likely to become the academic leaders of the 21st century. Chellam's project, which the CAREER grant will fund, is the first of its kind.

Chellam's research centers on advanced water treatment processes involving the control of chemical and microbial risks through the use of nanofiltration and microfiltration membranes. Although earlier research has been conducted on the diffusive transport of salts across reverse osmosis, Chellam will be the first to perform direct measurements of the diffusion of natural organic matter across nanofiltration membranes.

For the full story, visit www.egr.uh.edu/news/0202/?e=chellam.

Department of Energy Selects UH for a New Project to Improve Arctic Oil Production

Under the direction of University of Houston chemical engineering professor Kishore Mohanty, a new research project will focus on the special challenges confronting oil producers working in the Arctic. The project will be funded by the U.S. Department of Energy's National Energy Technology Laboratory.

UH Cullen College of Engineering will receive nearly $600,000 in federal funding for a three-year effort to develop a reservoir simulator that would show how injecting different mixtures of hydrocarbon and other gases can boost oil recovery and possibly lead to the sequestration of carbon dioxide, a greenhouse gas. The university will add $150,000 to the research project.

Photo by Jonathan Cobb

UH chemical engineering researchers are especially interested in a process called "water-alternate-gas" injection that operators could use in the future to produce heavy oil from the North Slope's shallow sand reservoirs. With today's state-of-the-art simulators, researchers can model how a single gas—methane, for example—behaves as it moves through a reservoir. When the gas composition varies, however, the modeling and simulation process becomes significantly more complex.

The UH model could make it possible for future North Slope operators to predict how injecting methane, carbon dioxide, flue gases, or combinations of these gases, along with water, can enhance the production of North Slope heavy oil. In the case of carbon dioxide, the model could also reveal important information on how the greenhouse gas might be captured and remain in the reservoir, which could lead to a viable way of disposing of several megatons of the greenhouse gas at the North Slope.

Fluid Dynamics Award Establishes UH Engineer as World's Most Highly Decorated Scholar in Field

University of Houston engineer Fazle Hussain's recent acquisition of the American Institute of Aeronautics and Astronautics (AIAA) Fluid Dynamics Award for 2002 establishes him as the world's most highly decorated scholar within the field of fluid dynamics.

Hussain, Cullen Distinguished Professor of Mechanical Engineering, has been selected to receive the AIAA Fluid Dynamics Award for his contributions to the understanding of turbulence. He had previously claimed all three of the other most widely coveted awards in the field:

- 1984 Freeman Scholar Award of the American Society of Mechanical Engineers (ASME)
- 1998 Fluid Dynamics Prize of the American Physical Society
- 2000 Fluids Engineering Award of ASME

Only two other scholars have ever claimed as many as two of the four awards, which are given for career achievement or most original contributions in the field.

"Dr. Hussain's accomplishments are unprecedented in his field," says Raymond W. Flumerfelt, dean of the UH Cullen College of Engineering. "This combination of prestigious awards is an indisputable fact of what we at the University of Houston have known for a long time: Dr. Hussain is the world's leading expert in turbulence studies and fluid dynamics."

The AIAA Fluid Dynamics Award is given in recognition of outstanding contributions to the understanding of the behavior of liquids and gases in motion as related to need in aeronautics and astronautics. Hussain will receive the award at the AIAA Awards Luncheon in St. Louis on June 25.

The primary theme of Hussain's decades of research is the "search for order in the disorder of turbulence." That is, underlying the complicated, seemingly random motion of turbulence, there is an organization. Hussain was one of the pioneers in recognizing that such organized motion is the key to understanding turbulence, and to controlling turbulent flows for technological benefit: for example, in designing better engines and turbines, reducing drag and hence saving fuel in aircraft, and reducing the noise from jet engines. Toward this end, he has pursued experimental, numerical and theoretical studies of the basic mechanisms of turbulence.

Hussain, along with his Ph.D. student Wade Schoppa, developed a realistic and economical strategy for significant reduction (up to 20 percent) in aircraft friction drag. The strategy potentially could reduce expenditures on aircraft fuel by $3 billion per year.

Hussain's career has been characterized by his insistence on developing and applying quantitative conceptual and experimental tools. In the 1980s, his research contributed to moving the field beyond the qualitative studies of flow visualization. Hussain's studies revealed how misleading and inadequate the qualitative approaches had sometimes been. More recently, Hussain developed Holographic Particle Velocimetry, a three-dimensional flow measurement technology that has applications, among other fields, in the medical sciences, particularly the study of blood flow in the development of the artificial heart.

Another project, initiated in conjunction with Michael Goldshtik, Ph.D., is the bladeless helicopter, which is powered by a "manufactured tornado" and is capable of vertical ascent and landing. Hussain, who founded the college's Aerodynamics and Turbulence Laboratory in 1973, has also studied turbulence phenomena in jets and shear layers, chaos control, vortex dynamics, aeroacoustics, and thermal science.

Hussain came to UH in 1971 as an assistant professor of mechanical engineering. He was inducted as a member of the National Academy of Engineering in 2001 and was elected a member of the Third World Academy of Sciences in 1997. The John Hopkins Society of Scholars inducted him in 1996.

In 1999, UH presented its annual Sigma Xi Research Award to Hussain, recognizing him as one of the world's leading researchers in fluid dynamics.

After earning his B.S. in mechanical engineering from the Bangladesh University of Engineering and Technology in 1963, Hussain worked as a lecturer until transferring to Stanford University as a Fulbright Scholar. He obtained his M.S. and Ph.D. at Stanford in 1966 and 1969.

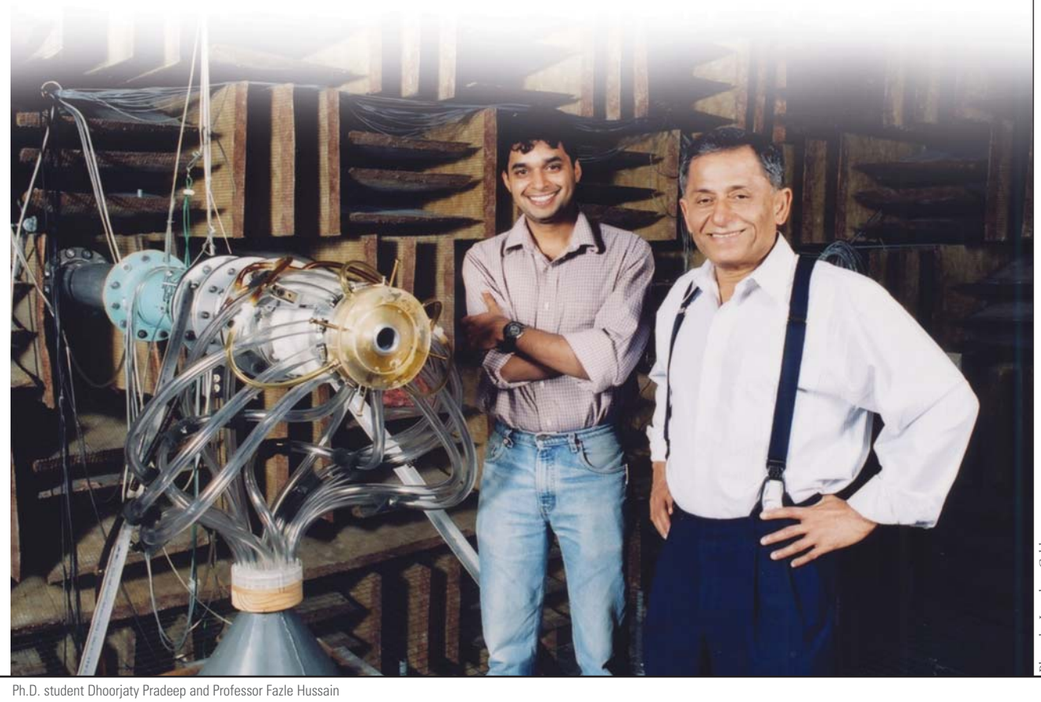


Photo by Jonathan Cobb

Ph.D. student Dhoorjaty Pradeep and Professor Fazle Hussain

Young Engineering College Comes of Age

Cullen College of Engineering Celebrates its 60th Anniversary

By Brian Allen

Some of the faculty members who have been with the college for close to 30 years or more: Jerry Rogers, Richard Banerot, Dan Luss, Stuart Long, Frank Tiller, Wallace Anderson, Dennis Clifford, Jim Richardson, John Glover, Neal Amundson, Betty Barr, Charles Donaghey, Larry Witte, Gerhard Paskusz, Leang-San Shieh and William Schneider.

Photo by Mark Lacy

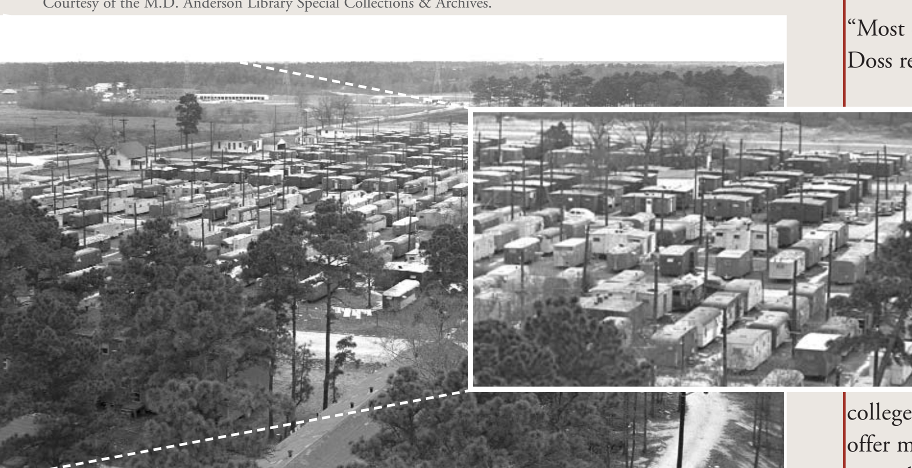
Cullen College of Engineering Celebrates 60 Years of Growth, Academic Excellence

More than 60 years ago, the University of Houston Cullen College of Engineering began its history with only five full-time faculty members teaching in a cluster of temporary buildings.

The true beginning stems back a bit further, to the late 1930s, when UH was emerging as a small private university with a new campus that featured two new buildings—the Roy Gustav Cullen Memorial Building and the Science Building. The engineering program, still only a department in the Division of Natural Sciences, was in its infancy.

By 1941, the engineering department had grown into a School of Engineering and began granting undergraduate degrees in general engineering and engineering physics, marking the official beginning of the college's history.

Courtesy of the M.D. Anderson Library Special Collections & Archives.



During the 1940s and early 1950s, thousands of veterans, many of whom were engineering students, entered the university under the GI Bill, leading to the construction of "Veterans Village," a cluster of trailers and temporary buildings that housed the veterans and their families.

Veterans Move In

When the college began, the faculty depended primarily on part-time instructors to teach its 29 courses. Lower division courses were taught in the Cullen Building and the Science Building, according to Richard Doss (1948 BSCE), who took classes in 1941 before joining the military during World War II.

Doss, who later served as a Harris County Engineer and supervised the Astrodome's construction, was among the thousands of veterans who entered UH after the war under the GI Bill. A village of mobile home-type structures was erected in the area now occupied by the Bauer College of Business. By the fall of 1949, that area, known as Veteran's Village, was home to more than 7,000 veteran students who comprised more than two thirds of the student body.

"Most of them had been overseas and were pretty hardened," Doss recalls.

In the mid and late 1940s, the College of Engineering offered a bachelor of science degree in general engineering, with fifth-year specialized degrees in civil, electrical, mechanical and general engineering. Under the leadership of acting dean and former director Millard L. Ray, the college continued to enhance its curriculum and grow in size during the post-war years. By 1955 the Engineering Council for Professional Development had accredited the college's undergraduate programs, and the college began to offer master of science degrees in chemical, civil, electrical, general, industrial, mechanical and petroleum engineering.

First Dean Enhances Faculty

In 1955 Frank M. Tiller, the first dean, arrived from Lamar University, where he served as dean of engineering. He set out to enhance the quality of the faculty and secure accreditation for all of the college's programs.

Tiller, who holds a Ph.D. in chemical engineering from the University of Cincinnati, inherited a faculty of 26, only four of whom held doctoral degrees. He set out to boost the school's status and quality by educating the faculty. He literally sent them back to school.

During Tiller's tenure from 1955 to 1963, the percentage of college faculty members with doctoral degrees rose from 14 percent to 40 percent, a remarkable feat for such a short period of time. The number of faculty members with Ph.D.s jumped from four to 18, and during that time two new faculty members with Ph.D.s were hired—Gerhard F. Paskusz, who still runs the college's highly successful Program for Mastery in Engineering Studies (PROMES) program, and Douglas Muster, former chair of the Department of Mechanical Engineering.

Tiller, who is currently Professor Emeritus and M.D. Anderson Distinguished Professor of Chemical Engineering, is quick to point out that he did not accomplish all this on his own. He relied heavily on the generosity of Isaac Arnold, who funded multiple fellowships for instructors, to drive his dramatic upgrade in the quality and education level of the faculty.

"Based upon the money that was donated by Isaac Arnold, Mr. (Hugh Roy) Cullen's son-in-law, we were able to start off a number of our young instructors with fellowships, and this meant they could get started with graduate work that in turn meant we could have a faculty with more Ph.D.s."

It was also during Tiller's tenure, in 1958, that the college was officially renamed the Cullen College of Engineering in acknowledgement of the contributions made by Hugh Roy and Lillie Cranz Cullen.

P.D.C.—Prengle, Dukler, Crump

In addition to enhancing the quality of faculty and making significant contributions by strengthening the curriculum in math, engineering and physics, Tiller says some of the most important work accomplished during his tenure as dean was that of three members of the Department of Chemical Engineering:

- H. William Prengle
- Abraham E. Dukler
- Joseph R. Crump

Crump founded the Department of Chemical Engineering in 1949 and later recruited Prengle and Dukler, both of whom worked for Shell Oil Company and taught part-time until the fall of 1952, when they permanently joined the faculty. Crump was also instrumental in convincing Tiller to leave Lamar for UH.

FrankeM, 1955 1963

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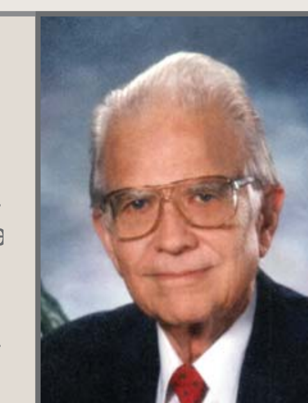

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The old Engineering Office and Classroom Building, constructed in 1955 and vacated for the Cullen College of Engineering Building 1 in 1967, later served as the Architecture Building before being demolished in 1986.

Courtesy of the M.D. Anderson Library Special Collections & Archives.

Larry Witte, associate dean for undergraduate programs and former chair of the Department of Mechanical Engineering from 1972 to 1976, remembers the profound impact of Prengle, Dukler and Crump.

"These three scholars were role models for the rest of the college," says Witte. "They showed us how to transform an undergraduate program into a successful graduate research program. In the 1960s they won a National Science Foundation (NSF) matching excellence grant that enabled them to expand and bring in more research. Other departments wanted to emulate their success."

Two other chemical engineering scholars on that talent-rich faculty who played major roles for the college are Dan Luss, currently Cullen Distinguished Professor who later served as department chair, and Professor Raymond W. Flumerfelt, our current dean.

'State School' Status Sparks Growth, Cultural Changes

The 1960s were a time of great change for the college because of the change in the university's status from a private to a state institution in 1963. The new state funding and lower tuition led to a university-wide boost in enrollment—which more than doubled between 1961 and 1971—and laid the ground work for a major demographic shift in the gender and ethnicity of students and faculty. As women and minorities began to enter the college, the once predominantly white, male student body began a slow but steady transformation.

"That was an exciting time at the University of Houston," says Witte. "The university really went from the trappings of a fairly small private school to a major research university with comprehensive degree programs across virtually all disciplines, with the exception of medical degrees."

Charles V. Kirkpatrick, who succeeded Tiller as dean in 1963, provided solid leadership during a time of tremendous growth and cultural change.

Charles Donaghey, professor of Industrial Engineering and faculty member since 1967, remembers Kirkpatrick as a faculty-friendly dean. "One thing about Kirkpatrick is he would meet with every faculty member every year," Donaghey says. "He would spend 20 minutes to half an hour with each one of them, and I always thought that was a good thing to do."

Stuart Long, associate dean of research, also remembers Kirkpatrick as a strong leader. "Kirkpatrick was the right dean for the right time. He was active in the professional engineering community, and the community revered him. He was an extremely bright man and very well respected in the community and elsewhere as an engineer."

With Kirkpatrick leading the way, the college played a vitally needed role in educating a generation of engineers for Houston's booming industries. "Houston was growing and needed a place where the sons and daughters of the blue-collar workers of Houston could come and learn a profession, and engineering was certainly a good thing for them to do," says Long.

During this time period, the college and the university made great strides toward fulfilling the vision of its most important early benefactor, Hugh Roy Cullen. A self-made oil tycoon, Cullen believed in providing opportunities to people with fewer social and economic resources.

"We had a lot of students—and still do to some extent—who are first-generation college students, people whose fathers and mothers didn't go to college, and a lot them were working," Long says. "They were going to school at night or part-time. I talk to our alums who are my age and graduated in the '50s and '60s, and almost every one of them was married or already had a family or they were working full-time somewhere else. Their recollection of the University of Houston Cullen College of Engineering is a place that gave them an opportunity to study engineering when they otherwise couldn't have."

Lewis Wheeler, interim chair of the Department of Mechanical Engineering, attended the college as an undergraduate in the early 1960s before returning in 1968 to join the faculty. "We hired really good faculty in the late '60s," Wheeler recalls. "We went from being a quiet, but high-quality school, to something that was major in the state. We certainly found our place among the major engineering colleges in the state—and we still hold our place."

Dukler Places More Emphasis on Research

During the late 1960s and early 1970s, the seeds of a premier research college, planted years before by Tiller, had also begun to blossom. In 1968, Dukler had received a major NSF matching grant—by consensus, the most important in the college's history—that enabled the Department of Chemical Engineering to eventually take its place among the nation's best. The $600,000 "Center of Excellence Departmental Development Grant" was used to hire faculty members and establish outstanding laboratory facilities.

Dukler, who served as dean from 1976 to 1982, placed greater emphasis on research and pushed for funding to construct the college's second building. He also reshaped the faculty by leading departments in an effort to replace outgoing and

Charles V. Kirkpatrick, 1963–1975

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Abraham E. Dukler, 1976–1982

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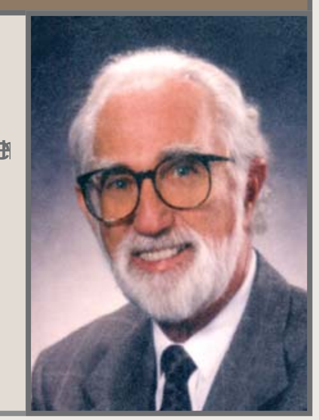

Roger Eichhorn, 1982–1996

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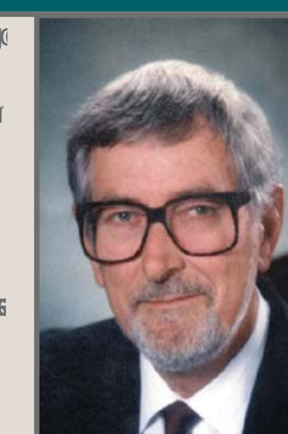

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retiring instructors with scholars who held doctoral degrees from some of the country's most prestigious universities. In much the same way he had helped elevate the Department of Chemical Engineering, he pushed the entire college toward a higher level of excellence in academic research.

Paskusz, professor of electrical engineering since 1961, sees Dukler's leadership as a watershed. "Prior to Dukler we were still basically an undergraduate college. He really shifted the emphasis very effectively and in a relatively short period of time."

Professor Osman I. Ghazzaly, a faculty member in the Department of Civil and Environmental Engineering since 1966, agrees. "The real quantum jump in the direction of research came when Abe Dukler took over. He wanted us to really show a change in direction, and he emphasized that research was the number one pursuit."

Dukler raised the bar for faculty by stressing accomplishments in research and lengthening the track for tenure from three years to five, but his direct style and dogged determination were not always well received.

"You had people in the old guard, who were good engineers and teachers, that didn't like the new emphasis on research, and they went to industry or retired or did something else," says Long. "But Dukler was willing to take the heat for making this transition. He was willing to sacrifice his popularity to do the right thing."

Enrollment Peaks As Eichhorn Steps In

In 1982, Roger Eichhorn replaced Dukler as dean just as the college was approaching its historical peak in student enrollment at 3,835. Although lean economic times and smaller enrollments lay ahead, Eichhorn found ways to keep the college moving forward.

"Eichhorn was able to bring in some really good people," Long says. "He kept improving the college. Before Roger, we had very little support from engineering alumni. He got the engineering alumni group started, which is now the strongest alumni association on campus."

During Eichhorn's tenure as dean, the college's Engineering Alumni Association initiated several annual events to help facilitate the relationship between the college and its alumni, including the Distinguished Engineering Alumni Awards Dinner, Homecoming BBQ festivities, Cajun Crawfish Boil and the Engineering Golf Tournament, as well as collaborations with alumni and students in fundraising, student recruitment, outreach to the engineering community and programming to high school students. He also used the college's 50th anniversary as an opportunity to coalesce the interest and affection of the alumni for their alma mater.

"Increasing the depth of the support pool is perhaps the college's number one accomplishment during my time as dean," Eichhorn says.

Eichhorn also was responsible for working with John Lienhard, M.D. Anderson Professor of Technology and Culture, to develop the nationally syndicated radio program, *Engines of Our Ingenuity*, which promotes science and history while bringing recognition and prestige to the university.

Another major change during Eichhorn's administration was an increase in the demographic shift that had begun in the 1960s and 1970s. In 1979, for example, more than 70 percent of the students at the college were white. By 1996, that number had fallen to 42 percent. A significant increase in international, Asian and Hispanic students accounts for most of the change. The percentage of female students also increased, rising from 15 to 20 percent in the same time period.

"When I came here, there were virtually no African-American students, very few Hispanic students and very few Asian students," says Witte. "The demographics at the college have changed dramatically."

Dean Flumerfelt and the Future

Eichhorn's tenure as dean was followed by a two-year transitional period during which Professor John C. Wolfe served effectively as acting dean. In 1998, Raymond W. Flumerfelt was appointed dean and a new emphasis was placed on external relationships with the community and industry.

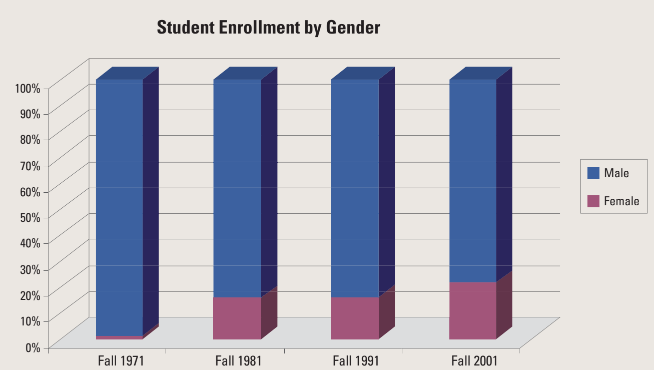
"Probably the greatest asset we have is the city of Houston and all the benefits that it can bring into play," says Flumerfelt. "We are finding new ways to tap into that asset. One way is by becoming more integrated with the Texas Medical Center and the researchers there. That's why programs like bioengineering are critical."

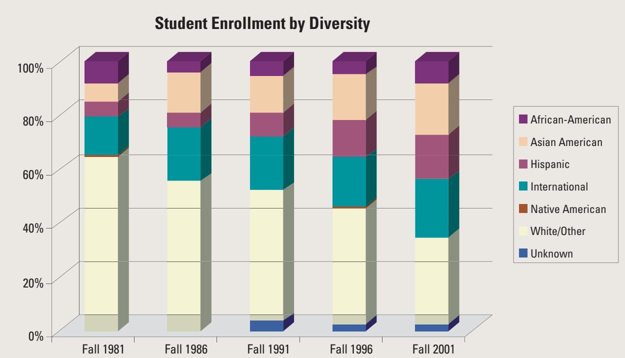
During Flumerfelt's first four years as dean, the college has increased student enrollment figures, hired more faculty, established a Cullen Engineering Leadership Board, promoted departmental Industrial Advisory Boards and received approval for a new building, which will be shared with the College of Natural Sciences and Mathematics.

"We've put the infrastructure in place, and we're starting to see the rewards from that. I'm very happy with the college right now," says Flumerfelt. "I think we've made a lot of progress."

A good beginning on another 60 years of excellence in research, education and service.

Editor's Note: Parameters would like to extend special thanks to the faculty members quoted herein, and to the following faculty members who also contributed valuable information and shared their stories with us: Wallace Anderson, Betty Barr, Charles Dalton, John Glover, Michael O'Neill and Jerry Rogers. For other historical features, visit www.egr.uh.edu/parameters.





1998 Present

Courtesy of the M.D. Anderson Library Special Collections & Archives.

Engineering faculty members on their way to convocation ceremonies at Cullen Performance Hall.

KUHF broadcasts the first of John Lienhard's "Engines of Our Ingenuity."

‘Unified Theory’ Sheds New Light on Effects of Earthquakes

By Brian Allen

It may be difficult to imagine a major earthquake ripping an abyss across the coastal flatlands of Houston, Texas, where the probability of such a catastrophe is extremely low.

Yet, Houston is home to one of the world’s premier experts on the effects of earthquakes on concrete buildings and bridges.

In 1992, Thomas T. C. Hsu shook the landscape of scientific understanding when he published his landmark book, “Unified Theory of Reinforced Concrete.” Since then, Hsu’s theory has garnered international academic acclaim and given real hope to engineers seeking to design safer, stronger structures—especially structures designed to resist the complex, three-dimensional forces of earthquakes.

Hsu, Moores Professor of Civil Engineering at the University of Houston Cullen College of Engineering, established the university’s Structural Research Lab, which is widely recognized as one of the most productive and influential facilities for concrete research and testing. His research and numerous publications form the basis of design provisions for torsion in the American Concrete Institute Building Code, used throughout the United States and many other countries.

When his research career began in the 1960s, bending and axial loading of reinforced concrete elements were understood. “You could solve them using a very scientific, rational method,” Hsu says, “and both those actions are one directional. But shear and torsion were not understood, and the reason is that shear was a two-dimensional problem and torsion was three-dimensional.”

An initial study on shear at the University of Toronto inspired Hsu to his own breakthrough work in understanding torsion, as well as significantly advancing the study of shear. Armed with the knowledge of forces in all three dimensions in reinforced concrete, Hsu set out to complete his dream of developing a unified theory.

By 1991, all the pieces were in place. He then took a year of sabbatical leave to compose his theory and published the book that is changing the way engineers design structures for earthquakes. From 1986 to 1995, he developed a world-class research facility at UH, the Universal Panel Tester, where he still gathers data and builds on his theory to move toward a new understanding of how entire structures—mostly buildings and bridges—will react during extreme conditions such as those present during earthquakes.

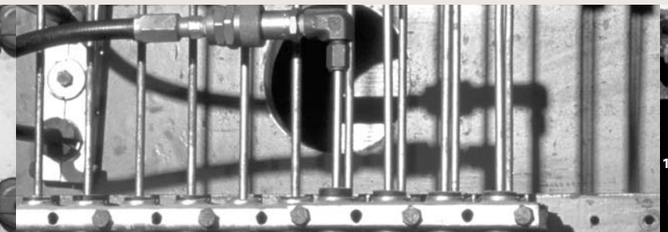
“Once you have a rational theory, you can begin to predict the behavior of any structure,” Hsu says. “Using computer models to integrate the behavior of individual elements, we’re now on the verge of being able to predict how whole structures will behave during an earthquake.”

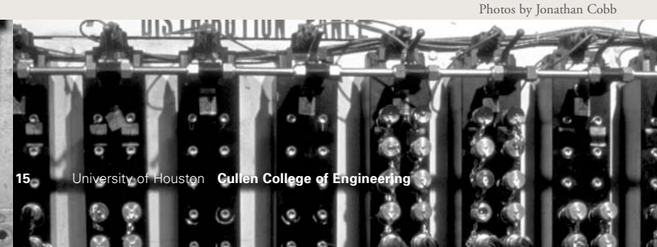
How does this world-class research scientist maintain such longevity of success in his field?

“You have to have a vision and be persistence,” he says. “You have to know what the new frontier is. For example, when I first began my study of reinforced concrete, I felt that things were all in pieces. It didn’t make sense to me that knowledge could be so fragmented and incomplete. It took me 30 years to figure out how to unify the whole theory.”

A native of Swatow, China, Hsu earned both an M.S. and a Ph.D. in structural engineering from Cornell University. Hsu, who arrived at UH in 1980, has received numerous research grants from the National Science Foundation. He has received many awards and honors from the American Society of Civil Engineers, the American Concrete Institute, UH and many premier research universities in the U.S. and abroad.

Photos by Jonathan Cobb





PROMES Program

Helps Students Sustain Success

By Tara Wijnanda Mullee

The first roots of one of the longest-running programs of its kind in the nation stretch back more than 25 years ago, to a symposium in Washington, D.C., where University of Houston engineering professor Gerhard Paskusz listened intently to the speech of General Electric CEO E.O. Smith.

In his speech, Smith said that if the United States wished to elevate the economic future of minorities, the best way to do so was through engineering. He proposed that new programs were needed to get more minorities into engineering.

Smith based his assertion on the idea that most engineering students came from blue-collar homes and thus the engineering career had for a long time been providing an economic upward jump. No other economic ladder seemed to provide similar opportunities.

"That's what the impetus was," says Paskusz of Smith's speech. Paskusz then utilized a $5,000 grant from Dupont to start the program.

Initially, the program carried the name "Program for Minority Engineering Students," or PROMES (pronounced "promise"). However, the name was changed following a decision in the Hopwood court case, which forbade racial discrimination. "After the Hopwood decision, in order to keep the acronym, we changed our name to 'Program for Mastery in Engineering Studies,'" says Paskusz.

Since its modest start in 1974 with only eight students, it has grown to more than 500 members. And according to these members, PROMES is an encouraging and helpful influence in students' lives.

"PROMES is a backbone to a lot of engineering students," says industrial engineering student Morolake Kuteyi, a member of PROMES for two years. "Some students say that if they were not involved in PROMES they don't think they would be engineering majors."

Any engineering student may become a PROMES member, provided that he or she consents to signing a contract that gives PROMES control over the student's freshman year class schedule. This is done to ensure that the student will enroll in at least one or two freshman classes that are strictly PROMES courses.

"In the freshman courses we get to know them [the students], they get to know us, they get to know each other," says Paskusz. "We had as a paradigm for the program the establishment of a scholar's community. We wanted to make sure that the students were working together, helping each other and competing with each other. That, from the very beginning, has been our aim."

PROMES members are also encouraged to attend banquets, speeches by industry representatives and other functions organized by the program. However, Paskusz feels that the first-year courses and the program's workshops, which assist students in broadening their knowledge beyond the classroom, are the most important part of PROMES. "They make the program," he says.

Workshops are one of the main methods used to prevent students from becoming discouraged and failing or switching majors. Maintaining a higher retention rate than the general engineering college is one of the goals specified in PROMES's Institutional Effectiveness Plan.

"Our freshman retention usually is a few percentage points higher than the freshman retention for engineering students as a whole," says Paskusz.

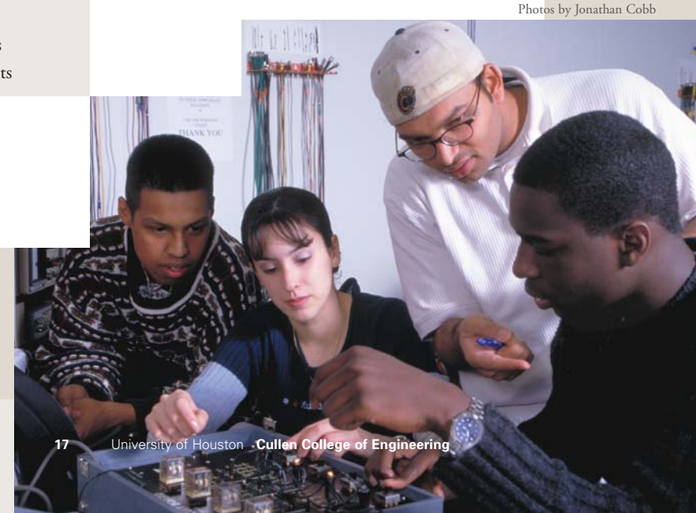
Other goals outlined in the Institutional Effectiveness Plan include achieving higher grades in basic mathematics and science courses, maintaining a higher percentage of freshmen on the Dean's List and increasing the number of kindergarten through high school students who consider engineering careers.

PROMES also is dedicated to helping its members obtain scholarships.

When Kuteyi enrolled at UH her freshman year she wasn't able to get any scholarships. Then she met John Matthews, PROMES program manager. Matthews ensured her that once she improved herself during her first semester she would be able to apply and receive scholarships, and that did happen, says Kuteyi.

"Mr. Matthews is constantly finding out new information for scholarships," Kuteyi says. "The PROMES crew supports engineering students. If you're having money problems, they find financial services for you. If you're having academic problems, they find tutors for you. Engineering is a very tough degree—you have to have support. I don't know where I would be if I didn't have PROMES."

Photos by Jonathan Cobb



Top left: PROMES students Alan Hsu, Dulce Mendez, Elena Sosa and Dan Suttajit work together on a chemistry problem.

Right: Students Chrystian Guerrero, Maricruz Silva, Hemang Makwana and Tomilola Dania learn how circuit switches work in an electrical engineering exercise.

Sandy Geffert Is Gunning for Gold in 2002

By Brian Allen

One of the fiercest fighting martial artists in the world sits in an office on the second floor of the Cullen College of Engineering Building 1 on the University of Houston campus.

Sandy Geffert (2001 BSME) is a UH honors graduate, a first-year graduate student and the undergraduate student advisor for the Department of Mechanical Engineering. She is also a highly decorated world-class karate champion.

"She informs me that her hands are registered weapons," says Keith Hollingsworth, who directed Sandy's honors thesis during her senior year. Those weapons helped her capture two silver medals and one bronze medal at the World Karate Association's (WKA) 2001 World Championship in Vienna, Austria.

The breadth of Sandy's accomplishments within the martial arts makes her unique. She participates in all three main categories of competition, a notable feat, especially considering that the three areas—fighting, soft kata and hard kata—are very different and require completely separate training regimens.

If Sandy's accomplishments in karate are striking, her assault on academic success has been equally as forceful. As a high school student at Kingwood High School in Kingwood, Texas, Sandy graduated with nearly straight A's and a 4.3 grade point average. From there, Sandy began pursuing a B.S. in mechanical engineering at UH, where she was a university honors student and an honors student in mechanical engineering. She's currently pursuing a master's degree in mechanical engineering and working as the department's student advisor.

Not much overlap can be found between the two disciplines of biomechanical engineering and martial arts, yet Sandy has excelled in both. "One of the things that makes Sandy unique is that these activities are somewhat disparate," says Hollingsworth. "One is very physical and the other is very cerebral."

How does she do it all?

"You have to make many difficult choices, especially as a young adult, when you're going to do certain things and what part of the day you're going to go have fun," she says. "If you're disciplined enough to make time for everything and be balanced in every aspect of your life, you can come out on top. At least the things that are important to you, you can succeed in."

Preparing herself for victory in Vienna was a balancing act itself. When she was training for the U.S. team trials in Minnesota, she ran between three to six miles a day through the piney woods of the Kingwood bike trails. And that was only a small portion of her daily workout. ▸▸

Photo by Mark Lacy

Photo by Mark Lacy

"We would run three in the morning and three at night. And we were doing this during finals week so it was a little intense. We'd run for an hour, fight for an hour, take a break and come back to work on our katas for another hour or two."

The running was not just to build endurance; it was also to control her weight.

"You have to fight in a certain weight class," says Sandy, "and you want to be at the top. I naturally fall in the middle of a weight class, and I can never eat enough to make it up to the top, so I have to drop my weight to fall into the class beneath. Five pounds can make a huge difference. Plus, fighting at the top of your class gives you a big psychological advantage."

The competition was fierce in Vienna, where Sandy faced off against the world's best martial artists in her first-ever international competition. The WKA World Championship is without a doubt the world's most prestigious international event, says Master John Peavey, Sandy's karate instructor for the past 12 years.

Cullen College of Engineering's Sandy Geffert, left, receives a bronze medal in women's fighting at the 2001 WKA Championship in Vienna, Austria, with gold medalist Anita Thiele, Germany, and silver medalist Sandra Mader, Germany.

The event featured participants from more than 80 countries and is easily the largest open-circuit karate championship in the world. It's become such an important event for the sport of karate that the U.S. Olympic Committee visited last year to open a dialogue about adding it as an official Olympic event.

Sandy's interest in karate was sparked by her younger brother Michael, who brought her to his karate class 11 years ago. Peavey, owner of the Top Kick Karate School in Kingwood, remembers when she first arrived at his school with her brother, who was nine at the time.

"It's kind of a funny story how she came here," Peavey says. "From time to time what I do to attract new students to the school is offer opportunities for kids, and I was offering her brother —or anybody in the karate school who brought in a new student— free head gear, which is a piece of equipment that is kind of expensive. So her brother convinced her that she needed to come to karate and try it. Well, the minute she tried it she got hooked and she's been here ever since. And since then she's won and done more things than I'd ever dreamed any one person would do."

Michael stayed in karate about another year and then turned his attention to football. Meanwhile, Sandy was introduced to sparring, or fighting, and kata, which somewhat resemble floor exercises in gymnastics.

During that time, Sandy began learning about the two main types of kata, soft and hard. "Soft style is a Chinese art form," Sandy says. "It's very beautiful and almost looks like a dance, with its fast, fluid, flowing motion."

Between the ages of 11 and 15, Sandy also was actively competing in softball, swimming and track. At the end of her sophomore year of high school, her mother asked her to choose one sport, hoping she would pick softball because she thought Sandy might be able to get a scholarship. "But I ended up getting one for martial arts so she was okay with that," Sandy says.

In addition to scholarships obtained through the university, she received a scholarship every year from her karate school. Peavey, who worked for Exxon for 16 years, is a retired engineer, and he was instrumental in bringing Sandy into engineering.

Peavey still marvels at Sandy's accomplishments, both in martial arts and in academics.

"Through all of her college years, she was training four to five nights a week and teaching karate to students and still staying up till two o'clock in the morning studying, getting up the next day and going to the University of Houston," says Peavey. "And what does she do? She graduates with honors in mechanical engineering. Now, it takes a special person to have that kind of drive and that kind of commitment. And all the time she was doing that she was winning state titles, traveling and competing against the state's best black belt women."

Sandy's 2001 World Championship Medals

-Silver in Soft Style Forms- -Silver in Team USA Women's Fighting- -Bronze in Women's Fighting (under 55Kg)-

Sandy says her karate training has shaped a strong sense of self-discipline, which is so vital to meeting the multiple challenges she faces in her life. Not surprisingly, Peavey stresses the importance of building good character along with karate skills. Because of that, he developed a community service team that performs at area hospitals for sick children, which is how Sandy initially became interested in mechanical engineering.

"We were out visiting the Houston Shriners Hospital for Children," says Sandy, "and there was this little boy who had a prosthetic device on his leg. I began talking with the doctors about some of the devices they were using, and they told me it was all biomechanical engineering. That child had a profound impact on my life. He taught me what having character was all about."

Peavey confirms Sandy's understanding of what it means to have character. "She is the most driven person I've ever met. When she does something wrong, she'll do it over and over and over again until she gets it right. And that's why she's as successful as she is. She has incredible character. A lot of people who are personally driven don't tend to be people who are willing to give of themselves on a regular basis. One of the things that is truly unique about Sandy is she gives of herself more than any student I've ever had."

So what does Sandy teach the children at karate school when she teaches them about having character?

"Be responsible in your life," she says. "When you've done something wrong, you say you've done wrong and you pay your price. Students are required to keep up a certain grade point average, and once students at the school become a green belt, they have to teach. We feel that teaching to give to others is the best thing you can do."

As it happens, teaching karate is yet another area of excellence for Sandy.

"I was a yellow belt when I first started teaching. I came in early one day because my mom is a single parent so she had to drop me off early, and I began helping Master Peavey with teaching. He asked me to stay because I had a knack for it."

Peavey credits Sandy with making his students better than most. The school placed nine members of the U.S. National Team in 2001, a record number for any single school in the country.

"The reason the kids are so good is because they have somebody out there who is a superstar in everything she does, and we're not just talking about at this school," says Peavey. "You just have to be around her to see how gifted she is with kids. She knows when to hug them and when to get on them about trying to do better. And she does it gracefully and with incredible class. And kids elevate to that. We've got kids in here that never would have achieved what they've achieved but for what Sandy has done."

Sandy says the key to good teaching is striking a balance between challenge and encouragement. "When you're sparring with a student, you fight just above their ability level, which encourages them to get better and teaches them self control," she says.

Sandy has already begun her initial training for the 2002 World Championship.

Now that she's captured silver and bronze medals, is Sandy hungry for gold? "I like being number one," she says with a smile.

Karate Champion Tackles Biomechanical Engineering Problem for NASA

By Brian Allen

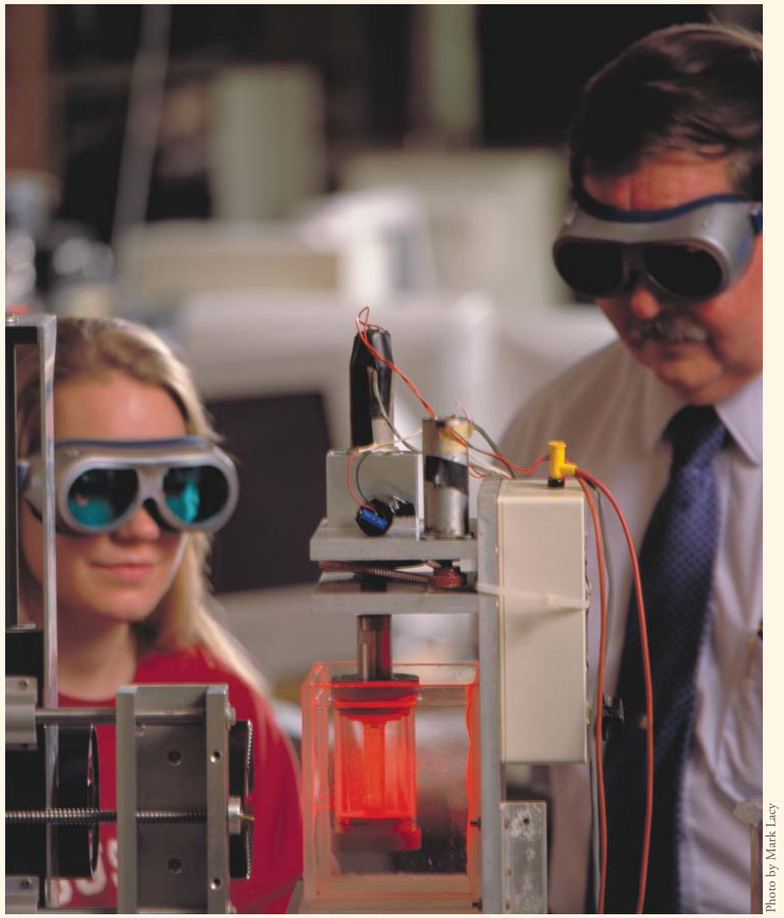


Photo by Mark Lacy

Sandy Geffert (2001 BSME) burst onto the scene of international karate competition a year ago, claiming two silver medals and one bronze medal at the World Karate Association's 2001 World Championship in Vienna, Austria.

When she returned from her first-ever international competition, she had another challenge to contend with: coming to terms with the intricacies of the fluid dynamics within bioreactors in microgravity. Sandy is working on a project for NASA with Stanley Kleis in the Department of Mechanical Engineering, and their work may help lay the foundation for the development of new lifesaving medical technologies for cancer and other diseases.

Kleis's mission is to further enhance the functionality of a bioreactor he designed to grow cells in space, cells that are, in some cases, impossible to grow elsewhere. NASA is interested in looking for the effects of microgravity on cells—animal cells in particular—because they're concerned about long-term exposure of astronauts to life in space.

"We're trying to provide cell scientists with an environment where they can keep these cell cultures alive in space for long periods of time," says Kleis. "Most animal cells are very sensitive to shear stresses. The cells and microcarriers they grow on are slightly heavier than the media in which they are grown. Even the stress levels that are generated by stirring reactor vessels at one G to suspend the cells in the media are enough to damage the cells. So by putting these in microgravity, we can stir them at much lower rates, produce much lower stress levels on the cells, and keep them alive."

Kleis's rotating-wall perfused-vessel has flown two flights on the space shuttle since he developed it nearly 15 years ago, and it has yielded valuable insights for cell biologists at various universities, including the Massachusetts Institute of Technology and the University of Pittsburgh.

The device is a small, cylindrical-type vessel with a flat disk at one end that rotates, creating a flow field that mixes the fluid around very gently. That motion transports the oxygen and nutrients without causing severe stress on the cells.

On previous missions, gas bubbles have gotten inside the vessels and in space they are extremely hard to remove. Sandy is working with Kleis to develop computer modeling of the fluid mechanics within the bioreactors. Her numerical modeling will help Kleis and his colleagues better predict the motion of bubbles in the bioreactor.

"One of the problems we've had over the years with these vessels is that when they get into space, gas bubbles form," Kleis says. "For example, they ran some cell experiments on MIR (space station) for a couple of months and they ended up getting very large volumes of gas in it for various reasons, and because of the geometry that we use it was difficult to get the bubbles out. So now we're looking at some modifications of the geometry that will make it easier to remove the gas from the vessel."

That's where Sandy's work comes in.

"She's is actually doing some numerical modeling to predict the motion of these gas bubbles, where they'll go and whether we can collect them in the center of the vessel near a port and remove them," Kleis says.

As an undergraduate last year, Sandy wrote her honors thesis on issues connected to a biological transport container, exploring a biomechanical engineering idea: How do you transport serum and vaccines and keep them within a thermal tolerance?

"Back when we were working on this, we had no idea how timely this subject could be," says Keith Hollingsworth, associate professor of mechanical engineering.

The project focused on a box designed to hold items between four and eight degrees centigrade, just above freezing. If the items freeze or they get too warm, their efficacy is destroyed.

"In the case of a bad vaccine, probably it doesn't have any side effects," Hollingsworth says. "Only after the person has gotten sick do you realize the vaccine didn't work. Delivering temperature sensitive products of any kind—medical or otherwise—to certain areas of the world is very difficult."

Sandy is also a student advisor for the Department of Mechanical Engineering. Working with Charles Dalton, Sandy assists in counseling freshmen and sophomores and orientation. "She's very effective, very conscientious and very pleasant," Dalton says. "The students can relate to her quite well because they consider her a peer."

Dalton says Sandy's experience as an undergraduate gives her special insight into managing the complexities of a class schedule.

"She trained and taught karate classes almost every evening when she was working on her bachelor's degree," he says. "I'm sure that kind of demand on her time helped her learn how to juggle schedules. In fact, she went through her entire undergraduate curriculum without ever taking any classes at night. I've never heard of anyone being able to do that before."

Left: Masters student Sandy Geffert works with associate professor Stanley Kleis on a bioreactor for NASA.

Donor Roll Call *Thanks!* September 1, 2000 – August 31, 2001

Photo by Phil Busby

Dean Raymond Flumerfelt and Vita Como present a signed Shasta to thank Leo Garcia (1978 BSCE, 1997 MBA) with Dow USA for his support of the college.

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DONOR PROFILES

Durga Agrawal

Photo by Bill Ashley

In 1962, Durga Agrawal received a National Scholarship from the government of India to study mechanical engineering, an honor that impressed upon him the value of student programs. Forty years later, he is returning the favor to students in Houston.

"I believe in helping students," Agrawal says. "We must give back to our community, to young people."

What Agrawal wants to give is knowledge. He supports UH through the Piping Design program, and serves on the Advisory Board for Industrial Engineering, as well as the Engineering Leadership Board. In 1998, Agrawal received the Outstanding Alumni Award from the Department of Industrial Engineering.

Agrawal earned his master's and doctorate in industrial engineering from UH after graduating with a B.S. in mechanical engineering from the University of Delhi. In 1978, Agrawal established his manufacturing firm, Piping Technology & Products, Inc. The firm has grown from a home-based business with a handful of employees to a thriving company with a workforce of almost 400, many of whom are UH graduates. In just the last six months, Agrawal has hired four UH alumni. Engineering interns from UH also frequent Agrawal's company, and he has set up an endowment for industrial engineering students in the Cullen College of Engineering.

Donor Profiles & New Endowments / By Tara Wijnanda Mullee

$250 to $499

Robert F. Andrews
Richard D. Bedell
Black & Veatch Corporation
Gerry A. Bollom
Daria I. Bougai
Dr. & Mrs. James Dee Bozeman
Robert J. Brunsman
Earl P. Burke, Jr.
Dr. Forest Busby, Jr.
Ronald T. Cambio
Philip L. Carpentier
Mr. & Mrs. Robert W. Caster
Richard R. Collins
CONDEA Vista Company
Timothy Michael Cross
David Duerr
Duke Energy
Mr. & Mrs. Allen G. Dusek
Dr. S. K. Evnochides
Fluor Daniel, Inc.
Stephen C. Franke
James Douglas Gamel
Charles L. Gerlovich
Frederick D. Gillespie, Jr.
Robert L. Goodmark
Mr. & Mrs. Charles Hakansson
Grant S. Hammond
Robert Lee Hayes
Mr. & Mrs. William Eugene Heck
H. Vernon Hough
Joe Williamson Construction Co.
Mr. Roger S. Joyner
Frank C. Kampe
Robbie L. Keller
Cynthia L. Kelsch
Mr. & Mrs. Joseph N. Labra
Dr. & Mrs. Jeng-Shong Liaw
Lance L. Lobban
Dr. Bruce Robert Locke
Gerald B. Long
Christopher Jon Matice
W. Fred McGuire
Edward H. Mergens
Mark C. Moyer
Denise M. Neylon
Satoshi Sut Oishi
Dr. Gerhard F. Paskusz
PathFinder Energy Services, Inc.
PBS&J
James Randall Pendergrass
Dr. & Mrs. L. Douglas Power
(continued on page 26)

Cheryl L. Thompson-Draper

The owner of the largest woman-owned electrical, utility and telecommunications distributor in the world, Cheryl Thompson-Draper played an integral role in the 1999 development and launch of a UH program that teaches students distribution and technical marketing as well as industrial engineering skills.

Courtesy of the Houston Alumni Organization

Thompson-Draper led the founding and funding of the innovative Distribution and Logistics in Engineering Program in the Cullen College of Engineering, a program which combines engineering analysis with business operations, commerce and strategy.

Thompson-Draper knows the value of business skills. In 1970 she began as a file clerk in the family business and is now owner, chair, president and CEO of that same company, Warren Electric Group. The company has grown to cover more than 30 national and international locations and was named Texas Family Business of the Year in 2001.

Programs such as the Distribution and Logistics in Engineering Program can help engineering students learn the business aspects of their field and provide the means to achieve a level of success such as Thompson-Draper's. Previously, no engineering degree program offered students learning opportunities in distribution, supply chain management, planning and scheduling, finance, technical marketing and sales. Aimed at students interested in leadership and entrepreneurship, the program allows flexible career options.

Elizabeth Dennis Rockwell

Elizabeth Rockwell recently committed to endowing a dean's chair in the Cullen College of Engineering, the latest in a series of gifts and services dedicated to supporting and enhancing education at UH.

Recognized as a "Friend of Education" by the College of Education, Rockwell received an Honorary Doctorate of Humane Letters from UH in 1999. She earned her bachelor's at UH in Business Administration and Accounting, and is now the executive director, Private Client Division of CIBC Oppenheimer Corp.

Rockwell serves on numerous boards at UH, including the Cullen College of Engineering Leadership Board, Bauer College of Business Foundation, Bauer College Dean's Advisory Board, Law Center's Health Law Policy Institute Board and the UH Foundation Board. She formerly served on the UH Planned Giving Council.

Photo by Bill Ashley

In 1997, the C.T. Bauer College of Business opened the Elizabeth D. Rockwell Career Services Center. Rockwell received the Distinguished Alumna Award from the College of Business and from the Houston Alumni Organization.

In addition to the Cullen College of Engineering Dean's Chair, Rockwell has also recently endowed a dean's chair to the M.D. Anderson Library and promised to endow one to the College of Education.

$250 TO $499 *(continued)*

Chris J. Rhine
Rudolph Rusnak
Dr. Ram V. Seetharam
M. H. Shepherd, III
James R. Simmons
Maurice J. Slot
Rick A. Stanford
James L. Steller
W. L. Tanner
Texas Instruments, Inc.
James Viaclovsky
Dan N. Westigard
Joseph D. Williamson

$100 TO $249

Aamco Transmissions
Dr. Samuel Onyebuchkw Agbo
Alberto Q. Amatong, Jr.
Terry A. Anderson
Thomas Michael Andrews
John M. Arnsparger
Dr. Satish D. Athavale
Anthony Robert Avilla
Chet A. Babin
James Gregory Badgett
Alan Roy Bair
Federico D. Bandini
Patrick C. Barrow
Walter Ronald Bartel
Kenneth Edward Bell
Donald R. Betterton, Sr.
Bineet S. Bhachu
Dr. Akhil & Sudha Bidani
Jeffrey Alan Bish
Keith D. Blaze
Henry Oliver Boswell, Jr.
Stephen J. Bowles
James W. Breaux, P.E.
Alfred Wayne Brinkmeyer
Hernan A. Brito, Jr.
Mr. & Mrs. William E. Brogan, IV
Michael G. Broome
Donald E. Brown
James Temple Burcham
Patricia Byerly
Timothy Howard Cahill
Dr. Timothy T. Cao
Juan J. Capdevielle
Bruce Alan Carmichael
William A. Carpenter, Jr.
Miguel A. Castillo
Edward Earl Castor, II
Victor M. Castro
Eugene C. Cavanaugh
Mr. & Mrs. Robert C. Chase
Charles Ronald Cheek
Circuit Concepts, Inc
Karan L. Cleland
Mr. & Mrs. Gabriel W. Cuadra
Dave K. Davis
Eric Alan De Vries
Robert Gregory DeMoor
Mr. & Mrs. Charles Thomas Dickson
Dr. Harold Hughes Doiron
Dr. Charles E. Donaghey, Jr.
Mr. & Mrs. Hasmukh Harilal Doshi
Mr. & Mrs. Richard P. Doss
Mr. & Mrs. Chester Joseph Drash
Dr. Bonnie J. Dunbar
Bassam Elkhoury
David Charles Englet
Gregory Eugene Fife
Stanley R. Fleetwood
Paul John Fruia
Steven P. Gardner
Dennis F. George
Frederick William Giffels, Jr.
Verland Lee Granberry
Michael Angel Guardia
Edna K. Gunn
Dr. Ho-Boo Ha
Gene P. Hackney
Dr. Shaddy Y. Hanna
Stephen F. Harper
Mr. & Mrs. Dwight R. Hayes
Michael Patrick Hemmi
Gregory G. Hendrickson
Robert P. Herrmann
Herbert D. Hickman
Thomas John Hirsch
Lisa A. Holmesly
Richard W. Hon
Michael R. Hugg
Peter Joseph Hurley, III
Mr. & Mrs. Gary L. Hurta
Dr. Zaki D. Husain
Michael R. Irwin
Gerald William Jacobs
Joe W. Jeanes
Mr. & Mrs. James Erwin Johnson
Roderick G. Johnson
Seda Kalantarians
Dr. & Mrs. Mohammed A. Khalifa
Robert H. Kin
James Kinzler
Claude R. Kirby
Emmanuel D. Kisamo
Jeffrey Vincent Kling
Russell Keith Kneupper
(continued on page 28)

Ronald and Bertha Lohec

Ronald Lohec, a successful engineer and UH alumnus, and his wife Bertha set up a scholarship endowment fund last year to express their gratitude to the Cullen College of Engineering.

Photo by Phil Busby

"My engineering degree enabled me to have a satisfying career and a good life," Lohec says. "I felt like I ought to share a little bit of that with other people."

Lohec graduated from UH in 1955 with a bachelor's degree in mechanical engineering. He worked for Exxon Corp., now ExxonMobil Corp., for more than 30 years in the field of petroleum reservoir engineering. In 1986, he retired to become an engineering consultant. Lohec has also authored and co-authored several technical papers.

The scholarships created from the Lohecs' endowment fund will give other UH students the chance to experience the same success. The fund, which will be preserved as a permanent endowment, also consists of matched contributions by the ExxonMobil Foundation. It will help cover the cost of tuition, books, fees and supplies for engineering undergraduates in good academic standing who exhibit leadership, motivation and other valuable qualities—ones which helped Lohec attain success in his career and studies at UH.

Cecil and Louise Holder

Photo by Phil Busby

Last year, Cecil Holder and his wife Louise established an endowment fund in the Cullen College of Engineering as a way of saying thank you to the university that provided him and his children with the education that propelled their success.

"I felt that the University of Houston had opened its arms to me," says Holder. "I think it gave me a very good education. I have not found myself short in competing against Rice or Texas or Harvard or any other school around."

Holder graduated from UH on an athletic scholarship in 1960, with a double major in petroleum engineering and mathematics. He worked for more than three decades in petroleum reservoir engineering. His son and daughter also earned UH degrees, one in computer science, the other in accounting.

Now Holder wants to provide current and future engineering students with the same opportunities through his scholarship endowment fund and by raising awareness of UH's qualities.

"I want to try to help people recognize what a great school they have here," Holder says.

ExxonMobil Corp., where Holder worked for more than 30 years, also contributed to the Cecil and Louise Holder Dean's Scholarship Endowment. Holder retired in 1992, but the Holder name didn't leave Exxon. His son has worked there for more than 20 years.

$100 TO $249 *(continued)*

Deborah A. Korndorffer
Robert Eugene Krancher
Mr. & Mrs. C. James Kuo
Dr. Chiang-Hai Kuo
Dr. Chi-Tat Thomas Kwan
Joe P. Lamb
Stanley Lasser
Gary Lemley
Mr. & Mrs. Clifford L. Lenert
David Roger Lewis
Kay Ko Lin
Mark L. Loethen
Jack Darrow Loftis, Jr.
Russell Long
Tony Tung-Ming Man
Jeffrey Wayne Maresh
Wayne A. Matthews
Ronald Cyril McCain
Jack D. McCartney
John H. McConnell
Gary D. McCullough
Anthony W. McLai
Margaret C. McPhail
Peter Robinson McStravick
Julie M. Mialaret
Middle East Equipment Company Inc.
Joseph E. Mims
Hugh T. Mixon
Mr. & Mrs. James Brock Moore, III
Michelle B. Moore
Gene H. Muhlherr, Jr.
Mr. & Mrs. Billy R. Neeley
Mr. & Mrs. Tho V. Nguyen
Thomas A. Odom
Anastasios Ernest Papavasiliou
Shirish Arvind Paripatyadar
Christopher L. Parker
R. Thomas Perry
Cong Thanh Phan
Dr. Ven Pinjala
Michael J. Piwetz
Elizabeth & George Placke
Gary Young Poole
David Russell Pratt
Michael Proch
Dmitry V. Rachuk
Joseph Edwin Ramsey
David Carlton Randal
Anthony L. Randall
Red Hot Code Developers
Marcos E. Reyes
Luis A. Reyna
Mr. & Mrs. Paul J. Ring
Charles J. Ritchie, Jr.
Kevin Rupert
Clifton Ray Russell
Zeev Saggi
Beverly Clark Scheliga
Keith Depaul Schindler
Adam Schneider
Otis A. Shelton
William S. Shelton
Chia-Fu Sheng
Richard E. Shepherd
Katherine H. Siller
Marilyn C. Simmons
Dr. & Mr. Charles H. Simonds
Dr. Randal Warren Sitton
Melvin R. Skarke
Kevin G. Smith
Sarabeth Waller Smith
Dr. Theodore James Smith
Walter Kurt Smith
Dr. Miles A. Smither
John Lynn Spencer
Tim Stalinsky
Major William Henry Stanley
Marvin C. Steffek
Ronald R. Stephenson
William R. Sudlow
Virgiliu S. Suseanu
Sabrina Sweeney
Tamborello Engineering Corporation
Chung I. Tan
Tetradyne, Inc.
L. J. Tichacek
Tom Tilton
Fan Tou
Lawrence N. Tran
Robin T. Tran
Robert C. Treadwell
Peinan Tsou
Dan N. Turner
Brian Erkin Turung
William A. Valka
Dr. Suresh P. Venkatesan
Dr. Suzan Voss
Thomas A. Wahlheim
Charles L. Waite, Jr.
Peter F. Walker
M. Judson Wallace
Ilene A. Warnke
James D. Warwick
Mr. & Mrs. Raymond Joseph Watkins
Drew S. Weaver
Westside Inspections & Engineering
David Charles White
Michael Dwain Williams
Donald E. Wooten
Dr. Robert Emmett Yates
Victor A. Zaloom

: : : : : 1960's : : : : :

Rod Canion (1966 BSEE, 1967 MSEE) was inducted into the Texas Business Hall of Fame on Oct. 18, 2001. He is the co-founder of Compaq.

Reuben Charles Plachy (1968 BSCE) retired on June 2, 2001 from the Federal Highway Administration after 36 1/2 years with the Federal Government (three with the Army Corps of Engineers on the Co-op program, two with the U.S. Army and 31 1/2 with the Federal Highway Administration). He served as the assistant division bridge engineer for the Florida Division from February 1978 until his retirement. Reuben can be reached at reuben.plachy@att.net.

: : : : : 1970's : : : : :

Frank Adamek (1972 BSME, 1975 MSME) was recently elected senior vice president for the Council on Engineering in the American Society of Mechanical Engineers. He is the manager of research and development at ABB Vetco Gray, Inc.

Harry Corder (1972 BSCE) is the senior engineer for the City of Santa Clarita in California. Previously, he was owner of HBC Project Management. Harry can be reached at hcorder@santa-clarita.com.

Rick Coneway (1973 BSCE, 1976 MSCE) joined Law Engineering and Environmental Services in January to manage their Austin office. Previously, he was the vice president of Informatics Corporation in San Antonio. He was recently inducted into the Academy of Fellows for the Society of American Military Engineers, where he has been a member for more than 10 years. He has more than 28 years as a consulting civil and environmental engineer in private practice and 11 years as a civil engineer officer in the U.S. Air Force Reserve. Retiring as a colonel from the Reserve, his 31-year decorated military career also includes 20 years in aviation, flying mostly Phantom F-4 fighters for the Air Force and Navy. The Texas Society of Professional Engineers recognized him as Engineer of the Year in 2000. Rick can be reached at rconeway@aol.com.

Allen D. Gault (1975 BSME) received the 2001 Conoco Technical Excellence Award in October for his contributions to the Subsea Mudlift Drilling Joint Industry Project. He is a senior staff engineer for Conoco and can be reached at Allen.D.Gault@conoco.com.

Parke T. Reid (1979 MSCE) is a senior engineer for the City of Houston Department of Public Works and Engineering. He can be reached at Parke.Reid@cityofhouston.net.

: : : : : 1980's : : : : :

Bob McDonald (1981 MCE, 1985 MBA) successfully defended his dissertation at the University of Connecticut in November. He is an assistant professor of marketing in the Rawls School of Business at Texas Tech University. Bob can be reached at mcdonald@ba.ttu.edu.

Steve Simmons (1981 BSCE) was recently named deputy executive director of the Texas Department of Transportation, where he will implement and manage TxDOT's statewide policies and programs with more than 14,000 employees and 77,000 miles of state maintained roadways. Previously, he was the district engineer in Fort Worth since 1998. Under his management, the Fort Worth District earned TxDOT's Metropolitan Design Excellence Award three years in a row for maintaining high quality plans and letting schedules. In 1993, Simmons became the deputy district engineer in the Houston District meeting its many varied transportation challenges as well, like the removal and reconstruction of the Pierce Elevated Bridge in less than a year.

Arup K. SenGupta (1984 PhD) received the 2001 Frontier Research Award in Environmental Engineering from the Association of Environmental Engineering and Science Professors in October 2001 for his contributions in environmental separation and monitoring. The award is given for advancing the frontier of environmental engineering by introducing new knowledge in the field for a prolonged period of time. Arup is chairman of the Department of Civil & Environmental Engineering at Lehigh University in Bethlehem, PA and can be reached at aks0@lehigh.edu.

Daniel Wong (1985 MSCE, 1988 PhD CE) is chief executive officer of Tolunay-Wong Engineers, Inc., which was recently named by the UH Small Business Development Center as a Houston 100 company.

David Higgins (1986 BSCE, 1995 MSCE) joined Alliance Engineering as a senior technical professional. Previously, he was a structural specialist for Burt-Kleinpeter, Inc. David can be reached at dhiggins@alliance-engineering.com.

: : : : : 1990's : : : : :

David Nghiem (1990 MSEE, 1993 PhD EE) joined the UH Cullen College of Engineering as director of the Telecom Center and assistant dean of outreach education and research. Previously, he was founder, president and chief executive officer of USA Wireless, Inc. He has also been a senior engineer for Qualcomm, Inc. and an associate principal engineer for the Harris Corporation. Since 1997, he has been an adjunct professor in the UH Department of Electrical & Computer Engineering. He is a member of the IEEE/SCC34-SC2 Subcommittee on Wireless Handset Specific-Absorption-Rate Certification.

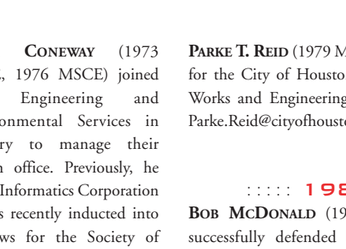
James Ortiz (1996 PhD EE) and UH professor Guanrong "Ron" Chen were selected to receive the M. Barry Carlton Award from the IEEE Aerospace and Electronics Systems Society for their article, "Intelligent Control for a Planning System for Astronaut Training." IEEE Aerospace and Electronics Systems Society gives the award for the best paper published in the *AES Transactions* during a calendar year. They will each receive a plaque and share a $1,000 cash award in recognition of their work. James and Ron began researching the topic as part of Ortiz's doctoral studies. James is the chief engineer for project analysis at Johnson Space Center Systems Management Office. He is also a member of the Industrial Advisory Committee for the UH Department of Electrical & Computer Engineering and lectures classes on control systems theory.

Y. Doreen Chin (1997 PhD ME) received ASME Petroleum Division's Jacobsen Best Paper Award at the Engineering Technology Conference on Energy in February 2001. She is manager of the Flow

Alumni News Briefs

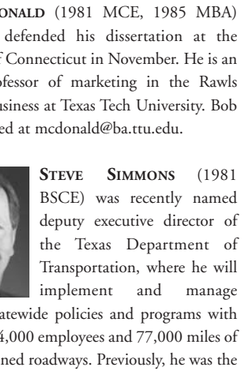
December Graduation

The Class of 2001 engineering graduates received their degrees at the UH Cullen College of Engineering Convocation on Dec. 14, 2001. A web cast of the ceremony is available at www.egr.uh.edu/news/1201/?e=gradwebcast.



Master of electrical engineering graduate Isaac Lagnado with his daughter following the college's convocation ceremony.

UH engineering graduates at the Cullen College of Engineering's reception following convocation.



Raymond W. Flumerfelt, Dean of the Cullen College of Engineering.

Use Your Expertise To Assist a UH Student

University Career Services is seeking advisors to provide information to UH students and alumni about career planning and the job search. Involvement can be at any level—from an exchange of e-mails to serving as a speaker for a student organization. Volunteers control the number of students they work with each month and contact is by e-mail.

To register as an advisor for the University Career Advisory Network (UCAN), visit www.career.uh.edu and click on the UCAN icon. For more information, contact Andrea Hall at 713-743-5094 or e-mail ahall@uh.edu.

Mentor Students Online

The UH Cullen College of Engineering has joined MentorNet to provide an online mentoring program which pairs undergraduate students with women engineering graduates. Spend 20 minutes per week providing mentoring via e-mail for a woman studying engineering. For more information, visit www.mentornet.net.

EAA Wins Third Consecutive Banner Year Award

For its active involvement in 2001, the Engineering Alumni Association received the Houston Alumni Organization's Banner Year Award at its Annual Meeting on Oct. 20, 2001. This was the third year that EAA has won this prestigious award. For a detailed list on last year's activities, visit www.egr.uh.edu/alumni/?e=about.

Are you interested in taking a more active role with the Engineering Alumni Association? For more information or to get involved, visit www.egr.uh.edu/alumni, e-mail alumni@egr.uh.edu, or call 713-743-4200.

Receive Engineering Alumni News E-Mails

Stay connected with your alma mater! Receive engineering news e-mails by subscribing to the college's news for alumni and friends listserv. To see previous messages or to sign up, visit www.egr.uh.edu/news/listserv.

Assurance Department at J.P. Kenny, Inc., a leading offshore engineering company. Doreen can be reached at doreen.chin@jpkhouston.com.

Azkar Choudary (1999 BSEE) is founder of the five-year old Web site www.pak.org and chief technology officer with WebAndNet Computing, the firm that operates it.

2000's

Russell Long (2000 BSEE) is a test process engineer for Electronic Products and Solutions Group, Signal Sources New Product Introduction at Agilent. He can be reached at russell_long@agilent.com.

Marriages

Tony Catalano (1979 MSChE) married Karen Casey Day on July 21, 2000 at the Lancaster Hotel in downtown Houston. Tony is a cofounder and senior vice president of Sago Energy, LLC. He can be reached at acat@sagoenergy.com.

Sharoni Chaudhuri (2000 BSChE) married Navin Rajashekar on Nov. 23, 2001 in Houston. Sharoni is an applications engineer for Invensys Process Systems and can be reached at schaudhu@foxboro.com.

Births

Fred B. Himburg Sr. (1966 BSME) and wife Charlene welcomed the arrival of their first grandchild Kayla Mary Himburg on Feb. 6, 2001. The proud parents are Fred Jr. and his wife Lesley. Fred Sr. retired from ExxonMobil in 1999 and can be reached at fhimburg@flash.net.

Dipul Patel (1998 BSCE) and wife Brinda welcomed home Riya Patel on Sept. 24, 2001. She weighed five pounds and 11 ounces. Dipul is a project manager for The Beck Group and can be reached at dipulpatel@beckgroup.com.

Deaths

Jolly Clay Hartsell (1951 BSPE) died on Sept. 8, 2001 in Midland, Texas at the age of 73. He was selected for the South All-Star Team in Basketball out of Victoria High School and played in the first Texas High School All-Star Basketball

game. He was drafted by the New York Giants after high school, but decided to pursue his education instead. He attended Schreiner Institute from 1946–48 where he played football and basketball. He played quarterback and defensive back for the UH football team. Jolly married Peggy Jowell on June 21, 1952 in Houston. After graduation, he was employed with Magnolia Petroleum in Healdton, Oklahoma, and Crown Central Petroleum in Palacios, Abilene, Midland and Houston. He retired from Crown in 1988 after 35 years with the company. He was a deacon with the Deaf Ministry at Golf Course Road Church of Christ and a member of Ranchland Hills Country Club and the UH Lettermen Association.

Louis J. Knippa (1951 BSCE) died on Sept. 17, 2001.

Robert Loren Dotts (1965 MSME), who was the chief project engineer during early development of what became the international space station, died Dec. 15, 2001 at the age of 61. Robert graduated from Ohio State University and found his first job as a NASA engineer at Houston's Johnson Space Center in the early 1960s. Robert, who retired last year after 38 years with NASA, was employed as an aerospace consultant for Science Applications International Corp. at the time of his death. Robert received several awards for engineering achievement on the flight of the first shuttle, Columbia, in 1981. He also earned three patents for lightweight tiles to protect the shuttle from intense heat during re-entry from orbit. When he retired, Robert was working as deputy director of technology transfer, investigating new inventions and designs. He spearheaded a project that developed special spacesuits for children who have a rare condition that prevents them from tolerating the sun's ultraviolet rays. Robert was a second-generation NASA employee. His father, Homer Dotts, reached the level of second in command over development of the space shuttle.

Key:
ChE — Chemical Engineering
CE — Civil Engineering
ComE — Computer Engineering
EE — Electrical Engineering
EnvE — Environmental Engineering
IE — Industrial Engineering
ME — Mechanical Engineering
PE — Petroleum Engineering

Class Notes

Send us your alumni news about new jobs, promotions, honors, moves, marriages, births, etc. Attach additional news clips or photos separately. Please include a self-addressed stamped envelope if you want your photos returned.

All Class Notes should be sent to:
Parameters Magazine, UH Cullen College of Engineering
E316 Engineering Bldg 2, Houston, TX 77204-4009
E-mail parameters@egr.uh.edu or visit www.egr.uh.edu/parameters

Name_____

Degree(s)/Major(s)_____ Class Year(s)_____

Day Phone_____

E-Mail Address_____

❑ Permission to print my e-mail address with my Class Note.

News_____

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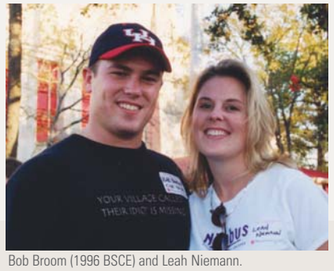
Alumni News Briefs

Homecoming 2001

Engineering Alumni Association board members Michael Chastant (1998 BSChE), Homecoming Chair Bob Woodward (1997 BSIE) and Ray Scheliga (1979 BSME) at the EAA Homecoming tailgate party.

Engineering students in the Industrial Scholar Interns Program at Homecoming included (front row) Amada Duran, Omolayo Badru, Adrienne Thompson, Amie Blake and Javier Franco; (second row) Dirk Calderon, Brian Henderson, Curll Dowden, Obiageli Osamor, Eric Writer, Casey Broxson, Joseph Coleman and Chris VanNess.

Mechanical engineering professor David Zimmerman and his wife Lisa.



Bob Broom (1996 BSCE) and Leah Niemann.

Jim Sikes (1970 BSME) and Pat Eastridge.

Annette Vogel (1985 BA Journ, 1990 JD) and John Paul Vogel (1986 BSCE, 1991 MSCE) with their daughter.

Mike Lacy (1985 BSCE) shoots some hoops for his team during Armchair Olympics at tailgate.

UH Cullen College of Engineering staff members Shirley Ray, Mytrang Baccam and Kim Jordan from the Department of Electrical & Computer Engineering and Angie Shortt (not pictured) from the Dean's Office participated in the Homecoming Parade. Homecoming Week started off on Monday with the annual golf cart parade. The UH Cullen College of Engineering was the only college to participate this year!

Sarah Ann St. John and Bill St. John (1975 BSCE).

More than 150 alumni, faculty, staff and students came out to the Engineering Alumni Association's annual Homecoming tailgate party on Oct. 20, 2001 to help the UH Cullen College of Engineering kick-off its 60th Anniversary. Besides eating barbecue and reuniting with old classmates, many participated in the competitive Armchair Olympics, which teams an alumnus, professor and student by academic department to compete by shooting basketball hoops, throwing darts and putting on the green. The highlight of the afternoon was the dozens of UH raffle items.

Photo by Mark Lacy

Engineering Education OPENS WIDE WORLD OF POSSIBILITIES

By John H. Lienhard

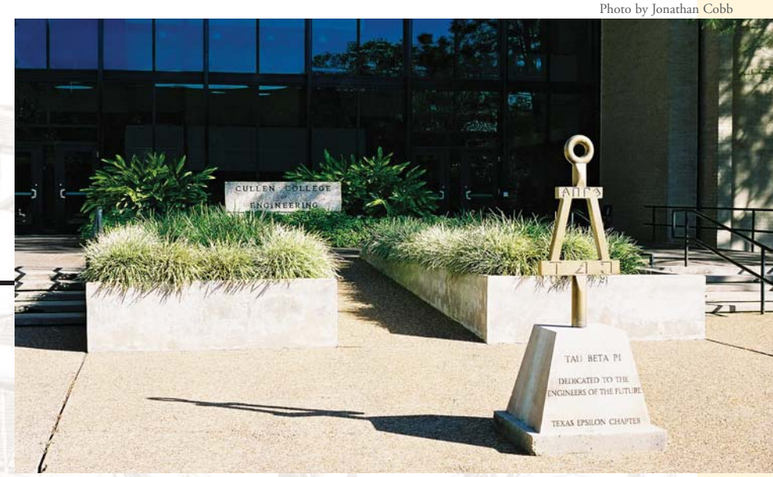


Photo by Jonathan Cobb

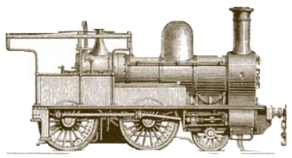
Science is, no doubt, the work of accurately describing what *is*. But it is the work of *engineers* to determine what *might be*.

That fact underscores the history of our 60 year journey from having no engineering program to having a very strong program indeed at the University of Houston. We have done so by keeping education simultaneously rooted in the sciences and in the engineering community of a burgeoning city. That combination has uniquely shaped the education of the thousands of engineers who have studied here.

The old stereotypes are wonderfully inverted in any good engineering school, but here more than in most. The science portion of our students' education provides the grist of practical day-by-day reality, while the engineering portion deals with the imagined and theoretical world of infinite possibility.

We might as well forget about framing any conventional definition of who and what our students will become. Once they have finished, their life-course is wide open. Just how wide open came home to me the other day when a colleague told me about something he had done in his class.

He had asked a group of freshman engineering students to write down nine names: three famous scientists, three famous inventors and three famous engineers. Few had any trouble with scientists. Most could name one or two inventors. But few of the engineering students could name *any* famous engineers.



They might have chosen any number of names: Vetruvius, Watt, Brunel, Eiffel, Mulholland, Rickover, Herbert Hoover and Jimmy Carter, Nevil Shute and Henry David Thoreau, Josiah Willard Gibbs. But we call Vetruvius and Eiffel architects. We call Watt and Brunel inventors, and Gibbs a scientist. We call Hoover and Carter political figures, and Rickover an admiral. We know Nevil Shute and Henry David Thoreau only as writers, even though both did major engineering work. The Cellist Carlos Prieto and the sculptor Alexander Calder are/were both engineers.

The *word* engineer is the etymological kin of both the word *engine* and the word *ingenuity*. Some people focus on engineering as a *profession*—an enterprise in which the public places its trust. Others see it as a source of new technology. Some expect engineers to expand our knowledge of *means* for building things. An essential tension lies among these different pursuits.

The most sober and reliable professional has limited interest in potentially dangerous new ideas. At the same time, codes and standards might lie pretty far off the radar screen of someone deeply involved with, say, creating new turbine-blade cooling systems in the laboratory.

This state of affairs is the direct result of our three-part engineering curricula. One part is mathematics and science. Technical engineering is another. Liberal arts and writing form the third. Within this framework, engineers get one of the best liberal educations available. In fact, some schools give their engineers a Bachelor of *Arts* degree instead of a Bachelor of Science.

That term *liberal education* refers to the tradition of educating students to become effective free citizens—people capable of making and carrying out good choices and decisions. (It has nothing to do with politics.) It refers only to equipping a person with freedom of choice. It is about creating effective citizens.

People who see the world with an engineer's eye are typically able to move in many directions. Some become scientists, others builders, managers, presidents or beach bums, writers or artists.

Naturally, since engineers are so seldom just one thing, our students have trouble identifying famous ones. They often do not know them *as* engineers. Those same students eventually come to see, after the educational process is complete, that they too have been educated, not to do just this or that, but to maximize their own potential.

Look at the people who have learned engineering here at the University of Houston over the past 60 years. You will discover that they too have formed a better world. They too have done so in so many ways, and under a wonderful variety of unexpected guises.

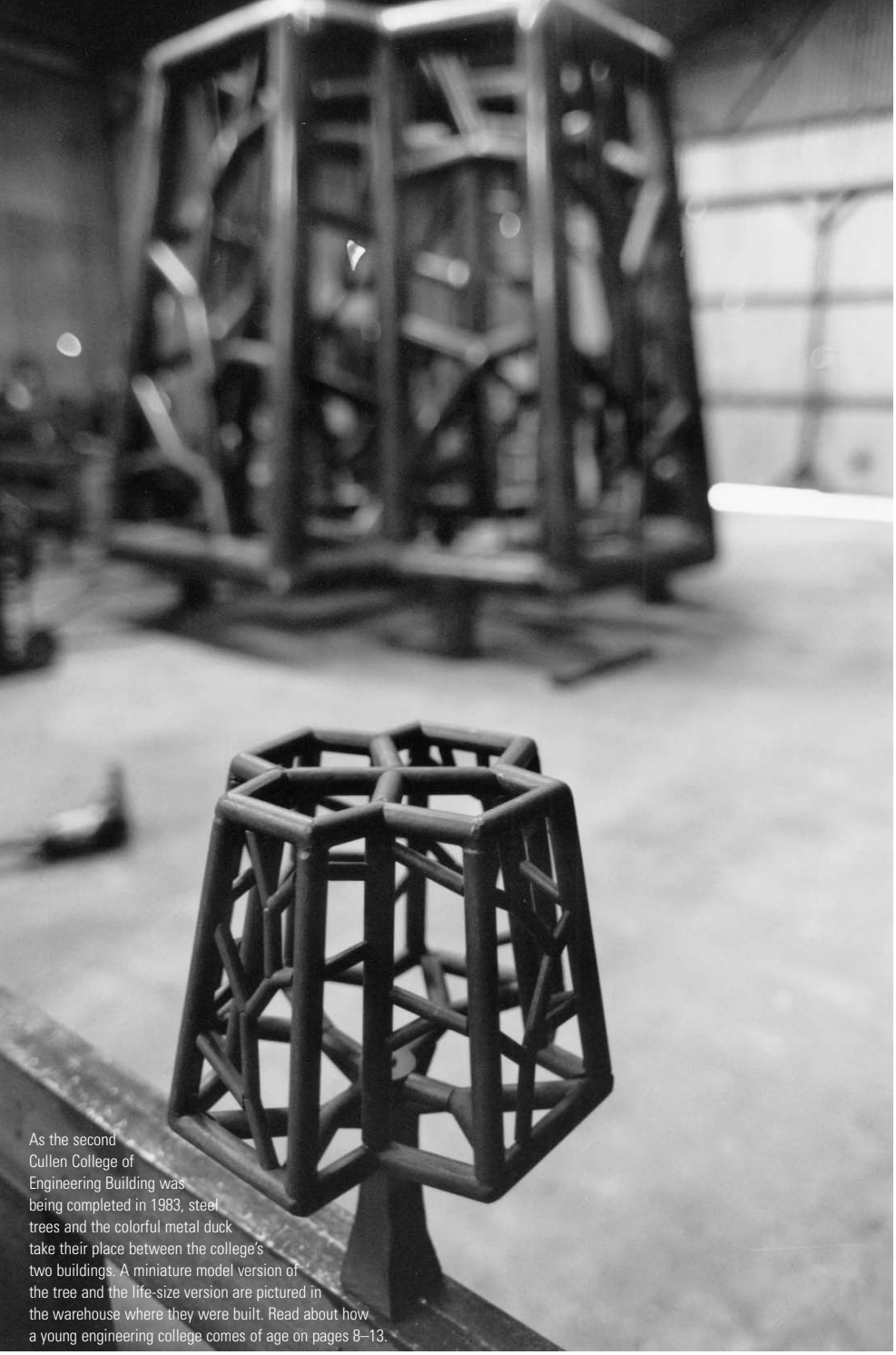
Images provided by John H. Lienhard

Lienhard's Ingenuity

It began with a conversation on a Friday in 1987 when engineering dean Roger Eichhorn mentioned to **John Lienhard**, M.D. Anderson Professor of Mechanical Engineering and History, that he'd been mulling over how to gain radio exposure for the UH Cullen College of Engineering.

By Monday morning, Lienhard had written three sample scripts and talked with KUHF station manager John Proffitt. Lienhard came back with a commitment from KUHF to start a daily featurette about the human side of engineering. Broadcasts of the program began in January, all the while, he says, "listening to people telling me how this wouldn't work." It was impossible, experts said, to hold the public's attention for more than 50 seconds at a time, especially with such a dull topic.

It's obvious now, almost 15 years later, that experts were wrong. *Engines of Our Ingenuity* has won several awards and is one of KUHF's most popular offerings, airing twice daily at 7:35 a.m. and again at 3:55 p.m. As of April 13, 2002, 1701 new episodes have aired on NPR stations nationally and posted on the *Engines* website at www.uh.edu/engines.



As the second Cullen College of Engineering Building was being completed in 1983, steel trees and the colorful metal duck take their place between the college's two buildings. A miniature model version of the tree and the life-size version are pictured in the warehouse where they were built. Read about how a young engineering college comes of age on pages 8–13.

2002 UH Cullen College of Engineering Events

Second Thursday of Each Month
Engineering Alumni Association Board Meetings
All engineering alumni are welcome.
5:45 p.m. | Dean's Conference Room
(E421 Engineering Bldg 2)

May 5
14th Annual ASME/UH Cajun Crawfish Boil
1–5 p.m. | Lynn Eusan Park, UH campus

May 11
Cullen College of Engineering Commencement
1 p.m. | Cullen Performance Hall, UH campus

June 7
Distinguished Engineering Alumni Awards Dinner
Honoring distinguished alumni Frank Adamek and Dennis Peterson, and Kathy Rhodes for service.
Keynote speaker is Texas State Senator Rodney Ellis.
6 p.m. | Four Seasons Hotel, Downtown Houston

August 8
Engineering Alumni Association Annual Meeting
6 p.m. | Athletics/Alumni Center, UH campus

For more information about any of these events, call 713-743-4200, e-mail alumni@egr.uh.edu, or visit www.egr.uh.edu/events.

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