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Dean Timothy W. Tong Tooling for the Future

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de From the National ck _{rer} Advisory Council

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Welcome to Synergy

Synergy: The combined action of cooperative agents that together produce a more effective and powerful result. It is the underlying theme of this publication — and the touchstone of the engineering profession. The labor of individual engineers, scientists, and industry leaders is enhanced when they work in concert with one another — a fusion of thought that combusts to produce creative tools for living. Education, too, produces its best result when shaped in synergy, weaving together students, academicians, researchers, alumni, business, and government.

The inaugural issue of *Synergy* is made possible by the generosity of two SEAS alumni who are members of the National Advisory Council: Walt Burmeister, MEA 1970, President, World Access; and Dr. Norris Hekimian, BS, 1949, Retired CEO, Hekimian Labs. In this issue, you will read about how newly-appointed Dean Timothy W. Tong is carrying out his vision for the School of Engineering and Applied Science; how education, research, and the high-tech industry are working together; and how generous donors are playing a pivotal role in the future of the School.

Synergy wants to hear from our readers. Tell us how we are doing. Share your ideas and thoughts. Your comments will help us as we grow in size and scope. Thanks for reading.

The Editor



Next in *Synergy:* More on the Prolific Dr. Zhenyu Guo and Team's Biomedical Engineering Bonanza



Tooling for the Future

n the eight short months since his appointment as Dean, Timothy W. Tong has been making waves. A pragmatic academician, Dr. Tong has accelerated his agenda into high speed, breaking barriers, forging partnerships and recruiting talent and revenue to create his vision for the future. In a recent interview, Dr. Tong mapped out his master plan for the School of Engineering and Applied Science (SEAS).

Synergy: You came to the U.S. for college; why did you choose engineering? **Dean Tong:** Initially, I was simply testing to determine if engineering was an interesting field. But after taking a few courses in undergraduate school, I found out it was a good choice for me. What stirred me was a class project on solar energy. It was the 70s and an energy crisis was strangling the country. I had the chance to see how my work could be relevant in the real world.

Synergy: What do you think it takes to make today's engineering education relevant? **Dean Tong:** It's crucial to create an educational experience that allows students to understand the application of what they learn. The simple definition of engineering is the practical application of knowledge to improve the quality of our lives. As educators, it's our responsibility to fashion a multi-dimensional experience that is both intellectually challenging as well as reflective of the world in which we live. And we must stay ahead of the curve. Technology is changing faster than ever. And our students are smarter than ever. To respond, the University must not simply be a place to gain knowledge, but also an environment in which students can learn to apply knowledge in creative, practical and affordable ways.

Synergy: What's your vision for this kind of educational experience at GW? **Dean Tong:** We are in a unique position at SEAS to forge creative partnerships between academia, research and development, and regional businesses. This was what attracted me to GW. The burgeoning high tech and biomedical industries in the region offer us a unique opportunity. The School can become a major player nationally and globally, if we take advantage of the fertile business environment in our community.

Synergy: How is this kind of collaborative approach being realized? **Dean Tong:** Our partnership with AOL is an exciting venture for us that I hope will become the template for the future. AOL has provided support to construct the "The Home of the 21st

ESSENTIALS

EDUCATION

BS, Oregon State University 1976; MS, Ph.D., UC at Berkeley 1978, 1980

SPECIAL INTEREST

Theoretical and experimental research in heat transfer

KEYWORDS Optimist, strategic thinker, coalition builder

BOTTOM LINE Education has to be relevant; the synergy of academia, research, industry



Esayas Kebede, electrical engineering (01).

"We are in a unique position ... to forge creative partnerships between academia, research and development, and regional businesses." Century " on our Virginia campus. As a cuttingedge research facility, the lab will be a vehicle for hands-on learning, and for the development of creative tools for living.

Synergy: What are your other goals? **Dean Tong:** I want to see us embrace a more collaborative approach to education — to seek out opportunities to stimulate partnerships between departments within the School, and between the School and the rest of the University. I would love to see a climate in which staff and students are always thinking about how one project or research proposal can utilize the expertise of a multi-disciplinary group of people. This enriches learning and makes proposals attractive to funding sources.

Synergy: What can be done to increase the enrollment at the School? **Dean Tong:** I've committed myself to increasing the School's undergraduate enroll-

Tooling for the Future

ment from 450 to more than 600 by 2005. To become more competitive we need to expand research and utilize the enormous potential of our faculty. And we need to create enhanced lab space, expand online educational opportunities, and continue to refine our curriculum to reflect engineering trends. I've established a goal of \$20 million in sponsored activities for the School, and fund raising has already begun to support this initiative.

Synergy: What's the first step? **Dean Tong:** We are well on our way. The AOL grant is a major coup for the School, and a perfect example of the synergy possible between research, education and industry. We need to further utilize the potential of the Virginia campus. We are already beginning active, hands-on recruitment of the best and brightest students. And, we have pledged to raise an additional \$5 million in the next four years for our scholarship program.

We are also doing a better job of marketing the School. This magazine is one way to communicate more effectively. I also want to more fully utilize our brain trust of alumni in recruiting top students, and opening doors to exciting internships. They can be advocates to University administration, and help us develop curriculum. Many are successful industry leaders with real world know-how to help keep us ahead of trends.

Synergy: When you conjure up your vision for SEAS in 2010, what do you see? **Dean Tong:** I see one of the top engineering schools in the U.S., many active industry partnerships, a significant scholarship program, major sponsorships for centers of excellence relevant to technological advances of the time. There will be a number of income-generating projects. It's all very possible in the next decade.

Online, On Target for the Future: The AOL Alliance

researchers merge in real time with peers from industry giant America Online (AOL), the results are visionary. That is the hope of the Home of the 21st Century project, an innovative collaboration just underway on the School's Virginia campus.

hen the fertile minds of SEAS'

This exciting new partnership — recently announced at The George Washington University's Technology Expo in April — is charged with creating the next generation of technologicallyadvanced products for the home. The year-long research alliance, which is one of the first University partnerships for America Online, represents a meeting of the minds between the communications leader and GW — each hopes the project will extend beyond its first year.

"What are the real scientific problems to be solved before we can create new technology and the next generation of interactive tools for the home and family?" asks AOL President Ray Oglethorpe. He believes the answers will be found in the context of the Home of the 21st Century — constructed at GW within a 1,500 square-foot laboratory space containing state-ofthe-art hardware and software supplied by America Online.

Dean Timothy W. Tong, who helped shape the partnership with VA Campus Executive Dean Irwin Price, calls it "a union of industry with academia that will not only yield product The Home of the 21st Century will create **products to transform our homes** into boldly-designed digital environments connecting us to our universe.

innovation, but help to shape the future of young engineers, as well. We are grateful to AOL for the opportunity," he says.

The Home of the 21st Century project is intended to develop innovations to transform our homes into boldly-designed digital environments. But, explains AOL's Kris Gabor, "These products must not only be attractive to the "digerati" — the small number of cyber elite among us — but must connect with the average person, as well. They must be simple to use and designed to enhance our lives and our families."

Dean Tong agrees with the notion of realitybased technology, and says there are many future applications of home-based digital networks. "Wireless connections can help us manage





GW's Virginia campus is the high-tech home of an alliance between AOL and SEAS to create innovative digital products.

energy, provide entertainment, and improve our health through telemedicine — the interconnection between our homes and medical care," he adds.

"The proposals from GW faculty were very intriguing to us," says AOL's Oglethorpe. "We've already created a harmonious relationship that we know will result in significant additions to our body of knowledge and the development of ingenious, user-friendly technology."

A Better, Greener Truck

he underdog GW Future Truck team is turning heads with its imaginative GW Forest – an innovative hybrid truck of the future. One of only 15 university teams selected to participate in GM Future Truck 2001, Team Forest is hoping to outwit the far more seasoned competition.

The contest pits teams of student engineers against one another to produce an environmentally-friendly sport utility vehicle. The GW team has been charged with turning a 2000 model GM Suburban into a hybrid electric vehicle — a manufacture-quality prototype of a greener, more energy-efficient truck.

"This is a very challenging technical problem," says Faculty Advisor Professor Vahid Motevalli. "But our students are involved for the love of it. What was once a 2000 GM Suburban has few of its original parts. Now it's an ingenious hybrid with two electric motors in both the rear and front, and a Volkswagen 1.9 liter diesel engine," he says. The result is a vehicle

that far exceeds emissions standards. The forward electric engine doubles as a generator that charges the batteries. The complex system eliminates waste of power from an idle engine state and allows the most efficient operation of the VW engine. The truck must meet specific requirements that call for operational safety as well as reduced greenhouse gas emission, a towing capacity of 7,000 pounds and seating for eight adults. It must be able to accelerate from 0 to 60 miles per hour in less than 12 seconds.

The GW truck received high marks during an interim review by GM — recognition that encouraged the team to complete the Forest and make it competition-ready for the June event in Michigan — a marathon, 13-day competition, which will be Web-cast on www.yahoo.com.

Initial funding for the GW Forest was provided by GM and the U.S. Department of Energy, who sponsor the annual competition. Additional financial support came from private donors including New Generations Motors, a Virginiabased company, which provided the light-weight electric motors as well as technical support.

Also among project supporters are American Axle and Manufacturing, the Dean Edmonds Foundation, PEPCO, GW Transportation Research Institute, Rosenthal Auto Corporation





Peter Wihl, a junior and member of the Future Truck team, works on the innovative hybrid motor.

of Arlington VA, TenAsys, Inc., the Carlyle Johnson Machine Company, Au Bon Pain, Dean Tim Tong, the Departments of Civil and Environmental Engineering, Electrical and Computer Engineering and Mechanical and Aerospace Engineering, as well as the Washington Section of the Society of Automotive Engineers.

The GW Team Forest:

Seated in front, left to right: Steve Chen (01), Peter Wihl (02), Tien Nguyen (04), Tashari El-Sheikh (03), William Rutkowski (Engineering Lab Tech), Kristen Gunia ((01), and Carl Behnke (Engineering Lab Tech). Standing, left to right: Joseph Mathews (02), Zeki Gokce (ME graduate student), Benjamin Ruppel (01), Faculty Advisor Dr. Vahid Motevalli (CEE), Team Leader Dan Boucher (02), Bhanu Pratap (ME graduate student), and Brian Murphy (01). Not pictured: Faculty Co-Advisor Dr. Can E. Korman (ECE), Affiliated Faculty Dr. Nabih Bedewi (CEE), Mike Shepard (02), Anuj Mallick (02), Pascale Doumit (03), Bridget Xavier (02), Technical Advisor Fred Wyron, Phil Wang ((01), Mohd Mohd-Syaifuddin (ME graduate student), Amir Faghfoory (02), Herve Roussel (03), Eko Ernawan (04), Brad Kellogg (02), and Khaild Al-Hussain (ME doctoral candidate).

Computer Competitive Edge

GWW Team 1, representing the SEAS Department of Computer Science, competed at the International Finals of the ACM 25th Annual International Collegiate Programming Contest this past March held in Vancouver, Canada, winning Honorable Mention – a remarkable achievement. Just 64 teams of students advanced from 2,700 teams representing 1,079 universities in 70 countries on six continents to win the privilege of participating at the World Finals sponsored by IBM.

The 2001 World Champions were a four-member team from St. Petersburg State University -a second consecutive first place win for the students from Russia. Second place went to Virginia Tech.



Scoring honorable mention at the International Finals of the 25th Annual AMC Collegiate Programming Contest are (left to right) Faculty Advisor Robert W. Lindeman, Justin Cutler, Peter Swanson, and J. Chad Parry.

The GW team won the honor to participate in the prestigious contest by placing first in local trials and third overall in the Mid-Atlantic Regional competition held late last year. Their performance in the regional contest won the team one of two "wildcard" spots in the Finals. Edging out stellar teams from Duke, University of Maryland, Johns Hopkins University, and University of Virginia, GW Team 1 was coached by Professor Rob Lindeman, with members Justin Cutler (01), J. Chad Parry (01) and Peter Swanson (01). GW Team 2, made up of underclassmen Justin Cohen (04), Eric Denman (04), Matthew Norris (02), and alternates Howard Sherman (02), and Naveen Ahuja (02), took seventh place in the local competition and placed 28 in the region.

The Department of Computer Science became its own entity last year during a reorganization of the School, which recognized the significant contribution of computer technology as an independent discipline. Today the Department accounts for more than one-third of the School's undergraduate enrollment and is chaired by Bhagirath Narahari, Ph.D.

NTSB Gives Nod to Virginia Campus

In an agreement reached last November, the National Transportation Safety Board (NTSB) is constructing a comprehensive investigative training academy on the Virginia campus of the School of Engineering and Applied Science. The facility, which will include classrooms and research labs, as well as space for accident reconstruction, is slated to open in 2003, and will be built adjacent to the U.S. Department of Transportation Crash Analysis Center on the Loudoun County campus.

The academy will be used in training accident investigators from both the private and public sector from the United States and abroad. The reconstructed wreckage of TWA flight 800 will be housed at the facility for training purposes (the aircraft exploded over the Atlantic Ocean near Long Island, New York in 1996, killing all 230 aboard).

The NTSB was established in 1967 to conduct independent investigations of all civil aviation accidents in the United States and other major transportation mishaps. It investigates about 2,000 aviation accidents and incidents a year and about 500 accidents in other modes of transportation — rail, highway, marine, and pipeline.

With transportation systems continuing to grow every year, and with the increasing need for well-trained accident investigators in many countries, explained Irwin Price, GW Virginia campus dean, "this Academy will enhance transportation safety systems throughout the world. The research center will be an extension of our long-term partnership with the NSTB," he added. Since 1997, the Virginia campus has played host to a number of conferences and international summits on aviation safety, which initiated the formation of the GW Aviation Institute.



A portion of the proceeds from international sales of Dr. Zhenyu Guo's innovative, hand-held Doppler device will be used to fund new research initiatives at SEAS.

Portable Doppler Market-ready

EAS Assistant Professor Zhenyu Guo's hand-held Doppler device is now available commercially worldwide. This biomedical advance with lifesaving potential was brought to market by Nicolet Vascular, Inc. Guo's portable Doppler measures vascular blood flow and is battery operated, allowing it to tackle complex physiological assessments that until now required large, much more expensive, stationary equipment.

Using Guo's portable device, clinicians can view blood flow in real time at the bedside or in the office and print out a report of the results. The unit indicates both forward and reverse vascular blood flow, and can identify dangerous blockages that may lead to stroke.

It is particularly useful as a screening tool to identify carotid stenosis — blockage in the carotid artery — that can be treated prior to a stroke through a surgical procedure called endarterectomy. The portable Doppler can also be used for diagnosis of peripheral vascular disease (PVD), a condition often characterized by leg pain, which can indicate more serious atherosclerosis throughout the body — a risk factor for stroke. Explorations are also underway for obstetrical use of this innovative technology.

The Portable Dopler Device is just one of a number of innovative biomedical engineering innovations under development in Dr. Guo's laboratory. A prolific inventor, Dr. Guo is also testing internetbased telemedicine equipment, three-dimensional ultrasound angiography, and the use of ultrasound imaging for the early detection of breast cancer.

Trends – Women and Minorities in Engineering

t has been a slow and steady climb for women and minorities in the Engineering profession. Doors are opening for more women in the field, while African Americans are making slower inroads into schools across the country.

In 2000, female undergraduate and graduate enrollment at SEAS reached 26 percent of the total enrollment — higher than the national average. SEAS undergraduate women rose from 21.1 percent of students in 1994 to 28.6 percent in 2000.

African-American underclassmen represented 10.3 percent of total enrollment in 2000, up from 9.6 percent in 1994 and higher than the national numbers. Graduate African-American enrollment reached nearly 7 percent in 2000. Hispanic undergraduate enrollment reached nearly 4 percent in 2000, a small gain in the last six years. And Asian students now represent nearly 20 percent of the undergraduate student body, up from 14.6 percent in 1994.

Here's a look at the national numbers*:

- In 1954, less than onequarter of a percent of undergraduate Engineering degrees went to women.
 In 2000, the number had risen to 20.6 percent.
- In the decade between 1990 and 2000, the number of women receiving a Master's in Engineering rose from 14.1 percent to 21.1 percent of degrees conferred. A little more than 9 percent of 1990's Doctorates in Engineering were earned by women: that number rose to 15.8 percent by 2000.
- African-Americans received 4.9 percent of undergraduate degrees in Engineering in 2000 – up from 3.6 percent in 1991.



• Hispanic Americans received nearly 7 percent of Engineering degrees nationwide in 2000 — up from 4 percent in 1991, and Asian Americans received 11.4 percent of undergraduate degrees in 2000, an increase of nearly 2 percent in a decade.

*Data provided by Engineering Workforce Commission of the American Association of Engineering Societies.

Ali B. Cambel, professor emeritus of engineering and applied science, addressed the Frontiers in Science and Technology Series speaking on Chaos, and was invited to serve as an external examiner for the honors course "Science, Freedom and the Economy" at the University of North Carolina.

Mona E. Zaghloul, elected VP of Technical Activities for the IEEE Circuits and Systems Society; the first woman in 50 years to receive the IEEE CAS Golden Jubilee Medal for outstanding achievement; appointed associate editor of a new IEEE journal, *Transaction of Circuits and Systems*.

Jonathan P. Deason, Ph.D., P.E.,

environmental and energy management program, appointed to the Committee to Review the Upper Mississippi River-Illinois Water Navigation System Feasibility Study of the National Academy of Sciences looking at environmental and economic impact of proposed improvements to the waterway.

Elaine Finger, doctoral candidate 01, and Mary Whitaker, recipients of scholarships to attend the Grace Hopper Celebration of Women in Computing Conference.

Nathan Campeau, civil engineering 01, recipient of *The Washington Post* and the Society of American Military Engineers Scholarship, 2000; and of the American Society of Civil Engineers Hathaway Memorial Scholarship, 2000-2001.

Tyler P. Wean, civil engineering 01, recipient of the American Society of Civil Engineering Scholarship Award, 2000-2001.

Raymond L. Pickholtz, Ph.D., past chair and professor of electrical engineering, received the Third Millenium Award from the IEEE (Institute of Electrical and Electronics Engineers), honoring the new century and his lifetime acheivements. He also continues to serve as co-principal investigator of a NORTEL Networks research project about cdma-2000, investigating expansion of wireless communication networks.



Mars Challenge for SEAS Students

eam JIAFS, representing SEAS and the Joint Institute for Advancement of Flight Sciences (JIAFS), was named one of six finalists in NASA's 2001 MarsPort Student Design Competition.

The MarsPort design competition, co-sponsored by the Texas Space Grant Consortium, Florida Space Grant Consortium and the National Aeronautics and Space Administration (NASA), challenges students to conduct engineering design studies in support of a MCCS, *a MarsPort Cryogenics and Consumables Station,* to operate on the surface of Mars during a future manned mission, which NASA is predicting within the next ten years.

As envisioned by NASA, a crew will land on the planet Mars where they will explore and conduct scientific experiments on the surface. To return to Earth, they must have a dependable infrastructure from which to launch a spacecraft called the Mars Ascent Vehicle (MAV) that will rendezvous with an Earth Return Vehicle (ERV). The challenge for students is to design an *autonomous cryogenic and consumables storage and distribution unit* that will hold



The SEAS MarsPort Team, pictured left to right, are graduate students Corey Hernandez, Jill Hanna and Paul Escalera, and, seated, Alicia Dwyer.

rocket propellants required for the MAV to lift the crew off the surface, as well as a large amount of water and oxygen for use by the crew.

Ultimately, manned missions to Mars must be able to make propellants and other consumable materials, using resources available on the planet. But for the first few missions, a large supply of hydrogen must be brought to Mars to be mixed with carbon dioxide from the planet's atmosphere to make water, methane, and oxygen. The contest focuses on the design of a unit to hold and utilize these materials. The GW team is competing against students from Cornell University, Embry Riddle Aeronautical University, Georgia Institute of Technology, University of Tennessee — Knoxville and University of Wisconsin — Madison. The winning team will have the opportunity to interact with NASA and industry leaders, and their concepts will be evaluated for use in a future Mars mission.

Team JIAFS: Faculty Co-Supervisors: Dr. Paul Cooper and Dr. Robert Tolson; graduate students: Alicia Dwyer, Paul Escalera, Jill Hanna, and Corey Hernandez.

India's Devastating Lessons

In the aftermath of one of the world's most destructive earthquakes that toppled the Indian State of Gujarat on January 26, 2001, GW's Krishna Vatsa joined an elite group of experts leading an Earthquake Engineering Research Institute (EERI) Reconnaissance Team in the region. The interdisciplinary team of nine studied the quake's impact, as well as emergency response to the quake and interim housing for more than 600,000 people left homeless — in hopes of improving responses to future quakes.

The Gujarat quake measured 7.7 on the Richter scale, killed nearly 20,000 people, and caused extensive damage to the area's infrastructure, as well as the destruction of recently-built multistory buildings.

Vatsa is a doctoral candidate with the Department of Engineering Management and System Engineering's Institute for Crisis, Disaster and Risk Management (ICDRM) and an Indian Administrative Service Officer. His report, and those of the other team members, recounted the horrific losses suffered in India's worst earthquake in 50 years.

Vatsa reported his findings at an EERI technical briefing held at GW, and at a recent ICDRM monthly disaster management workshop, sponsored by SAIC. He noted that the Government of India's immediate response was hampered because it was a national holiday, but he pointed to a weak and chaotic response by the state government, which had no disaster plan in place and was unprepared for a quake of this scale.

Dr. John Harrald, co-director of the ICDRM, says, "Our job is to understand from a technical perspective why so many lives were lost. The lessons learned are always about preparation," he explains. "You can't cut corners in building structures that can withstand a quake of this magnitude — the human cost is catastrophic."

Keeping the Faith

he Centuries Campaign is an ambitious, university-wide fund-raising initiative, now on target to reach its goal of \$500 million in contributions by 2003. The School of Engineering and Applied Science has established its own goal of \$20 million support that will secure the School's competitive edge far into this century. Gifts will be used to improve curriculum, enhance laboratory space, encourage creative student projects, and enrich the scholarship program. With \$15 million already raised, the School will soon complete its first major gift's campaign far ahead of schedule.

ТНЕ

Alumni have been key to its success, contributing 32 percent of the total to date. *Synergy* will highlight individual gifts to the Campaign in the months ahead. In this issue, we profile two generous donors, GW Engineering graduates who are "keeping the faith."



Gary Bard

G ary Bard is a right-brained romantic with an entrepreneurial bent. The best part of this dynamo's day is seeing the first light of Florida sun streaming through his bedroom window and the lacy pattern a palm frond creates as its shadow ribbons across the floor.

But in his 35-year career in industry, Bard learned to tame the romantic into a powerhouse who succeeded in a profession that takes vision as well as toughness. When he retired in 1998 as CEO and chairman of the board of Aydin Corporation, Bard had served as the president of five companies and earned a reputation for acute business savvy and creativity.

This son of a Philadelphia fireman and grandchild of Romanian immigrants swears he wasn't the brightest kid at Feltonville Public School. Still, at 12 he had the ingenuity to reinvent the electric relay, just so he would have the edge in a game of tic-tac-toe.

"I liked to tinker," Bard says modestly. "And I was curious about everything. I had no idea when I took a nail, tin cans, and some wire in my hands that I was engineering something." That something turned out to be his future.

Bard went on to the University of Pennsylvania, graduating in Electrical Engineering in 1959. He owed the Navy two years of service, which brought him to a naval base in Maryland, home at the time to one of the nation's first computers — the UNIVAC 1.

"It was so big," Bard recalls, "that you could walk inside its memory. And with a frequency of 50,000 cycles, the memory actually sang."

ESSENTIALS

NEW CENTURY

EDUCATION BSEE, 1959, U of PA; MSE, 1962, GW; MBA Temple Univ., 1969

c v Information systems entrepreneur

ET CETERA Contemporary art aficionado; artofisrael.com

GIFT

Support of an endowment for e-commerce curriculum

Bard, from page 9

The tune resonated with Bard, who knew in an instant that his career would be in the infant science of computer technology. He moved with characteristic vigor toward his future, earning his Master's in Electrical Engineering at GW at night while still in the Navy, juggling a full-time job at Leeds and Northrup back home in Philly, and completing an MBA from Temple.

Since then, Bard earned patents in computer-display technology and analog-digital conversion, and built successful businesses in electronics, communications, computer science, graphics, and image processing taking some of these companies public during a three-decade period that revolutionized information technology.

Some years ago, he was asked to serve on the National Advisory Council for SEAS, which he now chairs. And today he is building an e-commerce partnership, marketing contemporary Judaic art online.

It was his interest in e-commerce that motivated Bard to contribute to the School that helped launch his career nearly 40 years ago. He and his wife Judy have made a generous gift to the Centuries Campaign to endow a fund to support e-commerce curriculum at SEAS.

"I want the program to get students' creative juices flowing," says Bard. "It will allow them to take ideas, put value to them, and build something new from what they conjure up in their minds. It's my way to make an impact — to give something back. Giving is a wonderful notion," he adds. "No matter how big or small the gift, giving should be a part of all our lives."



Emilio Fernandez

In 1960, Fidel Castro was instituting agrarian reform in Cuba and 16-year-old Emilio Fernandez boarded a plane in Havana for Miami. Uncertain about the turmoil whirling around him, Emilio kissed his parents goodbye and climbed the stairs to the waiting aircraft. Nearly empty-handed, he had just the clothes he was wearing, his prized homemade radio tucked securely under his arm, and five American dollars in his pocket.

"My parents told me at 10 pm the night before that I would be going on a trip in the early morning," he remembers. "When I landed in Miami, I took a bus to Tampa, where friends of my parents were waiting."

Emilio Fernandez recounts this piece of personal history with little emotion, as if there was nothing brave about his exodus from a revolution. It's just an American story, he explains, "like so many others."

The teenager quickly adapted to his new home and by the time his parents arrived to join him in 1962, Emilio was Americanized. His father, an attorney in pre-Castro Cuba, found work with the OAS, in Washington.

Fernandez, always fascinated with things mechanical — erector sets and the prized radio he had fashioned from scrap parts — began to build his dreams at the University of Maryland, earning a degree in Engineering in 1969, and a Master's in Engineering Administration from GW in 1976. Then an offer to work at Southern Railroad propelled Fernandez toward his destiny.

ESSENTIALS

E D U C A T I O N BSEE, U of MD, 1969 MEA, GW, 1976

Rail transportation-biomedical instrumentation industrialist

ET CETERA Investor in future engineering talent

G I F T Support for University-wide capital improvements; *America's Gate*

It was there that he met Stanley Crane, whose faith in Fernandez's talent encouraged the young man. What followed was hard-afterhours work and a patent for a railroad datarecording device that remained the standard in the industry for many years.

From this, Fernandez and his partner founded Pulse Electronics, producing railway electronic monitor and control systems for 20 years. In 1995, he sold his company to Wabtec, a billion-dollar industry giant for which Fernandez now serves as vice chairman of the board. He is also chairman of Pulse Medical Instruments, a biomedical instrumentation company, and runs a venture-capital business to encourage other talented young visionaries.

Ten years ago Fernandez was reintroduced to GW by fellow alumni and his long-time mentor Stanley Crane, a University trustee emeritus. Crane encouraged Fernandez to get involved. Today, he too is a trustee of the University.

"Now I see GW from a new perspective," says Fernandez. "And I feel I should help the University maintain its excellence."

Fernandez has made a generous gift to the Centuries Campaign. It is symbolized by the elaborate iron gate that arches above the University's quad. Rejecting the notion that the gate carry his name, Fernandez explains, "I wanted it to be called *America's Gate*. Thousands of students pass through it. Like me, many traveled a distance to reach it and discover the promise GW represents."

10



Why Should We Care?

ifteen years ago, I walked away from GW anxious to start the next part of my life — to build a career and put what I had learned to work. It wasn't selfish desire that motivated me, but the need we all share to cre-

ate a life of value as adults. This past year I leaped head first into the thrill — and chaos — of starting my own business called Nextwave Systems, specializing in Palm application development. So why now look back at where I used to be; why care about the school that helped shape our futures?

Simply put, the School, the students, the faculty, and the University need us. Alumni can be critical linchpins to bridge the gap between academia and industry — between the community, the School, and the University. Under his stewardship, Dean Timothy W. Tong has made alumni relations a priority, urging us to play a significant role in the growth and development of the School in the next decade.

Now I am asking alumni to take on this challenge. We can help rebuild undergraduate enrollment at SEAS by recruiting top students from our local high schools. The EAA sponsors a program in which alumni judge the innovative work of student engineers at science fairs across the region. With your support, we can expand this program to every community where alumni work and live. You can then ensure the success of these students by sharing your time and expertise through the Student-Alumni Mentoring Program. Alumni can also help create innovative partnerships between SEAS and business to enhance the School's reputation, attract top researchers and faculty, and help build our competitive edge among engineering programs nationwide.



"Simply put, the School, the students, the faculty, and the University need us." I encourage all alumni to participate in the monthly meetings and lectures sponsored by EAA – these are valuable opportunities for networking, in particular for our newest alumni. These recent graduates can provide an important and unique perspective to help make EAA programs successful. And I ask that you share information with EAA – through email, fax or phone. Please take time to register online to receive up-to-date information on alumni events [see *Sign On*].

As President of EAA for the last year and an active member of the association since 1988, I have witnessed several transitions in the history of SEAS. Today, however, is a watershed time in which new energy and vision are bringing a refreshing vitality to the School. We are at the beginning of a crucial period of growth. I invite you to join us.

Mike Whitley

BS, Mechanical Engineering, 1986 President, Engineer Alumni Association

Sign On

There are nearly 14,000 alumni of the School of Engineering and Applied Science — just 10 percent of them are now registered with the School's listserve — its email communications network.

Visit us online at www.gwu.edu/alumni/listserve/subscribe.cfm to register and become part of this front-line information system. News, activities and calls to action are blast emailed to all alumni who subscribe. Sign on and help **build the list.**

For more information about the EAA, contact: Jason Miller, EAA-Alumni House Coordinator jpmiller@alumni.gwu.edu/ phone: 202-994-3987 • 1-800-ALUMNI-7 Visit the Website: www.alumni.gwu.edu

Alumni news

George Korte, BS, 1971, Civil Engineering, recently joined InfoTech in Alexandria, VA, as vice president of Information Technology Services, and authored *The GIS Book*, a management guide now in its fifth edition.

Paul D. Thompson, MEA, 1988, Engineering Administration, now on board at RGA Inc. in Richmond, VA.

Wookwon Lee, MS, 1992; Ph.D., 1996, joined the University of Arkansas as an Assistant Professor, Department of Electrical Engineering.

Stephen Whitt, MS, 1989, Engineering Administration, named vice president and general counsel of YAFO Networks, Hanover, MD.

Lisa Marie Conge, BS, 1998, Civil Engineering, last year married Jose Daniel Turcios of Arlington, VA, and is completing her thesis research for her MS in Environmental Engineering.

Lisa Jimney, BA, 1992; MS, 1999, Engineering Management, recently opened Jimney Consulting, an IT consulting firm in Geneva, Switzerland (www.jimney.com).

James C. Schaffer, BS, 1978, Electrical Engineering, recently appointed vice president of professional services for USPowerSolutions of Cambridge, MA.

Charles H. Wellington, MS, 2000, Engineering Management, named senior design engineer, Kronos Air Technologies, Lake Oswego, OR.

Synergy welcomes your news. You may email updates for *Transitions* to Lee Williams at Iwilliam@seas.gwu.edu; fax to 202.994.2684; or mail to GWU-SEAS, Tompkins Hall, Room 210, 725 23rd St., NW, Washington, DC 20052.

Alumnus Recognized For Outstanding Service

he George Washington Alumni Association recently recognized one of SEAS' own with an Alumni Service Award. On March 8, Mark V. Hughes, MA, 1977, was honored for his contributions to the University, one of five alumni to be recognized. Hughes, who is sector vice president of information and technology for Science Applications International Corporation in McLean, VA, serves on the School's National Advisory Council and on the Advisory Council for the University's Virginia Campus.

The EAA will also honor alumni for their distinguished service to the School of Engineering and Applied Science: An EAA Alumni Service Award and EAA Alumni Distinguished Achievement Award will be awarded this spring. The honorees will be recognized for their outstanding career accomplishments — as well as their commitment to advancing the engineering profession.



Pictured at the GW Alumni Association Service Awards dinner are (left to right) Dean Timothy Tong; SEAS Director of Development Lee Williams; and Award recipient Mark V. Hughes, MA, 1977.

Up and Coming

- May 18-20, 2001: Commencement
- May 19, 2001; 12-1:30 p.m.: SEAS Celebration
- May 19, 2001: Distinguished Alumni Achievement Awards Dinner
- May 21-23, 2001: Hysteresis and Micromagnetics Modeling International Symposium; VA Campus
- June 4-13, 2001: Future Truck Competition in Michigan
- September 14-16, 2001: Alumni Weekend Engineering Activities
- October 19-20, 2001: National Advisory Council Meeting

From the National Advisory Council CHAIRMAN GARY BARD, MSE, 1962

fter an invigorating meeting this past February, the NAC is armed with an ambitious agenda of action steps. The 40-member NAC – made up almost entirely of SEAS alumni – has been charged with helping Dean Tong carry out his priorities for SEAS, and with

helping to increase the marketability of SEAS graduates.

Among our chief responsibilities prior to our October 2001 meeting will be review of the Dean's strategic plan — a well-thought out approach for the future development of SEAS.

The Council's eight committees represent key areas for growth and challenge for the School's next decade: Curriculum, Finance, GW University Relations, Industry Relations, Marketing, Personnel, Research, and Future Strategies. During the next several months, committee members will meet to brainstorm about a host of issues, including:

- establishing new student internship opportunities;
- working with the Virginia Campus Advisory Committee to develop projects;

- developing a NAC speaker's schedule for SEAS students, and;
- expanding the connection between SEAS and industry, nationwide and in the Washington metro area.

Among other creative ideas the Council is exploring is the establishment of an engineering entrepreneurial center, which currently exists on other college campuses and which may help us create greater brand recognition for the School. We are also reviewing opportunities for new research grants with government and industry.

NAC member Dr. Jim Tegnelia of Sandia Labs in New Mexico will soon meet with Dean Tong to discuss ways to enhance the School's research program. And member Dr. Randy Graves is hoping to open doors for SEAS to other government agencies.

As you can see, the Council is engaged in activity that will have a positive impact on the School - and is enthusiastic about helping to shape the future of SEAS.

National Advisory Council Members

Michael Azizi, President, Azitex Trading Corp. Mintu Bachann, CIO and COO, Equidity Gary Bard, Retired, CEO, Aydin Corporation Gurminder Bedi, VP, North American Truck, Ford Motor Company Walt Burmeister, President, World Access Michael Caglarcan, CEO, Headlight.com Chung-Lung Chang, President, Johnson Safety, Inc. David H. Dastvar, VP, Dasc Corporation Ray Everett-Church, Esq., Managing Member, PrivacyClue.com Dr. Jim Goodrich, President, Goodrich Enterprises, Inc. Randy Graves, D.Sc., Director, Eurotech, Ltd. Jon Halpern, Former VP, Modernization, Millar Elevator Service Co. Dr. Norris Hekimian, Retired CEO, Hekimian Labs Al Herskowitz, Retired, Sector VP,

Al Herskowitz, Retired, Sector VP, Global Affairs, SAIC Elahe Hessamfar, Former Chief Technology Officer, Dun & Bradstreet John Holmblad, Exec. VP. Diveo Broadband Networks, Inc. Mark Hughes, Sector VP, Information & Technology Systems, SAIC Lou Hutchinson, CEO, Crunchy Technologies, Inc. Pradman Kaul, President & CEO, Hughes Network Systems, Inc. Shaun Kim, VP, Engineering, William Wrigley Jr. Co. Jim Lafond, Managing Partner, Washington Area, PricewaterhouseCoopers Bill Levin, Deputy Director, Instrumentation & Control Division, Naval Reactors Michael Mansouri, Chairman & CEO, iPass, Inc. Dr. Pat Martin, President & CEO, StorageTek Fariba Nazemi, Engineering Manager, GTE/Verizon John O'Brien, VP, Technical Services, Storage Computer Corp. Dr. Malcolm O'Hagan, President, National Electrical Manufacturers Association Nick Paleologos, Partner & President, Miller & Long Concrete Construction Co. Mikal Pedersen, President, Mika Systems, Inc. Rich Reich, Senior VP & CIO, Lifeline Systems Inc. Herbert Schantz, President, HFS Associates Intnl. Larry Schwartz, VP, ilearning, Inc. David Stefan, Former VP, Sales, Efficient Networks, Inc. Murray Stein, Professor & Engineering Consultant, CEE, SEAS/GW Dr. Jim Tegnelia VP, DOD Programs, Sandia National Labs Pete Velde, Esq., President, Richard W. Velde & Associates David Wang, Chair, Paperloop.com; Retired, Exec. VP & Dir., International Paper Dr. Charles Watt, Chairman of the Board, Scientific Research Corp. Don Weiss, Managing Partner, AVM Financial Group Shariar Zaimi, CEO, Engineering Design Group, Inc.

You invested in your future. Now invest in theirs.

The value of your GW education extends far beyond the diploma you received. When you remember GW in your estate planning, your legacy impacts countless future students.

Making a planned gift to GW benefits an institution you believe in and provides others with the benefits you enjoyed.

Plus, a planned gift to the University can:

- Provide you with an income for life
- Provide an investment in the future yours and theirs
- Leave a lasting legacy

Interested?

Contact Suzanne R. Spooner, Executive Director of Planned Giving Programs 202.994.8715 • 800.789.2611 • e-mail sspooner@gwu.edu

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