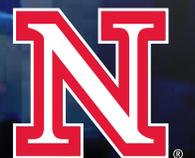


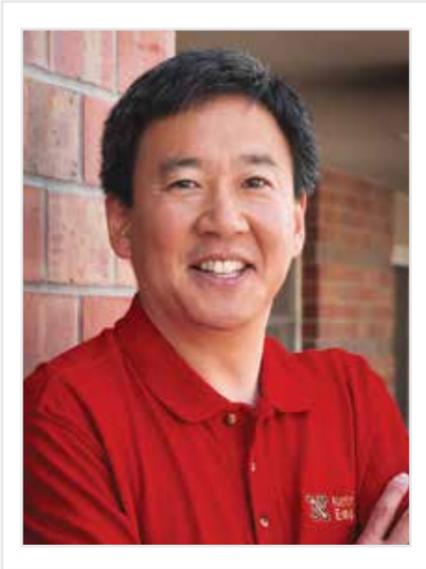
ENGINEERING @ NEBRASKA

AUTUMN 2013

RE-ENGINEERING LINCOLN

ALSO INSIDE:
ANCIENT ENGINEERING
BUILDING 22ND CENTURY RECAP





FROM THE DEAN > Building bigger, better for the next generation of Nebraska Engineering

I'd like to thank our alumni—as well as partners from industry, government and academia—who joined in the exciting and thought-provoking event, our "Building the 22nd Century" Conference: October in Omaha. It was great to see our community engage with international thought leaders and reach to understand, act on and explore what the future brings to our society and our work in particular.

The BT22C event happened within a month of another important moment for Nebraska Engineering: when the University of Nebraska Board of Regents approved a new path forward for The Peter Kiewit Institute. In accepting the plan of NU leadership to move PKI to the next level of excellence, the Board of Regents requested an integrated strategic plan for the institute that will include benchmarks for enrollment, program development, faculty hiring and involvement with business and industry. The plan, which will build on the strategic plans of PKI's two affiliate colleges as well as an assessment of workforce demands being conducted in partnership with the Greater Omaha Chamber of Commerce, will be submitted to the Board of Regents' Academic Affairs committee by Dec. 31.

Our college's strategic plan includes approximately 100 faculty hires, aligned with our goal of increasing undergraduate enrollments by 900-3,600 in the next five years. We aim to achieve this with a unified Nebraska Engineering brand and coordinated recruitment efforts. In addition, we'll work toward graduation rates of 70% in the coming decade—through retention efforts including enhanced advising, student communities and services, and compelling and relevant curricula.

In these respects, and many others, this college is on the threshold of an amazing time of growth—in size, quality, visibility and impact. Our success and sustainability moving ahead depend on our progress as one college. That we will become greater together is non-negotiable—as I've shared with our people, including faculty, staff and students—and what great looks like is, to put it simply, team effort.

I'm glad to be on this journey, with you: the people who make Nebraska Engineering even better.

– Timothy Wei, Ph.D.
Dean, UNL College of Engineering



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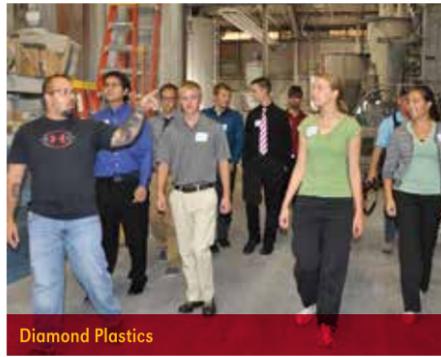
Submissions of letters to the editor, class notes, stories, photographs, illustrations, or other materials with a University of Nebraska-Lincoln College of Engineering connection are welcome. View this magazine online at www.engineering.unl.edu/publications.

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ENGINEERING “CAREER-FAIR-ON-WHEELS” ARRIVES IN GRAND ISLAND

More than 400 Nebraska Engineering freshmen from programs in Lincoln and Omaha traveled to Grand Island Sept. 27 to visit several businesses and make connections for potential future employment with Nebraska industries.

Ten bus groups toured organizations including the Central City Ethanol Plant, Chief Building, Diamond Plastics, Case IH, Chief Ethanol Fuels, Chief Fabrication, Flowserve, Global Industries North and South, Hastings Utilities, Hornady Manufacturing Company, McCain Foods USA, Nova-Tech Inc., Overhead Door, P&G Pet Care and Thermo King.



Diamond Plastics

Dave Williams, director of retention for the college, worked with alumni and business leaders, including civil engineering alumnus and Kirkham Michael CEO Roger Helgoth and the Grand Island Area Economic Development Corp., to build connections at the companies.

“What we’re trying to do is, very early in the education process, connect those students with our members, and create and try to improve the pipeline of talent,” said Randy Gard, president of the Grand Island Area Economic Development Corp.



Global Industries

It was the second annual community visit by students in the last two years. In September 2012 several hundred Nebraska Engineering students visited Columbus area companies and utilities.

The program is part of the college’s initiative to expose students to Nebraska firms and alumni eager to hire them upon graduation. An engineering learning community group of more than 40 students also travels each spring break to U.S. cities such as Chicago, Phoenix and Boston, where they meet with college alumni. The 2014 destination is Kansas City, Mo.



Students meet professionals at the Expo

ENGINEERING STUDENT SERVICES GROWS IN LINCOLN AND OMAHA

With increasing numbers of students entering the College of Engineering, the college is enhancing its student services, including added support staff and spaces.

David Jones, associate dean for undergraduate programs-Lincoln, announced new hires as part of implementing plans to better serve the college’s students in Lincoln and Omaha.

• **Mike Loehring**, right, joined the college as senior director of Student Services; he was

executive director of Enrollment Management with Angelo State University in Texas. Loehring leads efforts to coordinate and enhance student services in Lincoln and Omaha, reporting to Jones and John Thorp, associate dean for Omaha programs.

• **Brian Keiser, Kayla Person and Kevin Sueper** were hired as academic advisers. They occupy new offices in the recently



Mike Loehring

renovated UNL Engineering Library in Nebraska Hall. A 1,700 square foot space houses the newly expanded Engineering Student Services Center, providing academic advising, referral services

and retention initiatives, including tutoring and peer mentoring activities, and fosters collaborations with the Engineering Library as an important resource for students.

• **Dave Williams**, director of retention; **Lark Bear**, career development & academic advising coordinator; **Lori Straatmann**, assistant director - advising; **Adam Smith**, graduate assistant, and **Alma Ramirez-Rodgers**, assistant director of college relations and student programs – Omaha complete the ESS team.

• **Nicole Franta**, assistant director of recruitment, is based in Omaha at The Peter Kiewit Institute and augments the college’s recruiting staff; **Amber Retke** is assistant director of recruiting in Lincoln.

-Amber Retke

RECIPE FOR A FOOD SAFETY STARTUP (à la twitter)

Mix a #UNL food scientist and bio-engineer, then add #LNK software co. Serve w/@NUtechVentures & @UNLresearch.



Harshavardhan Thippareddi



Jeyam Subbiah

A new startup company has grown from the food safety research of UNL’s Harshavardhan Thippareddi and Jeyam Subbiah.

Working through NUtech Ventures — a non-profit, university affiliate that develops partnerships between researchers and industry professionals — the two UNL researchers paired with a local entrepreneur to create Presage Analytics. The new startup will use a software prototype developed by Thippareddi and Subbiah to track microbial contaminants in food processing plants and prevent widespread outbreaks.

The project started after Thippareddi, professor in food science and technology, and Subbiah, associate professor of biological systems engineering, realized that the tracking of microbial data over time was the missing link in food safety programs.

To close that gap, the researchers created software that tracks and analyzes environmental and product-testing data already collected by food processors.

NUtech Ventures helped match the professors’ software prototype with ISoft Data Systems, a local company with expertise in inventory management and production management software, and custom website design.

Food safety regulations mandate that companies in the food industry search for the presence of contaminants on a daily basis. The Presage software archives the food safety data collected and its location in the processing plant. By monitoring trends and data over time, Presage believes plants will be better equipped to isolate and contain future outbreaks.

Finding a local partner to develop the software was key to the company’s development.

“The software provides the food industry a means to connect the dots in case of a food safety issue through trend analysis to manage and prevent future food safety issues such as recalls and foodborne illness outbreaks, which can be devastating for the industry.”
-Jeyam Subbiah

“NUtech has been excellent in finding the right local partner,” Subbiah said. “We understand food safety issues and have the market domain knowledge, while ISoft has the capability to develop commercial-grade software and can provide prompt services to food industry customers.”

Matthew Wegener, president and chief executive officer of ISoft, saw an opportunity to use his company’s inventory software framework and apply it to a new industry.

“We see huge potential to get this product into the market quickly and to truly improve food safety internationally,” Wegener said. “By using the software framework already developed by ISoft and using Thippareddi and Subbiah’s expertise, we have the best of both worlds. This has been a great partnership.”

Presage Analytics has been working with a local poultry processing company as its beta customers. Recently, Presage took its first marketing step by exhibiting at a trade show focused on microbiology and food safety.

Wegener is president of Presage Analytics. Thippareddi and Subbiah are advisers and serve on its board of directors along with Anthony Merrit and Dillon Sadofsky, current ISoft employees. Sadofsky, a software engineer and UNL alumnus, takes a major role in developing Presage Analytics.

COMPUTER ENGINEERS LEAD PROJECT TO BUILD WATER-COLLECTING DRONE

Two Computer Science & Engineering faculty are guiding a national research project to develop unmanned aerial vehicles that collect water samples from lakes, streams and ponds.



Carrick Detweiler and Sebastian Elbaum

The project—led by Professors Carrick Detweiler and Sebastian Elbaum—gained a \$956,210 grant from the U.S. Department of Agriculture's National Institute of Food and Agriculture. The three-year "Co-Aerial Ecologist: Robotic Water Sampling and Sensing in the Wild" project is part of the National Robotics Initiative, a collaboration between the National Science Foundation and other agencies.

The multidisciplinary collaboration includes researchers in UNL's Institute of Agriculture and Natural Resources and College of Journalism and Mass Communications, as well as the University of California, Berkeley. NET, Nebraska's public broadcasting service, will produce outreach components.

"Water is a critical resource but scientists often cannot sample an area of study often enough or soon enough after a major rainfall or related event," Detweiler said. "Our basic idea is to create a UAV that can be located near a study area, can fly out over the body of water as needed, dip a hose down to a certain depth and pump samples into a collection reservoir."

"Normally, a water scientist must haul equipment, boats and people to collect

samples," Elbaum said. "With this type of collection vehicle, you could bring it to a test area and collect samples quickly with just a few people."

Amy Burgin, assistant professor with UNL's School of Natural Resources and water scientist, said the drone could open new opportunities in water study: sending a drone to places that humans can't easily access.

Detweiler and Elbaum have already developed a UAV that can successfully collect three 20-milliliter water samples. In the next year, they will use the USDA grant to focus on developing key algorithms to improve the safety and reliability of the water sampler.

"This project presents a lot of interesting challenges," said Elbaum. "The overall situation is risky as you have an electronic device flying over water and close to a scientist. We don't want it crashing into the water or a person."

The water-collecting prototypes cost about \$5,000 each. Detweiler said a project goal is to offer scientists a less-expensive model.

The research effort will focus on developing UAV systems that offer the right level of autonomy and reliability without compromising safety. Ultimately, the researchers hope to make the UAVs autonomous, with scientists programming in global positioning data and letting the drone go collect samples.

Onboard analysis, Elbaum said, could allow for disposal of samples that aren't useful. For sample reliability, Burgin compares the drone samples against human-taken samples.

Elbaum said testing of the UAVs would continue inside UNL's Nebraska Intelligent Mobile Unmanned Systems (NIMBUS) Lab. The team is also applying for authorization from the Federal Aviation Administration to fly in test sites relevant to the grant.

MAKING A KINECTION: CSE'S SARMA, STUDENTS DEVELOP INTERACTIVE ART PROJECT



Top: Anita Sarma. Left: Children create a digital painting with the "Kinection Project" in the Sheldon Museum of Art.

A research project led by Assistant Professor Anita Sarma and a team of UNL students added aesthetics to the Sheldon Museum of Art this summer.

As part of Sheldon's 50th anniversary "Naked Museum" celebration, Sarma and the team released the "Kinection Project" for public use in the museum. Using the gesture-detection software of the Microsoft Kinect system and an application developed by Sarma's students, the project allows users to create Jackson Pollock-like drip paintings on a wall.

Simple hand gestures tracked by the Kinect system create the paintings. A fast arm movement creates a thin line of paint. Slow movements allow the line to thicken; stop and paint starts to drip down the "canvas." Throwing motions toward the wall cause paint splatters to appear.

"The application developed by the students tracks the movement of the arm, from wrist to elbow," said Sarma. "The painting application then converts those movements into designs that are projected on the screen."

Two individuals can work on a canvas design at a time. Designs can be saved to an online Flickr account at <http://go.unl.edu/kinection>.

Over the last two years, students in Computer Science & Engineering's senior design capstone course created the painting application. Those teams include James Sukup and Josh Raef, and Luan Pham and Megan Jensen.

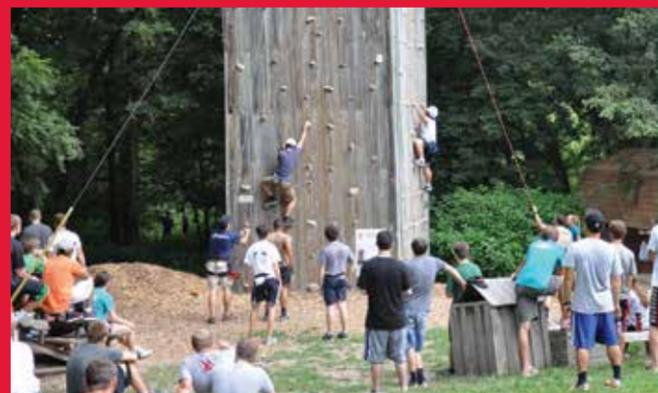
The student researchers are recording video of each painting made. The video will be used to gauge the sensitivity of the device and plan future refinements. Sarma said future updates include adding a musical component to the hand movements. An update by Microsoft to the Kinect system will also allow for improved tracking of hand gestures.

Sarma said the project could lead to developing applications that allow large amounts of data to be visualized in wall-sized displays and interacted with via physical gestures. She also sees the project as a way to educate the public, particularly children.

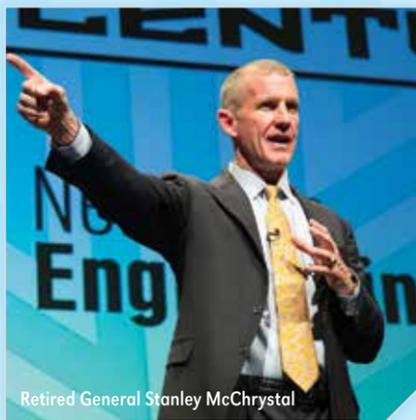
"We started to develop the Kinection Project because of its outreach potential," Sarma said. "We hope it gets kids excited about pursuing an education in the STEM (science, technology, engineering and math) fields."

— Troy Fedderson, University Communications

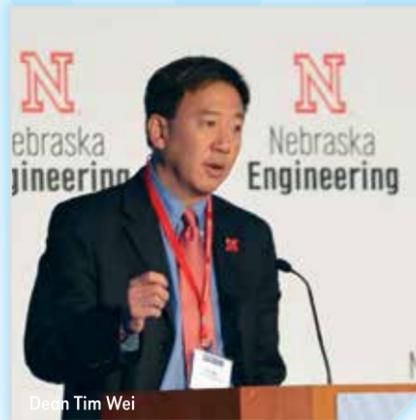
N.U.B.E. CAMP 2013



The college welcomed more than 200 of its 500+ incoming freshmen in August. Their first days with Nebraska Engineering were spent making friends and reaching new heights.



Retired General Stanley McChrystal



Dean Tim Wei



MIT's Kent Larson



Architects panel: Bjarke Ingels, Shohei Shigematsu and Dror Benshetrit

BUILDING THE 22ND CENTURY CONFERENCE



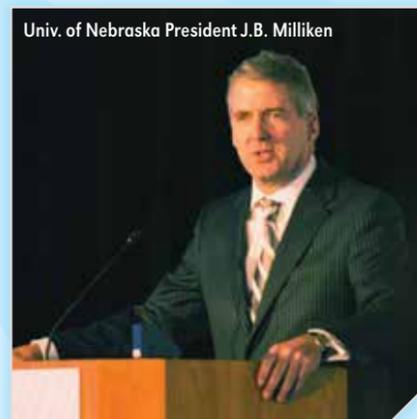
Janice Perlman, Mega-Cities Project



Don Albinger, Johnson Controls



Ray Kurzweil, Google



Univ. of Nebraska President J.B. Milliken

LOOKING BACK AT A LOOK AHEAD: NEBRASKA ENGINEERING'S "BUILDING THE 22ND CENTURY" CONFERENCE

When Nebraska Engineering Dean Tim Wei imagines the 22nd century, the college he now leads will be further along a vibrant path: educating the state's young people for engineering opportunities in-state and around the world. Accomplishing this, the college may not look like it does now. To envision the specifics, Wei looks to today's thought leaders—and best of all, he formed a team including UNL's Dean of Architecture Kim Wilson to gather those experts at a conference, Oct. 14-16 in Omaha: "Building the 22nd Century."

The conference focused on the challenges and opportunities 100+ years from now. By the beginning of the 22nd century, the earth's global population will rise to 15-20 billion people. Existing natural resources will be increasingly depleted. The vast majority of the world's

population will be living in megacities. The conference posed the question: "What will these cities look like?"

Attending the three-day event were corporate partners from Nebraska's largest employers and economic drivers, deans from high-profile engineering colleges in the U.S. and abroad, UNL faculty and students—plus many other leaders and futurists. The realization about how "tomorrow depends on what we do today" hit home with the diverse audience when Wei stressed that "the students we now

educate will have a direct impact on the settings for and the guidance of next-century engineers."

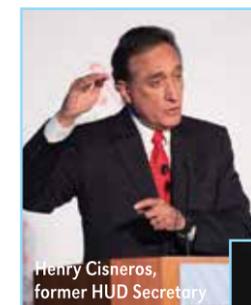
From Ray Kurzweil, Google's director of engineering and an inventor, more than 400 participants heard predictions for the future—such as when the very cells of our brains will connect with "the cloud." In another session, a panel of prominent international architects upended outdated structures and offered what's needed: with greater capacity, culture and community.

The future has many unknowns but we know we will need adaptive leadership, said Gen. Stanley McChrystal—former commander of U.S. and international forces in Afghanistan and co-founder of The McChrystal Group—in his #BT22C presentation. His perspective, "adapt or perish," challenges an organization's or individual's learning curve, which naturally flattens over time. To help ordinary people do extraordinary things, he advises developing trust as the sinew between individuals to form (or re-form) organizations. Then, shared consciousness leads to empowered

execution, with people engaged and able to act more quickly and own the problem.

Future built environment scenarios must consider refuge and infrastructure, amid social, political, food and global factors. This premise compelled the imagination of area K-12 students who will inhabit that world via a design contest (see the back cover of this magazine). By considering

THE CONFERENCE POSED THE QUESTION: "WHAT WILL THESE CITIES LOOK LIKE?"



Henry Cisneros, former HUD Secretary



Cindy Wuellner, Association of Professional Futurists

these questions and pursuing the answers, Nebraska Engineering will be better equipped to address these challenges: shaping the college's vision to prepare the next generations of engineering leaders.



Construction photos courtesy of BVH Architects

Collaborative progress involves Nebraska Engineering alumni, students and corporate friends in reshaping Lincoln

Lincoln is growing with several big projects, including the recently opened Pinnacle Bank Arena and surrounding Haymarket redevelopment just west of downtown. The newest is Nebraska Innovation Campus, at the former State Fair park site.

With an active role in the JPA, the joint public agency responsible for the process of hiring and contracting subcontractors for the arena project in particular, UNL Regent Tim Clare advocated for considering local talent, including college students. Clare thought it would be a great benefit to the students and the community if they could participate in this once-in-a-lifetime opportunity.



Nebraska Innovation Campus, under construction

UNL Photography

The university provides students with “a tremendous education,” Clare said, and these projects offer “greater opportunity to apply skills to the real world” and “get those students exposed around Nebraska” so that participating companies would hire and engage them in growing the state’s economy. This would also serve to “keep our intellectual capital here within borders of state, for the economic benefit associated with that.”

Clare recalled a Construction Management student from UNL’s Durham School of Architectural Engineering and Construction, who worked with Mortenson Construction and earned the nickname “Super Intern” for always doing the work that was needed and setting a good example, through his personality and initiative, for more students who followed. By Clare’s count, at least 65 interns worked on the West Haymarket projects, in aspects ranging from environmental to architecture and more. These students were walking the talk from their learning, which included a high-tech approach throughout the project, which was largely paperless. Change orders happened online and instantly distributed to the iPads of the key people for greater efficiency.

Nebraska Engineering students who want to be involved in Innovation Campus work are getting on board through their professors and building on the connections established. “Our students are building and developing the structure for their careers and for local and regional growth,” Clare said. “It’s exciting.”

The renowned alumna: Lincoln and arena hold special place in engineer’s heart

By Jordan Pascale. Reprinted with permission / Lincoln Journal Star

Her Blackberry buzzes again. Please excuse Erleen Hatfield as she silences her phone for the fourth time and puts it back in her bright green construction vest during a walking tour of the new Pinnacle Bank Arena. The Lincoln native and structural engineer in charge of designing steel and concrete and roofs for sports stadiums is in demand.

On the other line, people from the New York City-based international engineering firm Buro Happold, of which she is a partner, need answers, details. People from around the world call on Hatfield and her firm for help—the Detroit Lions, an international federation planning a soccer stadium for the 2014 World Cup in Brazil—and in the works, a state-of-the-art NFL stadium. She also helped design the CenturyLink Center in Omaha.



Erleen Hatfield

But in 2008, she made a call of her own. Hatfield wanted in on the proposed arena in her hometown and called architect Stan Meradith with DLR.

“I told him, ‘I specialize in sports stadiums all over the world, but I want to come home to Lincoln,’” she said. “This is my hometown, I want to work on this arena.”

“There hasn’t been a lot of big development for entertainment/recreation in Lincoln, so to put this together has been extremely rewarding for me.” Her office is in lower Manhattan, but seeing a new part of the Haymarket sprout still excites her.

In other places, she will get an idea of what the final product will be during the design phases. But here, in the places she frequented as a child—downtown, the Haymarket, the Devaney Center—she saw the benefit before she even started. The new arena has so many more amenities: better concessions, suites, sight lines. It will be a big step up for fans, she said.

“It’s a purpose-driven arena,” Hatfield said. “More than any other type of building, people identify with sports stadiums and arenas. They are important to the people that go to them. There’s a visceral connection to their team and their buildings.”

That passion is part of the reason she got into designing the roofs and structural guts of stadiums. Engineering doesn’t exactly run in the family—her dad was a manager at the Goodyear plant and her mom a teacher—but Hatfield was attracted to art and architecture as a student at the University of Nebraska-Lincoln. She soon realized she had a better gift for mathematical design work and mastered in engineering.

Hatfield was born in Ohio but lived most of her childhood in Lincoln. She decided to stay for a while after earning her master’s degree in 1996 before a stop in Chicago and then New York City to work at Buro Happold in 2009. There, she’s co-chairwoman of the American Institute of Architects New York Technology Committee and a past director of the Structural Engineers Association of New York.

She’s a sports fan who spent many nights watching basketball at Devaney, a venue she isn’t particularly fond of—and she loves the challenge of designing large arenas and stadiums such as Pinnacle Bank Arena.

When she started work on the arena in 2010, she faced the challenge of designing four roof trusses to span the 325-foot-wide bowl but keeping the supporting columns in between two live railroad tracks. She also had to engineer their design to hold more than 160,000 pounds of rigging for concerts.



“I told him, ‘I specialize in sports stadiums all over the world, but I want to come home to Lincoln.’”

“I’ve never had to work under those parameters,” Hatfield said. “Usually we’re not so restricted in the site.” So she worked inside out, designing the bowl concrete work to go in first, before the railroad tracks were moved out of the area. Meanwhile, the steel shell, some of the concourses and other areas on the east and west sides were being fabricated and installed while the tracks were taken out. Hatfield spent more than a year on the innards of the arena and still visits every few months to check the work.

Now, her phone rings more often as she starts to take on other ground-breaking projects across the United States. But the one she did in her hometown will always be her favorite.

“This building will be here for decades and decades, and it makes me proud,” Hatfield said. “It makes my parents proud, my family proud to know I had a part in building this arena that changed the skyline of Lincoln.”



The rising intern: getting an early view of arena and career success

Lunior civil engineering major Patrick Reeves has always had an interest in math and building things, but he knew that to make himself a competitive job candidate, building his resume would be just as important as getting his diploma. That's why Reeves has been gaining hands-on experience in engineering jobs since his freshman year.

Reeves has helped renovate a high school cafeteria and supervised street paving for North Platte's Engineering Department. He recently got an internship at Midwest Steel Works, a local steel fabricator for projects throughout Nebraska, Colorado, Wyoming, Kansas and Iowa.

"Companies come to Midwest Steel Works when they have a project needing steel. We design anything from steel columns for steel buildings, to steel stairways and frames for doorways. How we design it is based on the plans that the architect has given us. Our job is to make sure everything is structurally sound," Reeves said.

Reeves' internship is giving him a chance to see all of the work that goes into designing something long before construction begins. He has even reviewed the blueprints for the new Pinnacle Bank Arena.

"My friends and I have all been really excited about the new arena," Reeves says. "So it's kind of cool to be able to say I helped build it in a way. I hope to find a job in structural engineering after I graduate, so this job has been a really great opportunity for me."

On a typical workday, Reeves runs prints, which means printing off the structural drawings for a project to give to the bidder who will check the drawings and calculate a cost for them. Then he will do anything that is handed to him ranging from making drawings to shuffling papers into revised plans. Recently, he has even begun to design some small projects himself.

"I've worked on projects in the past where I was actually working with my hands, helping build things and lay concrete. Then I had the chance to do some oversight of jobs, and now I am actually designing what I was building and seeing be built," Reeves says. "It's great because I feel like by the time I graduate, I will have a lot of experience in this field."



Patrick Reeves

"Our job is to make sure everything is structurally sound," Reeves said.

Many students dismiss the idea of doing internships during the school year because of scheduling, but many employers work around their interns' course schedules.



"The people at Midwest Steel Works are awesome. It's a really laid-back environment, and they work around my school schedule really well," Reeves says. "I will go into work for a couple hours in the morning, then go to class and then go back to work if I need to and if I have a test or something I need to study for they are really understanding about me taking the day off. It's just a good place to work."



An illustration of how the renewable energy system will work at Nebraska Innovation Campus.

Corporate and governmental partners apply new technology

UNL's investment of \$12 million in the Central Renewable Energy System, or CRES, was approved by the University of Nebraska Board of Regents and introduced to the Lincoln City Council in late September.

The reclaimed water from the city's Theresa Street Wastewater Treatment Plant will be diverted to a heat exchange facility located on Nebraska Innovation Campus. The reclaimed water will then return to Salt Creek. A closed-loop, similar to a geothermal heat pump system, will be installed to serve the individual buildings. Depending on the season, heat content will either be absorbed or rejected to provide heating and cooling energy to the campus. This system can provide capacity for up to an estimated 1.8 million square feet of space.

"Over the last several years, the City of Lincoln has strived to become known as a good steward of our environment," Mayor Chris Beutler said. "The Central Renewable Energy System is a very unique

arrangement that should have broad appeal to private businesses who embrace renewable energy and sustainability. We are pleased to be able to partner with the University of Nebraska-Lincoln to make this project a reality."

"The construction of Innovation Campus should be innovative and sustainable," UNL Chancellor Harvey Perlman said. "This unique technology demonstrates our commitment to both."

"This central renewable energy system serving Nebraska Innovation Campus is one of only a few such systems in the world," Nebraska Innovation Campus Executive Director Dan Duncan said. "We are demonstrating our commitment to innovation as well as to the environment."

The system is scheduled to be in operation next spring or summer. Olsson Associates is the engineering firm on the project.



Uncovering ANCIENT ENGINEERING

By Kate Fickle, Architectural Engineering sophomore
The Durham School of Architectural Engineering and Construction

A 1,600-square-foot mosaic at Antioch ad Cragum site was unearthed by the team of Dr. Michael Hoff, UNL Hixson-Lied professor of art history and field director for this excavation and reconstruction project. With Dr. Ece Erdogan, the project's engineering director and associate professor of architectural engineering with UNL's Durham School, a Nebraska Engineering team studies the site's ancient structures. The mosaic was crafted during the third and fourth centuries A.D. when Roman influence flourished in southern Turkey. The engineering team focuses on reconstruction of the main temple and other structures in the ancient city such as the baths and colonnaded street, and works on a temporary structure to protect the mosaic. For more on the archeological discoveries see go.unl.edu/d0g.

This summer was an incredible gift: I spent three weeks in Turkey doing research as part of Associate Professor Ece Erdogan's "temple team." With The Durham School, she has been a principal investigator for the Antiochia ad Cragum project since 2005, collaborating with Michael Hoff (UNL art history professor) and Rhys Townsend (Clark University professor) to assess and reconstruct a collapsed Roman temple, dating from

roughly the first to third century A.D., on the southern coast of Turkey. This year's temple team also included architectural engineering graduate students Ariel Kousgaard and Eric Garcia.

Since 2005, the temple site has been fully excavated: more than 600 marble blocks were safely moved into the block fields, leaving plenty to keep the architectural engineering team busy: nondestructive testing of the marble blocks for internal voids, the assessment and treatment of block deterioration, and eventually

the structural design and analysis for the temple reconstruction.

I am very grateful to Dr. Erdogan for writing papers and proposals seeking funds to bring students to Turkey. Her efforts give her team a sense of support, a source of challenge and inspiration, and new responsibilities. I am thankful for her faith in me, her willingness to pick this young sophomore from her research team, and for all these new experiences in the lab and the field. It's a priceless opportunity; she makes us better than we could ever be on our own.

Exploring Istanbul

Our flight landed in Istanbul on a clear afternoon, and I saw minarets in the distance as I stepped onto the runway. From the hotel van, my first glimpses of Turkey included palm trees and sea birds, as men walked slowly in solitude with pressed collared shirts, their heads bowed and hands behind their back as they hold their prayer beads.

After our first meal of chicken skewers and fresh tomato, we strolled through Sultanahmet—the Old City of Istanbul—just as the sun was setting. People sat on picnic blankets on the lawn between the Blue Mosque and Hagia Sophia, as they waited for Ramadan festivities to begin. For them, it had been a day of patience and hunger, waiting for the evening's celebration. For our Nebraska Engineering team, the months of research and travel preparations were complete, and we had arrived in Turkey.

The next day, the Blue Mosque was breathtaking with high windows casting light on 20,000 handmade ceramic tiles lining the interior: intricate blue and red patterns, too far away to see all the details of their curving tulip designs. The structure's fluted columns are massive with a ring of golden calligraphy. Light enters from all directions in the dome and I held tightly to my headscarf as I looked up. Chandeliers hung overhead, turning slightly with the breeze from open doors.

The mosque's artistry is impeccable, down to the smallest dot on a tile caused the French to come up with the name turquoise, or "color of the Turks." The colored glass in the original windows was a gift to the sultan from the Signoria of Venice—truly Istanbul is where East meets West.

After visiting the gardens of Topkapi Palace, where the Ottoman sultans lived, we saw the Hagia Sophia, constructed in 537 A.D. First it was a Byzantine-style church, later it became a mosque and now it is a museum. Its gold mosaics were covered in plaster, and now conservationists balance uncovering the tiles with maintaining the

Islamic calligraphy and painted designs. The mosque endures almost continual restoration of both the mosaics and the structure since the walls were originally constructed with more mortar than brick, weakening them under the weight of the large dome. Although the dome is renowned as the first example of pendentives (triangle shaped arches to support the dome's weight), the dome has still collapsed many times due to earthquakes since Istanbul lies directly over a fault line. Many of the problems of this building would excite any structural engineer.

The Hagia Sophia survived through Roman and Ottoman history, despite loss and pillaging of its gold mosaic tiles during the sack of Constantinople. Its bold beauty of gold and dark tones remains. With a confused identity, areas of the mosque need reconstruction from the gentle hands of conservators. It's odd to feel for a building—a mix of concern, sympathy and awe—and past its tattered edges, some of the gold tiles still shine.



Hagia Sophia in Istanbul

Another day we walked past the University of Istanbul to see Suleymaniye Mosque: the pristine, white mosque sitting atop the Third Hill of Istanbul. This breathtaking mosque is considered to be the masterpiece of Sinan, the Ottoman engineer and architect often compared to Brunelleschi or Michelangelo. Sinan was a major influence in Ottoman architecture, and his followers went on to design the Blue Mosque and Taj Mahal.



UNL Engineering Temple Team, sitting on top of the temple podium (left to right: Kate Fickle, Ariel Kousgaard, Eric Garcia, and Dr. Ece Erdogan)



Uncovering ANCIENT ENGINEERING



Impact echo nondestructive testing of marble blocks

and workers. We avoided large “donkey” bees by sitting near Dr. Erdogmus with a small stick of incense burning—experiments took place even at breakfast.

After eating, we would walk downhill to the site where Dr. Townsend and Jeri (one of Dr. Hoff’s graduate students) were studying the details of the blocks to determine their original arrangement in the structure. The temple overlooks the Mediterranean, and I could look up from any point to see the extensive blue sea.

Field Work at the Temple Site

We woke at 3 a.m. for a flight from Istanbul to Gazipasa, but we were grateful to avoid the 15-hour bus ride. We were joined by The Durham School’s Dr.

Clarence Waters and his daughter Lela, who had also been exploring Istanbul enroute to visiting Dr. Erdogmus and the project site. Dr. Hoff graciously picked us up from the airport with his dolmus (van) and brought us to the “teacher’s house” (Gazipasa Ogretmenevi) while other students working on site would stay at the recently renovated dig house just outside of town.

Gazipasa was larger than I expected, and we arrived at the center of town: a short walk away from the main street and a fruit market, and a 45-minute walk from the beach. Gazipasa is surrounded by mountains and historic sites, with the remains of aqueducts and ruins mixed with farmland and more ruins hidden along the outskirts of town.

Each morning we woke up before the roosters at 5 a.m., loaded up Dr. Erdogmus’ rental car with equipment, and enjoyed the quiet, early-morning drive up into the mountains to the site. We had breakfast with the large group at long tables by the school house up the hill from the temple. Our group of 40 included 15 students from St. Olaf College, a dozen students from Atatürk University in Turkey, we three Nebraska Engineering students, four professors, several graduate students and other individuals

it travels through the block, for part of the calculations. We also did impact echo testing on each block: on the top face and one of the sides with an average of 25 spots tested on each block in a gridded formation. The graphs turned out well and will help us draw conclusions from the data. For 10 days we were touching, taping, testing, and carefully climbing on blocks from 1,800 years ago.

Dr. Erdogmus and Ariel went from block to block, recording notches for connections that kept



Eric Garcia and Kate Fickle work on impact echo, to help with dating and reconstruction of the ancient pillar blocks.

the marble blocks in place in the original structure. Dr. Erdogmus is creating a database

of all evidence of ancient connections that were used in the original construction of the temple in order to reverse engineer the collapse mechanism and to inform the design of the future reconstruction. Ariel created 3D models of blocks using a photogrammetry program and made measurements, marking up blocks with tape and filling her camera with hundreds of photos of blocks for the program to mesh together. We aim to accurately model the Corinthian column capitals with intricate carvings and the oddly split column pieces, since both would be difficult to model accurately using AutoCAD alone. Dr. Erdogmus is planning to use these scaled 3D models of individual column pieces to manipulate them in 3D virtual environment to match pieces together (like a 3D puzzle!) and to calculate the total height of the temple.

Ground penetrating radar (GPR) was another nondestructive testing equipment we used to

determine whether walls or other archeological remains lie beneath the surface of a nearby field. The GPR system consists of an antenna that sends electromagnetic waves through the ground while a transducer records the reflections. Waves are reflected due to a change in material properties, characterized by a dielectric constant that relates strongly to the water content of the materials. A change from soil to stone would cause a strong reflection on the line scans, and further analysis can be done by processing the data and creating three-dimensional grids of the scans. The equipment has a survey wheel to record distances collected along the 3D grid, and a computer device (the head unit) allows the user to control the setup properties and duration of the scan. It took a day to clear the field of rocks and weeds to map out a huge grid as close to perfectly square as possible, and we scanned the area multiple times.

While other days we worked until 1 p.m., every Friday, work ended at 11:30 a.m. for “trench tours,” when all teams presented the week’s worth of progress to the entire group. On the first Friday, we toured the mountainside beyond the temple and the mosaic, including the high walls of the city entrance, the colonnaded

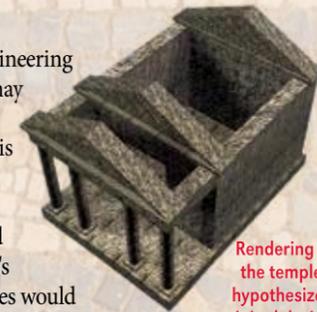
street, the small temple with beautiful mosaic tile flooring, the large mosaic (the largest in this area of Turkey) which completely encircles a bath, a milepost and more baths. Although our temple site felt far from the mosaic, we shared the excitement of new discoveries there.

Our days off yielded fond memories. On one of our Sunday excursions, Dr. Hoff showed us around all the ruins in Gazipasa. We climbed a narrow stairway in Trajan’s tomb, built in memory of the leader who died near the site. We also saw ancient inscriptions and at the top of Selinus saw the acropolis and ruins of the ancient city. It was phenomenal that these sites simply exist so close to the town without the disturbance of tourists or ticket booths.

On our last day at the site, we finished the testing and took our concluding sets of block photos for 3D modeling. That morning, we had taken our ending hike up Selinus to see the sunrise over the mountains. After three weeks of travel and research, it was finally time to say our goodbyes, repack the equipment, and take our long flight home.

A DURHAM SCHOOL DEVELOPMENT

When the Roman city of Antioch ad Cragum was built in the middle of the 1st century A.D., dry stack was a common method of construction, with instances of specialized connections: usually an iron connection piece surrounded by a molten lead filling.



Rendering of the temple’s hypothesized original design

At this site in present-day Turkey, the Nebraska Engineering Durham School team observed these connections may have included some dowels at frictional interfaces, but not consistently. Dr. Ece Erdogmus described this as “curious,” since many earlier Greek and Roman temples had a much more systematic approach to lateral force resistance systems—with well-developed connections, especially in locations such as Antioch’s high hilltop where both wind loads and seismic forces would be acting on the structure. (The question remains whether this is due to poor engineering judgment, lack of funds, or other causes.)

The response of dry stack masonry to seismic action and the physical performance of certain types of ancient connections in classical architecture are relatively well studied, Erdogmus said; however, the effect of the dowel connections on the overall seismic

response of the dry-stack post-lintel systems is not well understood. To her team’s knowledge, the only information available on such behavior is from qualitative assessments of the system response versus input ground motion. Further, the effects of classical styles—Doric, Ionic, Corinthian—and their respective proportions on the seismic behavior are not addressed in existing literature.

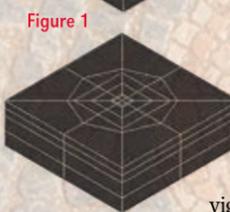


Figure 1

The dissertation by her graduate student, Cody Buckley—The Effect of Dowel Connections on the Behavior of Classical Columns under Seismic Loads—includes vigorous finite element analysis of various column arrangements (single drum, multi-drum), with and without dowel connections (Figure 1) and for various styles (Figure 2).



Figure 2

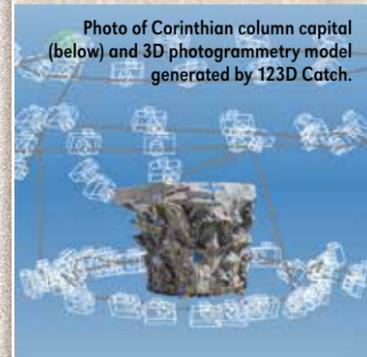


Photo of Corinthian column capital (below) and 3D photogrammetry model generated by 123D Catch.



“Understanding what enables a column to survive centuries of existence serves two purposes,” Buckley said. “First, the cause of previous structural failure can be better explained; then, successful preservation techniques can be designed and employed.”

Erdogmus added: “Masonry is anisotropic and brittle, which makes it not only highly vulnerable against seismic action but also difficult to analyze for the effects of these dynamic loads. The discrete nature of an ancient column with a capital (figure 3), drum, and base can result in sliding, rocking, or a combination behavior at each interface, under different seismic excitations. To our knowledge, there is no research identifying, quantitatively, the thresholds of ground acceleration causing these different types of behavior with respect to different classical styles, related range of slenderness ratios, and the existence of dowel connections. This work will address this research gap.”

Jennifer Brand, professor of Chemical & Biomolecular Engineering, is a 2013-14 ELATE Fellow. Brand joins 18 women faculty in science, technology, engineering and math (STEM) fields for ELATE at Drexel*, a collaborative project of Drexel University and Drexel University College of Medicine.



Jennifer Brand

According to a news release announcing the selection, ELATE at Drexel* focuses on increasing personal and professional leadership effectiveness, leading and managing change initiatives within their institutions, using strategic finance and resource management to enhance the missions of their organizations, and creating a network of exceptional women who bring organizational perspectives and deep personal capacity to the institutions and society they serve. The program is facilitated by leaders in the fields of STEM research and leadership development.

Brand is part of the second incoming class for ELATE at Drexel, with participants from a range of universities and colleges across the country. Her ELATE work began in May with online assignments and community building activities; ELATE Fellows also spend three week-long, in-residence sessions near Drexel in Philadelphia. Her ELATE experience will conclude in March 2014 with a symposium organized around participants' projects and with graduation ceremonies attended by their deans and other university leaders.

Dennis Schulte, with 35 years as professor of Biological Systems Engineering, received ASEE Midwest's 2013 Outstanding Engineering Educator Award.

MME junior **Maggie Clay** led "Mad Science Mondays," summer sessions for kids' STEM learning at the Edgerton Explorit Center in Aurora, Neb.

Anuj Sharma, CIVE assistant professor, worked with HDR on a service activity, studying the "Economic Framework for Feature Selection in Healing Garden: Evaluation at Women's Hospital." The project won a merit award from the American Society of Landscape Architects' Great Plains Chapter.

Jennifer Melander, BSE assistant professor, was named to a Science Literacy program with the Institute of Agriculture and Natural Resources and other partners.

Isra Somanas, MME graduate student, is recovering from a near-fatal crash while biking on West O Street in Lincoln this summer. Students at the engineering welcome back event, Rock the Block, signed a giant get well card for their classmate, which was delivered by MME staff member Ryan Pretz.

Patrick MacBride and Sameena Khan, architectural engineering students with UNL's Durham School of Architectural Engineering & Construction, were awarded the 2013 Howard Brandston Student Lighting Design Grant for their entry in the prestigious competition with the Illuminating Engineering Society of North America. Durham School industry fellows, Rodrigo Manriquez of SmithGroupJJR and Michelle Eble-Hankins of Alvine Engineering, advised MacBride, Khan, and architectural engineering students in the AE 4250 - Lighting Design Course. The Durham School has a tradition of excellence with the award, including winners in 2011, 2010 and 2009, along with an honorable mention in 2011.

Mohamed Dahab, professor of civil engineering, was appointed to the Nebraska Environmental Quality Council. His term continues into 2017.

MICROGRAVITY U. 2013



A UNL team returned to the Johnson Space Center in Houston for a sixth year with NASA's Microgravity University. The team's 2013 project assignment focused on the ability of the Active Response Gravity Offload System (ARGOS) to provide a microgravity environment for a free-flying vehicle. Team captain Jake Reher, MME senior, said ARGOS is a robotic system that provides reduced gravity environments for robotics and humans through a large motion-based platform, but it had not yet tested free flyers. The UNL team developed an octocopter to fly a specific set of motion patterns in both ARGOS and plane-induced microgravity environments. The Nebraska team also devised a related data collection method for a combination of data sources, including a motion capture camera system and inertial guidance unit aspects. Parabolic flight maneuvers during Microgravity University Flight Week in July collected another data set for comparison to the data collected with ARGOS. Ultimately, the UNL report will help the ARGOS system to be evaluated and the control system to be tuned for optimal free flyer performance.

UNL's **Stormwater Management Education Team** received the 2013 Outstanding Team Gold Award from the Association of Natural Resources Extension Professionals for its programming efforts. Team members include **Tom Franti** and **David Shelton**, biological systems engineering and extension engineers; **Steve Rodie**, agronomy and horticulture; **Kelly Feehan**, extension educator; and **Bobbi Holm** and **Katie Pekarek**, assistant extension educators.

Vedita Saraf, chemical engineering graduate student, served as a guide for prospective students featured in "College Bound USA," a series produced and broadcasted by a national television network in India.

At the American Society of Agricultural and Biological Engineers 2013 conference, Biological Systems Engineering and Agricultural Engineering faculty **Deepak Keshwani** and **Tami Brown-Brandl** received the ASABE Presidential Citation for service to their profession and society; and **Richard Stowell**, **Dennis Schulte** and collaborators won a Blue Ribbon award for developing the Air Quality in Animal Agriculture eXtension website. **Suat Irmak** was on a UNL team that earned Blue Ribbon honors for their paper, "Evaluation of Water Productivity and Irrigation Efficiency in Nebraska Corn Production."

Florin Bobaru, MME professor, was named to a MURI Center for Material Failure Prediction through Peridynamics with the Air Force Office of Scientific Research.

NEBRASKA STUDENTS' ENGINEERS WITHOUT BORDERS NAMED PREMIER CHAPTER, MIDWEST REGION



EWB-NU students attending the 2013 EWB-USA Midwest Regional Conference were: (from left) Austin Costello, Jared Beyersdorf (chapter president), Eric Berglund, Keith Ozanne (power/solar team lead), Liz Schmidt, Allison Speicher, Paul Smith, Brett Sallach, Amanda Dunekacke (water quality / biosand filter team lead), Phil Blankenau, Adam Gilbert and Ben Pavlik.

Engineers Without Borders - University of Nebraska Student Chapter was named the 2013 EWB-USA Regional Premier Chapter among 20 chapters at the Midwest Regional Conference in Lawrence, Kan., Nov. 8-10.

The Nebraska student chapter is comprised of engineering students in programs at both Lincoln and Omaha, and students in other majors are also welcome. The chapter formed in 2008 and is relatively new among the 225 national chapters, according to faculty co-adviser Libby Jones, an associate professor of civil engineering who works in Lincoln and Omaha. A Nebraska professional chapter of EWB sometimes joins the students for learning activities, though each chapter has different projects.

EWB-NU entered a minimum five-year commitment with Kianjavato, Madagascar: a remote community in the African island nation's interior, where Omaha's Henry Doorly Zoo operates a field station near a threatened ecosystem that's home to critically endangered lemurs.

Site work began in 2008 when four Nebraska students began evaluations for sustainable solar power and water filter projects with the villagers. Installations started in 2010 during annual EWB-NU visits, with 23 biosand water filters built and three classrooms in local schools lit with solar power (and at least four more classrooms ahead), Jones said.

"This honor reflects the passion and dedication that each member of our chapter has for our work. We are deeply invested in the mission of Engineers Without Borders, and this motivates us to perform top quality work that truly makes a difference in the world," said EWB-NU President Jared Beyersdorf, a senior who majors in Biological Systems Engineering. "Along with the community of Kianjavato, we are extremely grateful for the financial support we have received over the years, enabling our projects to become a reality."

Beyersdorf said a great way for people to help is to learn more and contribute online at <http://ewb.unl.edu/>.

MME students **Mohan Basnet** and **Walter Bircher** work with UNL students and a partner in Nepal to raise funds and install a hydroelectric generator in the village of Hardeni, Nepal. Their Power A Village project will provide electricity to 35 households for the first time. Basnet's parents grew up in a Nepali village without electricity before they moved to the city for better education, which led him to college in the United States.

Three Nebraska Engineering faculty are among five UNL academic leaders selected by the Senior Vice Chancellor for Academic Affairs to participate in the Committee on Institutional Cooperation's Academic Leadership Program: **Steve Goddard**, interim dean of Arts and Sciences and professor of computer science and engineering; **Mark Riley**, professor and department head of biological systems engineering; and **Lily Wang**, associate dean for graduate programs and faculty development and professor of architectural engineering. As fellows they represent UNL at three CIC Academic Leadership Program seminars. Established in 1989, the program develops the academic leadership and managerial skills of nominated faculty who have demonstrated exceptional ability and academic promise.

Istvan Bogardi, CIVE professor emeritus, was invited to participate in the 2013 Budapest Water Summit, a prestigious group of water scientists from all over the world. He was eager to represent and utilize his 25 years of teaching and research experience at UNL.



A Nebraska Engineering team placed second at the 2013 International Quarter Scale Tractor Student Competition. From left to right are advisers and students: Professor Roger Hoy, Micah Bolin, Bob Olsen, Ethan Mosel and Assistant Professor Joe Luck.

PHILLIPS FAMILY DONATES TO ENGINEERING, EDUCATION



The couple met at UNL in the early 1930s—the economic times were not easy, but they valued their education. When he landed a job in Washington, D.C., she joined him and their married life began.

He worked as an engineer for the Department of the Navy in the Ordnance area—through World War II then the Korean War and into the Vietnam War—first in buildings along the National Mall and later in Arlington, Va. At home, two children arrived and the couple became even more involved in their community—yet, at the heart of it all, was the love that united them. He enjoyed how she brought music and warmth to their days; she admired his steady, logical mind. As time flew by, John and Lorraine Phillips decided—together—to plan for their later years, including money they set aside for a donation to UNL: to be shared equally between their colleges—engineering and education—in an unrestricted fund.



John & Lorraine Phillips

Daughter Martha Phillips-Patrick, said her father “liked what was logical and predictable—the designing of their first home, the grammatical structure of a foreign language, the reliable patterns of a square dance, the intricate strategy of a well-played bridge hand, the careful mapping of a road trip or mountain hike, the daily distraction of a crossword puzzle—as well as the challenges of engineering problems and the elegance of mathematics.”

She added: “I think my father enjoyed what he did and appreciated the education that gave him the conceptual skills to do it. And I think he would smile to know that an academically curious, motivated young person might benefit by a legacy ... at UNL.”

The College of Engineering deeply thanks the Phillips family for their generosity. If you consider giving back to Nebraska Engineering, please contact the NU Foundation’s Karen Moellering, kmoellering@nufoundation.org / 402-458-1179 or Amy Ferguson, aferguson@nufoundation.org / 402-458-1203.

In Memoriam

Mark Franklin Gardner, ’93, died Oct. 22. In World War II he was commissioned a 2nd Lt. and assigned to the 163rd Engineer Combat Battalion. He was the battalion’s adjutant and was awarded the Bronze Star. In Europe, the battalion removed land mines, repaired roads, and built 40 bridges. He also helped build a hospital in Bremerhaven, Germany, before returning to the U.S. in 1946.

Gardner continued his studies at the University of Nebraska and graduated June of 1948 with a B.S. in Electrical Engineering. He was an engineer with Toledo Edison Company and later worked for Iowa Public Service Company, in various offices including executive vice president. He remained in the U.S. Army Reserve and retired as Lt. Colonel in 1980.

In Sioux City, Gardner served on various boards and by leading organizations. He is survived by his wife of 65 years, Mildred; two children and three grandchildren. Memorials may be made to Christ United Methodist Church or the Salvation Army. Condolences can be added at roperandsons.com.

Ervin Ralph Blish, 85, died June 22. Born in Lincoln on Aug. 24, 1927, he graduated from Lincoln Central High School and joined the Navy during World War II, when he was involved in the early study of radar. Through careful rationing of his GI Bill benefits, he completed his bachelor’s degree in electrical engineering at the University of Nebraska in 1949, with additional credits in liberal arts.

Blish married Louise Metzger in 1951 in Lincoln, and the couple later moved to Bloomington, Ind., where he became the chief engineer at Hoosier Energy.

A 50-year member of the IEEE, Blish oversaw projects including: construction of electrical power generating plants in Indiana and Kentucky; the Army’s M-1 tank facility in Lima, Ohio; and the Citizens Fidelity Tower in Louisville, Ky. Recruited by the Agency for International Development during the Kennedy administration, he traveled to Ecuador and Peru to oversee the delivery of electrical power to remote areas high in the Andes.

He is survived by his wife of 61 years, four children, eight grandchildren and two great-grandchildren.

1960s

Electrical Engineering Professor **Don Cox** ’59, ’60 M.S., completed his first auto race “at an advanced age” by driving his Tesla Roadster in the Sandhills Open Road Challenge. For more information, see <http://go.unl.edu/ntf>.



Don Cox racing his Tesla.

Terry D. Boucher, ’62 EE of Highlands Ranch, Colo., is retired and does community service through Sertoma.

1970s

Steve Seberger, ’77 EE, is senior principal electronics engineer with Emerson in Marshalltown, Iowa. His son, Tim Seberger, ’08 MECH, is a project engineer with Cleaver Brooks in Lincoln.

1980s

John Vakiner, ’82 MECH of Ithaca, N.Y., is director of engineering with EMF.

John B. Solie, ’82 Ph.D. AGEN, Regents Professor Emeritus & Starkey’s Distinguished Professor Emeritus, Oklahoma State University, and current resident of Brownville, Neb., received ASABE’s 2013 Cyrus Hall McCormick Jerome Increase Case Gold Medal Award. He was honored during the awards program at the ASABE Annual International Meeting in Kansas City, Mo., on July 24.

Dan Rubin, ’85 EE, M.S. ’86, is a general director with Union Pacific.

Mike Heser, ’89 CET, is a project manager and vice president with Boyd Jones Construction in Omaha.

1990s

Pam Dingman, ’91 CIVE, owner of EDC, spoke at TedxLincoln in November. For more about Pam and her message, see <http://www.tedxlincoln.com/speakers/> and <http://go.unl.edu/by5>. Dingman was recently named Lancaster County Engineer.

Dave Woebbecke, P.E. AGEN ’91, M.S. ’93, is engineering manager with Sentinel Building Systems in Albion, Neb. He recently helped develop a new metal buildings product for the international poultry market.

Tony Fulton, P.E. Emeritus, ’97 MECH, was term-limited from the Nebraska Legislature in January 2013. Recently he joined the Board of Advisers of Niocorp Developments Ltd, a company based out of Vancouver, B.C. They are developing what is being called North America’s richest niobium deposit in Elk Creek, Neb.

Matthew Panting, ’09 MECH, of Temecula, Calif., is a manufacturing engineer with Abbott Vascular’s Projects group. His work deals with “anything from audits to working in the production areas in the clean rooms.” He added: “I recently completed a project in which I worked with a team to transfer the manufacturing of certain products from our established site in Southern California to a brand new manufacturing facility in Costa Rica.”

2000s

John Kastning, ’00 CHME, has been working as a Foreign Service Officer for the U.S. Department of State. With the U.S. Foreign Service since 2006, he recently started a new position with the State Department as a political officer at the U.S. Embassy in Berlin, Germany. His work covers a variety of issues in internal affairs related to bilateral relations between the U.S. and Germany.

Steve Franks, ’01 MECH, is a process engineer with Pella at its Shenandoah, Iowa facilities.

Ed Nadurata, ’02 CHME, is a technical supervisor with 3M’s plant in Nevada, Mo.



Curt Tomasevicz, ’03 BS ELEC and ’06 MS ELEC, will compete with the U.S. Bobsledding teams in the 2014 Winter Olympics, February 7-23 in Sochi, Russia.

Nick Blanchard, ’05 CONE, is an estimator with Boyd Jones Construction in Omaha.

Darrin Moy, ’05 CET, is a senior estimating manager with Kiewit Engineering in Omaha.

Pat Prendergast, ’06 CIVE, is a project executive / operations manager with Skanska in Phoenix.

Renee (Day) Hopman, ’07 MAE, is a design engineer with Zachary Engineering in Omaha.

Ashley Grace-Sims, ’08 MECH, is a test engineer with John Deere in Ottumwa, Iowa. She enjoys the work—“getting paid to break things.” Her John Deere colleague, Mitch Usasz, ’10 EE, is an electrical systems engineer who was on a team that won a John Deere Innovation Award, for an integrated autotrack system with GPS guidance in the redesigned steering system of the Windrower product line, launching in 2014.

Captain Andrew Lingenfelter, ’08 MECH, is a developmental engineer with the U.S. Air Force. He earned his master’s degree in Industrial and Systems Engineering from the University of Florida. He recently completed a tour at Eglin AFB, where he was a test engineer for two years with the 53rd Test Wing. He was the responsible test engineer on multi-billion dollar programs such as the RQ-4, MC-12, targeting pods, and other platforms/systems. In the fall, he began attending the Air Force Institute of Technology to begin his Ph.D. in Aeronautical Engineering.

2010s

Kyle Heberly, ’10 CM, and **Chris Beaty**, ’13 MAE, are sales engineer with Johnson Controls in Omaha.

Jacob Goecke, ’10 MAE, is a design engineer in the Structures Group with Kiewit Engineering in Omaha.

Ben Wademan, IMSE ’11, works with BD in Columbus since graduating from UNL and writes: “I have been thoroughly enjoying my job. I began as a quality engineer in January 2012 and was promoted to a manufacturing engineer in January 2013. In this new role I already have management responsibilities with eight direct reports.” He adds that he’s also gaining engineering and business experience including design, automation, project management, process improvement, budgetary management, and design of experiments. He notes, “None of this would be possible without the ... College of Engineering and the outstanding staff that helped me prepare for the real world.”

Luke Hatchell, ’12 CM, is a field engineer with Lane Construction based in Dallas-Fort Worth. His work involves a variety of projects including Air Force bases, bridges, railroad and racetracks. He said his UNL education “set me up better than I realized ... six months into the job, I was referencing notes from my classes—especially those with Prof. Wentz.”

Dani Smith, ’12 BSE, is an engineering intern with Kellogg in Omaha. She is currently working on her master’s degree in engineering.



Leviticus shares Holocaust survival story

By Melissa Allen, *The Daily Nebraskan* | reprinted with permission

On Veterans Day, former College of Engineering faculty member Lou Leviticus spoke in Lincoln on his escape from Nazi persecution during World War II.

The German police found them on the third story of an apartment building in Amsterdam.

It was 3 p.m. on Nov. 2, 1942. Louis Leviticus and his family had spent days prior to that afternoon with the windows drawn, the lights off and their voices low as they marked the days off on the wall.

“Shock and fear crystallized into one ball in my stomach. I was frozen,” said Leviticus, a retired University of Nebraska-Lincoln agricultural engineering professor who told his story at the Grand Lodge at the Preserve Monday morning. “My mother started wailing, and my father said a number of words that were totally out of character for him – bad words. That shocked me out of my paralysis. All the sudden, I knew I wasn’t going to stay there.”

Eleven-year-old Leviticus ran into the back room of the apartment and crawled through an open window onto the balcony.

“I was ready to jump down,” he said. “I looked over my shoulder and saw my father close the doors behind me. He waved goodbye. And that was the last time I saw my parents.”

Leviticus jumped from the third story and ended up on both feet in front of a German police officer. He ran away before he could be caught.

Both of his parents perished within the next month in Auschwitz in Poland – the largest of all the concentration camps.

Left stranded, Leviticus ended up in an orphanage for Jewish children who had lost their parents during the war.

Decades later, he moved to Lincoln in 1974 as an agricultural engineering professor and is now a published author of “Tales from the Milestone,” an autobiography about his experiences during the Holocaust. Leviticus has been at the Grand Lodge for a little more than a year now.

“I saw Lincoln, I saw the people, liked the people, and decided to stay,” he said.

Before the war hit Holland, Leviticus lived an upper-middle class life, and he said he never experienced anti-Semitism.

“I was pretty isolated from what was happening to Jewish people in Germany,” he said. “We just thought, ‘that can’t happen here in the Netherlands.’ Until it did happen.”

The Germans invaded the Netherlands on May 10, 1940. From that day on, there was no more freedom for Jewish people. Starting in 1941, curfews were set for Jewish citizens, who weren’t allowed to use public transportation. Then the raids began. German police picked Jews off the

street and sent them to concentration camps. During one of these raids, Leviticus’s father was taken away to a work camp, but he escaped before that day in Amsterdam.

“My father wanted to be a free man,” Leviticus said. “He knew we were going to escape. And one day he did. But now he wasn’t just a Jew prisoner, he was a Jew criminal.”

When his family reunited, they moved from their upper-middle class apartment in Amsterdam to a farm outside of the city. Here, while his parents stayed hidden indoors, Leviticus helped the farmer plow the fields and developed a love for farm life. Until the day his family once again uprooted and moved back into the city of Amsterdam.

“Suddenly, we had to leave, and I don’t know why,” he said. “Parents don’t talk to children. Children felt like burdens because of this.”

Finally, they ended up on the third floor of a five-story apartment building, where the Germans eventually found them.

“It was like living near the mouth of a volcano,” he said. “There was fear. We went to sleep with fear, we woke up with fear. That’s why this country for me is the best country in the world. You don’t have a fear for your life and loved ones.”

2002

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FOR THE FUTURE:

Youth engage in 'Building the 22nd Century'

Nebraska Engineering's "Building the 22nd Century" Conference included a challenge for K-12 students to express their ideas for the future built environment.

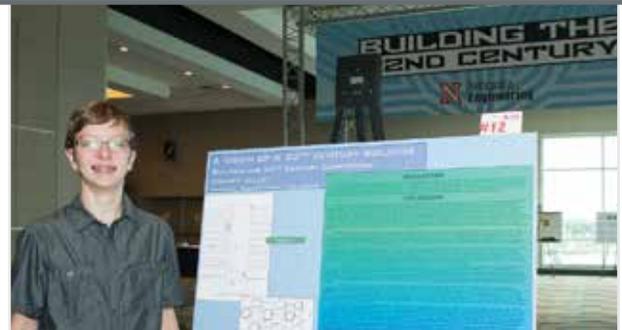
The college's contest asked youth in elementary, middle school and high school age groups to use their imaginations and design posters or build models to envision cities or structures in the next century.

"The students' approaches were surprisingly positive in addressing challenges such as dwindling resources and increasing human population," said Ece Erdogmus, associate professor with the college's Durham School of Architectural Engineering and Construction, who coordinated the competition. Judging was done by a faculty panel and through audience favorite balloting by conference attendees.

Dean Tim Wei greeted a contest participant, Connor Jolley, who visited the conference's last day (when judging had concluded). Jolley said he enjoyed the contest's opportunity to apply his perspective to solve problems in the future, and he plans to pursue a career in engineering.

Winners in each age division earned cash prizes up to \$100, plus \$1,000 school stipends (first place in each category) to be used for science, math and pre-engineering classes or programming. To see the list of winners and view the top posters, visit <http://go.unl.edu/k12posters>.

- Carole Wilbeck



Top, Connor Jolley; below, Ece Erdogmus helps students at All Saints Catholic School in Omaha make building shapes from their classmates during an awards ceremony honoring contest winners and participants..