



C E E E

UPDATE
SPRING 2022

SMART CITIES ₄



LINDA NOZICK

Dear Alumni and Friends,

You are amazing! As director of the School, I express on behalf of the students, faculty and staff, our gratitude for the financial support you provided to CEE on Giving Day 2022. Times have been challenging the last two years, to say the least, and we are forever appreciative of your continued support of CEE and the wonderful students we have the pleasure to educate.

In this issue of CEE Update, we announce a new undergraduate concentration in "Smart Cities." This concentration teaches students, through a new suite of courses, how to integrate a wide array of technologies in the urban environment to improve infrastructure, buildings and to promote sustainability. The feature story details how and why CEE developed these courses. The future of cities is in integrating technology that improves the quality of life in urban areas. This concentration will teach students how to do that.

In 2021, CEE hired Matthew Reiter as a Professor of Practice in structural engineering. Reiter has created new courses to expand education in structural design and behavior. Among the offerings are courses in masonry and timber, allowing our School to, once again, provide a robust curriculum in this area.

It is always a pleasure to learn about the wonderful activities of our alumni. In this newsletter, we bring you two alumni articles; one that highlights the story of a record-holding athlete and another that presents a published puzzler. These stories are inspiring and one even calls for your participation! For the first time ever, we offer you a crossword puzzle to complete. To learn the rest of the story and not have me give it away here, I ask that you give the puzzle a try to find your "aha" moment.

Lastly, as was recently announced by Dean Archer, it is my pleasure to continue on as CEE Director for another three-year term. I look forward to meeting more CEE alumni and you are always welcome to write to me at the email address listed in this publication under "contact us."

Continue to be safe and stay in touch.

A handwritten signature of Linda Nozick in blue ink. The signature is written in a cursive, flowing style.

Linda Nozick
Professor and CEE Director

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Diversity and Inclusion are a part of Cornell University's heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veterans and Individuals with Disabilities. Cornell University is an innovative Ivy League university and a great place to work. Our inclusive community of scholars, students, and staff impart an uncommon sense of larger purpose, and contribute creative ideas to further the university's mission of teaching, discovery, and engagement.



CEE UPDATE

is published once a year by the School of Civil and Environmental Engineering at Cornell University in Ithaca, New York.

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SMART CITIES: CLOSING THE LOOP

By Chris Dawson

The rapid evolution of sensor technology and data analytics has opened a new era in civil and environmental engineering and paved the way for a new undergraduate concentration.

Smart Cities Concentration

Cornell's School of Civil and Environmental Engineering, under the leadership of Director Linda Nozick, has added a concentration in Smart Cities to its list of options for undergraduate students.

The addition reflects the reality that civil engineers are the people who design much of the infrastructure cities rely on to function smoothly. To build the smart cities of the future students will need to learn more than civil engineering skills; they will also need to have knowledge of the environment, climate change, technology, sensors, human decision-making, data science and artificial intelligence.

"Civil engineering is the engineering that makes civilization possible." This statement, from Professor Chris Earls, may sound a bit grandiose when you first read it, but if you take a few moments to think about it, Earls is exactly right. Once a human settlement expands much beyond the size of a small town, infrastructure becomes essential. Transportation, energy, communications, water and sewage systems are all requirements of modern life, especially in cities.

At present, more than 55% of the world's eight billion people live in cities and this number is expected to grow to 68% by 2050. If the growing cities of 2050 continue to rely on 20th century systems and infrastructure, they are

likely to suffer from debilitating pollution, traffic, power, water and inequality problems. By offering a Smart Cities concentration, the School is living up to its commitment to prepare students to play a key role in creating cities that serve the people who live in them.

Sensing a change

Nozick and the faculty of CEE understand that the recent explosion in the availability, affordability and capability of sensor technologies is changing the field of civil engineering at a fundamental level. Sensors can gather real-time data on a wide variety of infrastructure-related issues, including traffic volume and flow, weather conditions, energy usage, pollution concentrations and water consumption. This data has the power to then inform design, implementation and policy if engineers and decision-makers know what to do with it. Over and over in conversation after conversation with CEE faculty this term "closing the loop" comes up.

"At Cornell, we are looking at closing the loop on this data," said Professor John Albertson. "Not just making data available, but also using it to optimally control infrastructure systems for a higher level of performance."

In one form or another, classes taught by Albertson,

Nozick, Patrick Reed, Samitha Samaranayake and H. Oliver Gao all teach students how to use data to better understand how infrastructure systems work—and don't work—in the real world and then how to apply what they have learned from the data to improve the systems.

There is a growing awareness in the field of civil engineering that the training undergraduates receive in their degree programs needs to better match what civil engineers are actually designing and building. "We are teaching the fundamentals of the civil engineering domain," said Assistant Professor Samitha Samaranayake, "but also giving students exposure to computing tools like machine learning and optimization. We need civil engineers who understand the physical and chemical processes at work, but also human psychology and behavior, modeling, computation, data analysis and optimization. The problems are simply different now and we can't just engineer our way out of them."

Smart Cities Curriculum

Students in the undergraduate civil engineering degree program have the opportunity to specialize in one or more areas, including Civil Infrastructure, Smart Cities, Fluid Mechanics / Hydrology / Water Resources Infrastructure and Transportation, or to plan a more general civil engineering curriculum. The 2021-22 academic year was the first year that the Smart Cities option was available and it started strong with six courses on the schedule.

In the fall of 2021, CEE 4800 Engineering Smart Cities, CEE 4930 Data Analytics and CEE 5735 Mathematical Modeling of Natural and Engineered Systems were all offered. CEE 4665 Modeling and Optimization for Smart Infrastructure Systems, CEE 4795 Sensors for the Built and Natural Environments and CEE 5745 Inverse Problems: Theory and Applications were on the course list for the spring 2022 semester. It is likely more classes will be added in the near future.

Classes included in the CEE Smart Cities concentration reflect the 21st century knowledge and skills required to take full advantage of the smart buildings, smart energy grids, smart water systems, and smart transportation systems that will grow to define the future.

Even before the fall 2021 semester began, Nozick and the faculty received some positive feedback about the new concentration: Albertson's Engineering Smart Cities class filled quickly. "I had students from the Ithaca campus and students from Cornell Tech in the class," said Albertson. "My goal in having students from both campuses is to build project teams that have classic disciplinary engineers from Ithaca together with Cornell Tech students that are focused on things like cybersecurity, privacy and other aspects of Smart Cities."

Continuing Cornell's legacy of civil engineering leadership

"CEE at Cornell has been at the forefront of much of the

thought process behind redesigning energy markets and integrated water management systems in the past," said Patrick Reed, the Joseph C. Ford Professor of Engineering, "so there is a legacy here of the school taking a leadership role in some very important areas. The mix of humans, engineered infrastructure and the evolution of systems is in our blood."

This makes the addition of a Smart Cities concentration unsurprising. In many ways, it is simply a curricular reflection of the research being done by many CEE faculty members. The existence of the concentration more closely aligns faculty research with what the school teaches.

One person whose work falls squarely under the subject heading of Smart Cities is H. Oliver Gao. Gao, who is the Howard Simpson Professor of Civil and Environmental Engineering as well as director of the Systems Engineering program at Cornell, focuses on urban infrastructure, transportation, and environment systems analytics / modeling and innovation for healthy living in smart communities.

When Gao talks about the idea of Smart Cities, he always adds another adjective to the formulation. "I am advocating not just for Smart Cities, but for Smart, Healthy Cities," said Gao. "Civil engineers plan and design our future cities. If we don't have a vision that prioritizes the health and wellbeing of the people who live in these cities, then who will?"

Reed agrees wholeheartedly. He believes that civil engineering is one mechanism whereby cities can serve their citizens. "By starting this training process here and giving the next generation of civil engineers the tools they'll need to create the smart, healthy, equitable and just cities of the future, we are simply giving them what they are already craving," said Reed. "Many of our students want a pathway to a future where they feel safe." As civil engineers trained in data analytics, modeling and artificial intelligence, in addition to discipline-specific knowledge, they will be well-positioned to close the loop connecting design, data and application to have a real impact on the world.



Cornell Tech Campus

MATTHEW REITER, PROFESSOR OF PRACTICE



Matthew Reiter, Professor of Practice

By Chris Dawson

When Lance Collins, former Joseph Silbert Dean of Engineering at Cornell, announced the creation of the Professor of Practice title as a new category of faculty position in 2018, newly appointed Professor of Practice Matthew Reiter was exactly the type of professional Collins had in mind. Dean Collins said at the time, “We are excited to have this title available. It provides a way to bring a very different set of complementary skills to campus to add to our already stellar faculty. Now, people with deep experience in industry will have a chance to be part of the teaching corps of the university.”

Reiter, who joined the faculty of the School of Civil and Environmental Engineering in the summer of 2021, had close to twenty years of professional engineering experience before stepping foot in the classroom. He worked for the City of Chicago’s Bureau of Bridges; he was a Project Engineer for the engineering firm Thornton Tomasetti; and he held several positions in Cornell’s Facilities Engineering Department. Those years of experience inform his teaching and give him a perspective students find invaluable.

Fellow faculty members also appreciate Reiter’s deep pool of practical subject matter knowledge. “The faculty of CEE have been absolutely amazing,” Reiter said. “They are very much invested in me succeeding and it feels great.” In 2019, while still working as a structural engineer for Facilities Engineering, Reiter had the chance to teach the Introduction to Metal Structures class for Professor Chris Earls, who was on sabbatical at the time. Teaching that class was a revelation to Reiter. “I loved it,” he said. “I loved being in the classroom; I loved interacting with the students; I loved the projects. Above all, I loved being able to bring my experiences as a practicing engineer to the students and show them practical applications for what they were learning.”

When the idea of filling a Professor of Practice role in civil engineering was floated, Reiter jumped at the chance. Now that he is part of the faculty, he is focusing his teaching on behavior and design classes in steel, timber and masonry. Reiter is also leading the Master of Engineering (M.Eng.) program’s Structural Mechanics and Materials option.

It would be hard to find a teacher who believes more strongly in the power of structural engineers to affect the future. “We are in a position of influence with regards to not only how structures are built or modernized, but also what materials are used. It doesn’t get more essential than that,” Reiter said. “The world and its built environment are facing so many challenges with climate and sustainability and resilience, and structural engineers have the potential to make a major impact in these areas.”

The architectural style of Cornell’s Ithaca campus is hard to sum up with one word. You can find buildings from the 1860s to the 2010s and almost every decade in between. Reiter spent ten years getting to know those buildings and now he can use them as a living laboratory to help his students learn about structural engineering. “If I want my students to know about how a concrete slab would have been poured in 1910, they don’t have to read about it. We can go to the Bailey Rotunda and see for ourselves,” Reiter said. “And if we want to explore the implications of using modern Mass Timber construction, we can engage with the Facilities’ capital projects actively vetting its appropriateness for Cornell’s campus.”

Reiter is excited to be able to share what he has learned about structural engineering with the next generation of civil engineers, and is especially eager to be able to show them firsthand. In this first year in the classroom, he is teaching the Steel I, Steel II, Timber and Masonry classes to a mixed group of undergraduate and graduate students. When he is not prepping for class, teaching classes, grading assignments, or further developing the Structural Mechanics and Materials M.Eng. program, you can find Reiter roaming the sidelines at some of Ithaca’s youth basketball games, coaching his children as they play, or running through campus, always on the lookout for the next real-world case study to bring to his students.

3D-PRINTING ROBOT ENABLES SUSTAINABLE CONSTRUCTION



IRB 6650S Industrial Robot System in the Bovay Lab

By David Nutt, courtesy of the Cornell Chronicle

The Bovay Laboratory Complex, located in the basement of Thurston Hall, has a new tenant: a roughly 6,000-pound industrial robot capable of 3D printing the kind of large-scale structures that could potentially transform the construction industry, making it more efficient and sustainable by eliminating the waste of traditional material manufacturing.

The process of 3D printing – also known as additive manufacturing – has already led to breakthroughs in product prototyping and biomedicine. When it comes to large construction projects, however, many questions remain about how 3D-printed structures will perform in the real world.

Cornell is now one of only a handful of universities in the U.S. to have such a system. Not only will it enable College of Engineering faculty to do robotic construction research, it will also give students hands-on experience in the fast-growing technological area within civil infrastructure, according to Derek Warner, professor of civil and environmental engineering.

“Robotic masonry (brick laying), printing with recycled plastics and printing with metal at a large scale are all exciting areas with lots of room for growth, both in terms of science and understanding, as well as technology and engineering,” Warner said. “The scaling of many of the phenomena controlling the build processes are such that they need to be studied at a scale near to that in which they will be used. The same applies to some of the phenomena controlling performance. Plus, there are always the unknown surprises that occur when up-scaling early-on with a new technology.”

The IRB 6650S Industrial Robot system arrived in February, and for the last several months the lab has been training to use the robotic system – which is essentially a long, swiveling arm – and run a number of medium-size test prints, including benches and planters, even a large letter C in the Cornell typeface. “The robotic system is versatile

and flexible,” said Sriramya Nair, assistant professor of civil and environmental engineering. “One of the ways we are using it is for 3D-printing of concrete, but it can be used in other ways, too. You can attach a welder or laser system. You can stack bricks or tie rebar. Many tedious processes can be automated.”

The robot is set on a 12-foot-long track, with a circular reach of about 12 feet, for a total coverage area of up to 8 feet by 30 feet, although Jim Strait, manager of technical services for the Bovay Lab, doesn’t anticipate printing anything quite that large. Operating the system is a team effort. One group of people mixes a pre-batched mortar and stirs in additives, such as a superplasticizer that reduces the water content of the mix and improves its flow through the hose. Another group operates the robot’s controller to regulate how much admixture runs through the system. When the admixture reaches the robot’s extruder head and nozzle, a hardening additive is introduced so the material thickens as it is poured. Getting the consistency right can be a challenge. Call it the Goldilocks dilemma. “The bottom layers need to be rigid enough to hold the next layer that’s being printed. But they can’t be so rigid that when you print the next layer on top, it doesn’t stick to it,” Strait said. “You need to make the adhesion in there, but you can’t have it so soft that it squishes out.”

The process is labor intensive, but when done successfully, 3D printing eliminates the need for casting molds and also allows for the creation of unconventional shapes – optimizations that waste less material.

Nair plans to incorporate the system into a new class she is teaching in the fall, Sustainability and Automation: The Future of Construction Industry, which will help prepare students for the coming changes in their field.

“We are giving them an opportunity to learn something that’s cutting edge and happening right now,” Nair said. “The more they know, the more they can be champions of change, but also know what the limitations could be.”

For now, the system is 3D printing with mortar, which is technically a paste with aggregate up to 4 millimeters in size. Anything larger than that could jam and damage the pump system. However, Nair’s team intends to build their own extruder head to print steel-fiber-reinforced concrete, which uses larger aggregate, that can withstand heavier loads. That will pave the way for the lab to 3D print full bridge components and test them.

Nair also hopes her group can create its own mixture to print with, rather than relying on the manufacturer’s premixed material. “The carbon footprint of these materials is very high right now,” she said. “So that’s another goal, to reduce the carbon footprint associated with 3D-printed materials.”

Chrysostomou '85 Finds Family in Cornell Men's Track & Field

By Lauren Simpson, courtesy of Cornell Athletic Communications



Christis Chrysostomou B.S. '85, M.Eng. '86, Ph.D. '91

Editor's Note: Back in the years of 1984-86, some of you may recall a husband and wife team studying to earn their Bachelors and Masters of Engineering degrees in CEE. The below story is about that couple, Christis Chrysostomou B.S. '85, M.Eng. '86, Ph.D. '91 and Maria Ioannou B.S. '85, M.Eng. '86, who came from Cyprus to Cornell to fulfill their educational goals. This article was first written and published online in February 2021 by the Cornell Athletic Communications office, where Chris is recognized for his track and field accomplishments.

Because of the connection to the School of CEE, we wanted to reprint this piece to share with all CEE alumni. The plaque mentioned in the article that displays Maria's full name (Maria N. Ioannou) is called the Fuertes Medal Undergraduates award, named after CEE Professor and head of CEE from 1873-1903, Estévan Antonio Fuertes. It is located in Hollister Hall.

ITHACA, N.Y. – Cornell men's track and field alumnus Chris Chrysostomou '85 has an abundance of memories that accompany his accomplishments as a long and triple jumper for the Big Red from 1983-85. His fondest, however, has nothing to do with the individual accolades he achieved. Rather, it is the family that his teammates provided him with that made an everlasting impact.

With Chrysostomou hailing from Cyprus, one would argue that finding "family" in Ithaca, roughly 5,500 miles away from home, would prove to be valuable. Luckily, before Chrysostomou bonded with his track and field family, he had his wife, Maria. The couple came to Cornell together, both transferring into the College of Engineering as juniors in 1983 after receiving the equivalency of associate's degrees in civil engineering at the Higher Technical Institute in Cyprus.

Although the academic rigor at Cornell was an adjustment from what they were accustomed to, both Chrysostomou and his wife thrived.

"The engineering program was very demanding, but we got so much out of it," said Chrysostomou. "My wife graduated as the No. 1 in 1985 and I was No. 2."

It's not every day that you see a husband and wife finish first and second in their civil engineering class, let alone in a program that is among the strongest in the nation. But their success doesn't stop there, as Chrysostomou and his wife aren't owners of just bachelor's degrees from Cornell. The pair also earned their Master's of Engineering degrees together in 1986, and Chrysostomou added his Ph.D. in Structural Engineering in 1991.

Both Chrysostomou and his wife undoubtedly left their marks in the College of Engineering. Chrysostomou knew his wife's would be indelible, as her name resides permanently on a plaque for finishing top of her class. But 35 years later, Chrysostomou's name has withstood the test of time elsewhere - in the Big Red's track and field record book. He just didn't expect it at the time.

"Maria's name is on the wall in Hollister Hall because there is a medal for every student who graduates and is ranked first," said Chrysostomou. "I told her, 'Well, your name is there, it's going to be for eternity. My name is in Barton Hall, but someday it's going to come down.'"

That day has yet to come.

To this day, Chrysostomou's outdoor long jump leap of 26-02.00 is not only Cornell's school record, but the Ivy League record as well. The story of the jump that won him the 1985

Ivy League Outdoor Heptagonal Championship in the event is exhilarating, and Chrysostomou remembers it precisely.

"I tell many people this story because it's one of those that you see in the movies, sort of an out-of-body experience," said Chrysostomou.

Chrysostomou's championship hopes all came down to his last jump. Although he had been leading the competition through five jumps, Yale's Eugene Profit, who later embarked on a five-year career in the National Football League (NFL), surpassed Chrysostomou on his sixth and final jump with a distance of 26-02.00. As the final jumper of the competition and now sitting in second with one jump remaining, the pressure was on for Chrysostomou.

"I remember standing at the edge of the corridor of the long jump, with all of my teammates to my left standing outside the track, shouting, screaming, and clapping for me, because it was the last event," said Chrysostomou. "After the silence, I just ran."

After all, the support from his team, which became so much more than a team for Chrysostomou, was one of the factors that left him on the brink of his third Ivy League Championship. Chrysostomou was seeking his first title in the long jump, but had clinched the indoor and outdoor Ivy League Heptagonal titles in the triple jump in 1984.

"In track and field, it looks like there are individual events, but with the way it is done in the states and the team competition, it becomes a team sport," said Chrysostomou. "Although you are relying on individual performances, except for the relays, it fosters team spirit. That's what I got at Cornell the two years that I was there. The comradery and warm feeling of family with my teammates is something that is with me still."

Having completed his final jump and with his "family" looking on, Chrysostomou anxiously awaited the results. The verdict – 26-02.00. A tie, or so it initially appeared.

"They measured it once, they measured it twice, they measured it three times, because it was the same distance and they wanted to make sure that they measured it correctly," said Chrysostomou. "The judge came up to me and said, 'Well, you have the same distance as Eugene, but you're number one.'"

Chrysostomou was crowned the champion thanks to a longer second jump as compared to Profit's. He couldn't have been more ecstatic, but the greatest source of Chrysostomou's joy wasn't his individual title or record-breaking



Christis Chrysostomou, Prof. Peter Gergely and Maria Ioannou B.S.'85, M.Eng.'86

performance. It was the fact that, as co-captain of the 1985 squad, he helped guide his team to the Ivy League Outdoor Heptagonal Championship, the Big Red's first at the time since 1978. Those feelings still resonate within him today.

"Although my record is still standing and I am very proud of it, what I most remember is the faces of my teammates and the faces of joy after we won the championship," said Chrysostomou. "That was more important than any individual performance that we had that day. It was team spirit and managing to clinch what we wanted so badly, both for the coaches and the team."

Even if his record-breaking jump wasn't, or won't ever be, the focal point of that day for Chrysostomou, it's still hard to look past how impressive this feat was. Cornell's previous outdoor long jump school record was held by Olympic silver medalist Meredith Gourdine '53. His mark stood for 34 years before Chrysostomou shattered it, so it only seems fitting that Chrysostomou's record has now stood for 35.

Today, Chrysostomou continues to reside in Cyprus where he serves as a Professor in the Department of Civil Engineering and Geomatics at Cyprus University of Technology. Over the course of his engineering career, he has specialized in earthquake engineering. Much of his work has focused on finding ways to update infrastructure, and even monuments, to increase their seismic design and their ability to withstand earthquakes.

And today, Chrysostomou continues to cherish the family that Cornell track and field provided him with. He came to Cornell with one family member, his wife Maria, and left with more family members than could be counted. Chrysostomou is richer for it, and the feeling is mutual, because the Big Red is richer for having Chrysostomou as a member of its track and field family, as well.

CEE ALUMNI CROSSWORD

Stu Ockman
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CEE You Later

Across

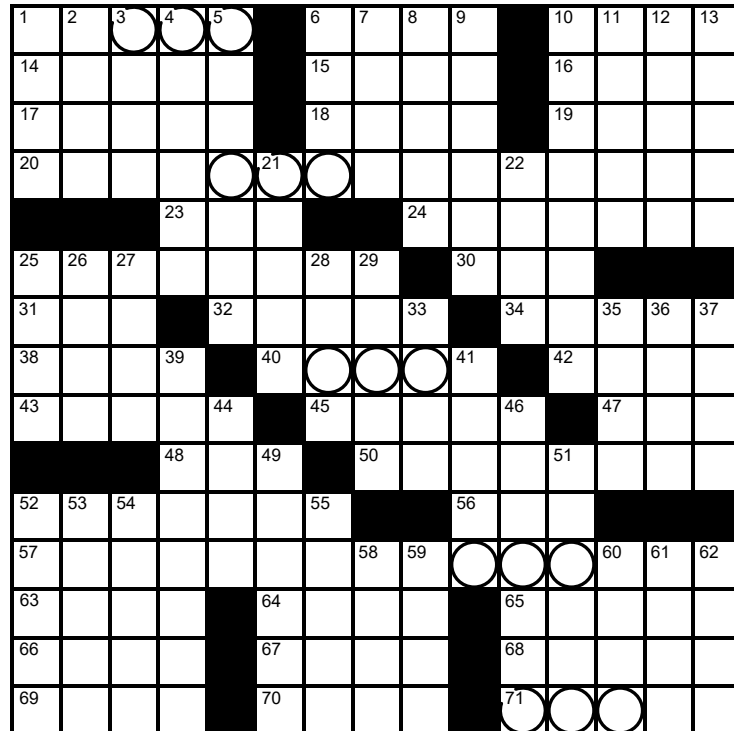
- 1 "Cabaret" role that starts the show
- 6 Haunting sound
- 10 It's an Italian thing
- 14 Dogie catcher
- 15 Biathlon need
- 16 How PBS specials air
- 17 Ain't proper?
- 18 Abductor of Europa
- 19 Black, to Botticelli
- 20 Accidental meeting
- 23 Swimming gold medalist Thorpe
- 24 Bar attraction
- 25 Sorcery
- 30 Milne hero
- 31 6-Down runner
- 32 iPhone message
- 34 "'Tis a pity"
- 38 Miner's entrance
- 40 Cold summer treats
- 42 Apse neighbor
- 43 Colorful aquarium dweller
- 45 Arizona Indians
- 47 "The Power to Surprise" sloganeer
- 48 What I think is online?
- 50 Spacious and splendid
- 52 "All finished!"
- 56 Alphabet ending?
- 57 It's a steal
- 63 Affording ingress
- 64 Tiny trash can, e.g.
- 65 Bonn's river
- 66 Bird feed
- 67 Glenn Miller's "In the ___"
- 68 "The Boy Who Cried Wolf" source
- 69 "House" actor
- 70 Brooklyn-based crafts website
- 71 Green with five Grammys

Down

- 1 Ariel's prince
- 2 Netting
- 3 Where water became wine
- 4 Reebok rival

- 5 What Marie Antoinette said to "let them" do
- 6 Challenging locale
- 7 Sign
- 8 Out of control, var.
- 9 "Huh-uh"
- 10 Apple pie seasoning
- 11 "I'm not ___ brag..."
- 12 Animated ogre
- 13 Love deeply
- 21 As a friend, to François
- 22 "Exodus" novelist
- 25 Angel's antithesis
- 26 Add cargo
- 27 Exchanging cross words
- 28 Blue
- 29 Bind
- 33 "Champagne Tony" of golf
- 35 "The Square Egg" author
- 36 4-Down rival
- 37 "Agreed!"
- 39 Nuclear-sub missiles

- 41 ___ law (old Germanic legal code)
- 44 Famous ___
- 46 Big Easy cocktail
- 49 Punctual
- 51 Bit of a chuckle
- 52 "Either Way ___" (Nina Simone song)
- 53 Freshen, as a drink
- 54 "Clean" series win
- 55 World Showcase setting
- 58 Aussie bounders
- 59 Archaeologist Jones, to friends
- 60 It can help you get a grip
- 61 Hydroxyl compound
- 62 Take back, for short



The man behind the puzzle

By Jeannette Little and Chris Dawson

If the name in the crossword puzzle's byline sounds familiar to you, maybe you were studying civil engineering at Cornell back in the 1960s. During a recent Zoom meeting with classmates, Stu Ockman '67 revealed that, in addition to a career as a professional engineer and business owner, he has had a lifelong love of crossword puzzles. It began when he was a teenager and has only gotten stronger through the years.

"Perhaps, my earliest memory of solving a real crossword puzzle (not the Highlights for Children version) was a contest run by *The Philadelphia Inquirer* when I was in sixth grade. I had a lot of fun solving it (and think I found the correct answer), but I needed a version without any erasures to enter the contest, and I was too shy to ask our next-door neighbor for their copy of the paper. Imagine my surprise a few days later when *The Inquirer* announced that there were no winners," recalled Ockman.

At Columbia High School in Maplewood, New Jersey, Ockman enjoyed math and physics and participated in the chess club after school—he even got a chance to play a match with the Cornell chess team against Penn State. In 1964, he came to Cornell and graduated with a bachelor's degree in civil engineering in 1967. He went on to receive an M.S. in Construction Management from Stanford and an M.B.A. from the Wharton School, all the while filling in daily crossword puzzles throughout college and his engineering career of more than 50 years.

Ockman is a licensed Professional Engineer in the state of California. In the early part of his career, he went to work for Day & Zimmermann, Inc. where he managed the scheduling of "all private sector projects in the engineering and construction division" for clients such as 3M, Union Carbide and General Electric. Later, his responsibilities shifted to "construction delay claims analysis including evaluating the impact of time delays, calculating damages and making recommendations for negotiations, hearings and trials."

Ockman's longtime Cornell friend, Adam Perl—who lives in Ithaca and with whom Ockman has stayed in touch—told Ockman that he had submitted a puzzle to *The New York Times*. Ockman did not know that an individual could submit puzzles to *The New York Times*. That is when he decided to take his passion for crossword puzzles up a notch. Ockman purchased a crossword software package that could help him create puzzles. It did not take long for him to get proficient. He has even submitted



Stu Ockman B.S. '67

puzzles to Will Shortz. (Yes, that Will Shortz of *The New York Times*!)

Over the past few years, Ockman has had 13 puzzles accepted by Shortz and published in *The New York Times*.

When asked if he would consider creating a puzzle for this issue of CEE UPDATE for alumni to solve, Ockman gladly and immediately accepted the invitation, with one condition. "I will need to collaborate with someone to come up with a theme, preferably someone who does crossword puzzles," Ockman said. A collaborator was found quickly in the College's Communications Office when, in response to an email query, Chris Dawson responded enthusiastically with "Yes! I LOVE crosswords! I do them every day." Dawson suggested a few possible themes to Ockman, and Ockman took it from there.

Dawson came away from the interaction inspired and downloaded his own copy of the crossword creation software. Who knows, maybe next year you'll be solving his puzzle in these pages.

Ockman, still working at the engineering practice of Ockman & Borden Associates that he founded in 1981, plans to continue solving and creating crossword puzzles. In addition to *The New York Times*, Ockman's puzzles have appeared in the *Los Angeles Times*, the *Jerusalem Post* and... well, you can do a google search on him and his name will appear!

Ockman built a long, successful career utilizing his education in a profession that he enjoys. He managed to keep up and grow his hobby of crossword puzzling for relaxation and has shared his enjoyment with others. He is a humble man with a fun spirit. He hopes CEE alumni enjoy solving the puzzle "CEE You Later."

A side note: according to Ockman, "every crossword puzzle needs at least one 'aha' moment." Try the puzzle to see if you can find any "aha" moments of your own. Enjoy!

CEE FACULTY AWARDS & HONORS



WILF BRUTSAERT, was awarded the 2022 Stockholm Water Prize, “the world’s most prestigious water award.” Widely known as the Nobel Prize of Water it is “awarded to people and organizations for extraordinary water-related achievements.” Brutsaert has received this honor “for innovative work on evaporation and groundwater storage that has helped improve climate modeling and technologies to estimate and measure evaporation.” To read more on the story visit <https://tinyurl.com/2p8duazr>

In addition, Professor Brutsaert’s well known book “Evaporation into the Atmosphere: Theory, History and Applications” (Springer Science and Business Media, 2013) has been translated into Chinese. The official announcement can be found at <https://tinyurl.com/2p8pwp3e>



PHIL LIU was appointed as Honorary Chair Professor of Ocean University after presenting a talk in the “Blue Ocean” lecture series on “Generation and propagation of Tsunami-like bores and resulting inundation” to students of National Taiwan Ocean University on December 13, 2021. In addition, Liu was awarded the 2021 Distinguished Alum for Academic Achievement at the National Taiwan University.



TODD COWEN was a recipient of the 2021 College of Engineering Mr. and Mrs. Richard F. Tucker Teaching Award.



H. OLIVER GAO was awarded the inaugural Howard Simpson Professorship title on July 1, 2021.



GREG MCLASKEY has been promoted to the rank of associate professor, with indefinite tenure, effective July 1, 2022.



CHRIS EARLS was a recipient of the 2021 College of Engineering Daniel M. Lazar ‘29 Teaching Award.



KEN HOVER serves on the U.S. Department of Commerce’s National Institute of Standards and Technology team to investigate the June 24, 2021 devastating partial collapse of Champlain Towers South condominium in Surfside, Florida.



SAMITHA SAMARANAYAKE was awarded an NSF Early CAREER Award.



GREESHMA GADIKOTA was awarded an NSF Early CAREER Award, a 2021 College of Engineering Research Excellence award, an Army Research Office Early CAREER Award, and a Cornell Rising Women Innovator Award.



QI LI was awarded an NSF Early CAREER Award.



FRANCIS VANEK became a Faculty Fellow for Engaged Learning through the Office of Engagement Initiatives.



DEREK WARNER has been promoted to the rank of full professor, effective Jan. 1, 2022.

CEE GRADUATE STUDENT ASSOCIATION RESEARCH SYMPOSIUM

CEE's graduate student association organized the annual, day-long event, offering students the opportunity to present their research, foster communication and build meaningful connections. The symposium was held on March 25, 2022 and prize categories were awarded as follows: Oral Presentations: 1st place tie - Paige Jacob and Rohini Gupta; 3rd place - Nan Wang; People's Choice award winner - Rohini Gupta. Poster Presentations: 1st place - Sara Beth Cebry; 2nd place - Evan Heberlein; 3rd place - Jun Young Song; People's Choice award winner - Jun Young.

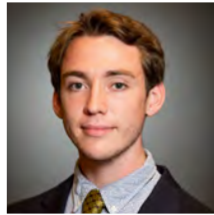
CHARLES LEE CRANDALL ESSAY PRIZE AWARDEES

This award recognizes the best three papers written by CEE Students in three categories: Environmental, Civil Infrastructure, Systems and Management. Winners are announced annually at CEE's graduation ceremony. The 2021 awardees are: 1st place prize - Danyeh Gutema B.S. '22; 2nd place prize - Divya Maheshwari B.S. '22; 3rd place prize - Bo Rider B.S. '23.



KATIE ADLER, Ph.D. '22, was awarded an American Association of University Women (AAUW) Dissertation Fellowship award for 2022.

Dissertation Fellowship award for 2022.



AIDEN CLARAGE B.S. '22, is a recipient of the 2021-22 Clark Construction Scholarship

award, as "a top civil engineering junior who has shown an interest in and aptitude for construction."



CASEY CHING Ph.D. '22, was a recipient of a 2021 Graduate Diversity and Inclusion Award in the category

of Excellence in Leadership. She was recognized for her dedication and efforts to building and growing inclusive communities within the school, college and university levels.



DUORU GUI B.S. '21, was awarded the 2021 Fuertes Medal. The Fuertes Undergraduate Medal,

established in 1893 by the late Professor E.A. Fuertes, Dean of the College of Civil Engineering, provides a gold medal recognizing a Civil Engineering student with the highest GPA over the four consecutive years of study at Cornell.



YANLE LU, currently a graduate student, was a finalist in the 2022 Three Minute Thesis competition. An annual

competition sponsored by the Cornell Graduate School, for doctoral students to develop and showcase their research communication skills.



HANNA SI B.S. '21, was the recipient of the 2021 Walter Lynn Medal. This award is given annually to a graduating

senior majoring in Environmental Engineering of admirable character whose scholastic achievement is most distinguished over the four consecutive years of study at Cornell.



AKANKSHA SRIVASTAVA B.S. '22, was the recipient of a Cornell Engineering Alumni Association (CEAA)

Undergraduate Research Award. As a senior majoring in environmental engineering, Srivastava is in Dr. Greeshma Gadikota's research group, "working steadily towards developing innovative integrated approaches to separate rare earth metals with inherent carbon removal."



TANAYA YADAV
M.ENG. '22, was part of the winning team for best Business and Technology pitch at 'Switch

The Pitch'- a protothon co-hosted by the High Tech Club at SC Johnson College of Business & Product Management Club at Cornell. Yadav wrote, "We prototyped ProFI (Protect Financial Information) - a combination of mobile payment and fraud detection system that enhances the customer payment journey and protects customer information while they make transactions through mobile phones."

COLLEGE OF ENGINEERING 2021 DIVERSITY PROGRAMS IN ENGINEERING (DPE)

honored the achievements and impressive contributions made throughout the year by students, staff and faculty. CEE's 2021 student Diversity Scholar Award recipients were: **Isabella Animadu '22**, civil engineering, **Bridget Childs '21**, environmental engineering, **Henry Tenecela '22**, civil engineering.



ISABELLA ANIMADU
'22, civil engineering, was the recipient of the Undergraduate Distinguished

Service Award for her outstanding contributions to the Cornell community and her volunteer

efforts. In addition to introducing local youth to STEM, Animadu mentored the 2020 cohort of the Pre-Freshman Summer Program, was a course assistant for ENGRG 1070 Spatial Visualization, and serves as the Chair of the Technical Outreach Community Help program of the National Society of Black Engineers.

STAFF NEWS

JOE ROWE, director of administration in the School of Civil and Environmental Engineering, was awarded the 2021 Richard Allmendinger Staff Commitment to Diversity Award for his effort to unite the community and host open dialogues. "In 2020 we all saw a visible outcry for racial and social justice in our country," Rowe said. "This opened the door of opportunity for the Cornell Engineering community to come together and have meaningful discussions about diversity, equity, inclusion and belonging (DEIB). The outcome has increased understanding through sharing many perspectives and the opportunity to learn from each other. I personally have felt more energized and hopeful. Courageous conversations about DEIB must continue to help build individual and team relationships that are necessary for action toward sustainable change."



Joe Rowe

President's Awards for Employee Excellence are awarded annually in six different categories to recognize the achievements of staff who excel in their roles, both in skills and performance.



Beth Korson

BETH KORSON, CEE's Events and Main Office Coordinator, was a 2021 recipient of the President's Culture of Belonging award for going beyond expectations to create and support an open, inclusive, welcoming workplace environment. Korson is a dedicated employee who provides excellent support to students, faculty and staff, ensuring equitable treatment for all persons.

ALUMNI CONNECTIONS

Trueman Goba CEE M.Eng. '86, a shout-out of congratulations to Trueman, who has been named honorary fellow by the Royal Academy of Engineering. Trueman is the Chairman of Hatch Africa, part of HATCHLTD and is also President of the South African Academy of Engineering. Trueman received his B.S. in Civil Engineering at the University of Natal, Durban and he graduated in 1986 with a Master of Engineering from the School of Civil and Environmental Engineering at Cornell.

Jerome Hajjar M.S. '85, Ph.D. '88 has been elected to the National Academy of Engineering, Class of 2022. His citation reads: "For development of design criteria and models for stability and seismic design of innovative steel and composite structures." Hajjar is the CDM Smith Professor and Chair of Civil and Environmental Engineering at Northeastern University in Boston.

Mike Rolband B.S. '80, M.Eng. '81, MBA '82 has been appointed Director of the Virginia Department of Environmental Quality (DEQ) by Governor Glenn Youngkin, effective January 15, 2022. DEQ's Mission is to protect and enhance the environment of Virginia in order to promote the health and well-being of the Commonwealth's citizens, residents and visitors in accordance with applicable laws and regulations. DEQ is responsible for administering laws and regulations related to air quality, water quality, water supply, renewable energy and land protection through the work of nearly 800 employees at six regional offices across the state and the central office in Richmond, VA.

Jawad Shaikh '92 is a Partner at international management consulting firm Roland Berger. Jawad went into consulting shortly after leaving Cornell and his experience spans the US, the UK & Europe, and the Middle East where he's been based for the last 10+ years. Jawad leads the firm's Telecom Media & Technology sector and Digital practices, and in between his consulting stints, he has also held an executive-level role for a regional telecom player, and gained experience of digital start-ups as a founder / investor.

Constantine "Costis" Toregas M.S. '70, Ph.D. '71 writes: "It is 50 years since I left Hollister Hall with my Ph.D., fresh and eager to conquer because of folks like Arnim Meyburg and Pete Loucks whom I discerned in a recent Zoom call photo! So glad! My trajectory took me to non-engineering places like Public Technology Inc. for 30 years, where I helped mayors and commissioners bring technology into their operations, and another 20 at GWU where I am preparing the next generation of cyber warriors. The journey was made easier by my Cornell preparation. I wonder what happened to the grad students with whom I huddled in the 4th floor cubicles- Fernando and Allistair and many others who helped me make it through? I am still working hard, and also serve on many non-profit boards as there is a lot of work yet to be done in sustainability, the role of women in society and the role of governments in our everyday challenges.

Photo captions (top): Jordan Dick '12, Professor Ken Hover, Anna Ferry Petkovsek '12 (bottom): 1962 Classmates: Fred Hart, John Abel and Alex Vollmer

CEE Reunion 2022



CEE You Later Answer Key

E	M	C	E	E	M	O	A	N	C	O	S	A			
R	E	A	T	A	A	M	M	O	I	N	H	D			
I	S	N	O	T	Z	E	U	S	N	E	R	O			
C	H	A	N	C	E	N	C	O	U	N	T	E	R		
					I	A	N	K	A	R	A	O	K	E	
B	L	A	C	K	A	R	T	P	I	M					
R	A	T	E	M	A	I	L	S	O	S	A	D			
A	D	I	T	I	C	E	E	S	N	A	V	E			
T	E	T	R	A	Y	U	M	A	S	K	I	A			
					I	M	O	P	A	L	A	T	I	A	L
I	T	S	D	O	N	E		I	Z	E					
L	O	W	E	S	T	P	R	I	C	E	E	V	E	R	
O	P	E	N		I	C	O	N	R	H	I	N	E		
S	U	E	T		M	O	O	D	A	E	S	O	P		
E	P	P	S		E	T	S	Y	C	E	E	L	O		

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CONTACT US

STAY CONNECTED

Write to us! Let us know your thoughts on the crossword puzzle.
Share some news. Let us know what you are doing.
Email civil_env_eng@cornell.edu, or visit us at
<http://cee.cornell.edu/cee/alumni/> to submit an alumni note.

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