Editor-in-Chief
Saimon Sharif (ChE ‘15)
Asst. Editor-in-Chief
Chae Jeong (ChE ‘16)
Assoc. Editors
Joseph T. Colonel (EE ‘15)
Caroline Yu (EE ‘15)

Illustrators
Jake Potter (ME ‘16)
Laura Quan (CE ‘15)

Writers
Yara Elborolosy (MCE ‘16)
Allison Tau (ChE ‘15)
Evan Burgess (Arch ‘15)
Anamika Singh (Art ‘17)
Kevin Sheng (EE ‘18)
Anushree Sreedhar (ChE ‘18)
Ruchi Patel (ChE ‘18)
Brenda So (CE ‘18)
Pranav Joneja (ME ‘18)
Monica Chen (CE ‘18)
Andy Jeong (EE ‘18)
Photographers
Jenna Lee (ME ‘15)
Vincent Wai Him Hui (Arch ‘15)
Howie Chen (EE ‘16)
Christine Huh (Arch ‘18)
Winter Leng (ChE ‘18)

The Pioneer

NOVEMBER 17, 2014
Volume 94, Issue #5
pioneer.cooper.edu
pioneer@cooper.edu

FALL BLOOD DRIVE

ANDY JEONG (EE ‘18)

On Tuesday, November 4th, Zeta Psi and the Society of Women Engineers (SWE) helped host the Cooper Union Blood Drive, which was held from 12 pm through 6pm. This event was sponsored by the New York Blood Center in order to help save young kids’ lives. It was originally scheduled to take place in the Foundation Building Colonnade, but due to the last-minute art students’ need for the space, it was moved to the Gelman Foyer in the New Academic Building (Lower Level 1). With seventy to eighty sign-ups prior to the event, approximately thirty to forty donors showed up. There were supposed to be eight beds available; however, because of the limited space, only three were used. The donors were asked to have a healthy meal before donating, and have maintained body health. The yield rate was not too impressive, but thanks to all donors who showed up courageously! You can fill out a detailed survey at http://ow.ly/E9fXw (case sensitive). ◊

DETAILS ON THE COOPER FUND

CAROLINE YU (EE ‘15)

Each year, donors contribute to Cooper Union’s Annual Fund. The Annual Fund supports student scholarships, academic programs, and the maintenance and growth of student resources. In addition to the Annual Fund, the Cooper Fund was established in 2012 to specifically support grants, fellowships, and programs for Cooper students.

Alumni and other donors who contribute to the Cooper Fund are paired up with Cooper students, which serves to strengthen the relationship between donor and recipient. To connect the two, donors meet with students at the Cooper Fund Leadership Circle Reception.

The collection of these donors’ gifts is coordinated by the development office. I interviewed Jennifer Durst, the major gifts officer, in Cooper’s Office of Alumni Affairs and Development. I thank her and Gabrielle Peterson, the Development Assistant, for their support and cooperation.

The Cooper Pioneer: What is the role of the Development Office at Cooper and what is your individual role in the office?

Jennifer Durst: The Development Office is part of the Office of Alumni Affairs and Development. We are responsible for raising money from alumni, parents, foundations, corporations and friends of The Cooper Union. These funds go towards supporting Cooper’s programs and operations. It is important to note that philanthropy is a major source of revenue for

(‡ continued on back)

MORE CAMERAS!

EVAN BURGESS (ARCH ‘15)

This summer, we watched as a series of new security cameras were installed around the perimeter of the New Academic Building. I took a walk around the building and counted no fewer than ten cameras, nearly half of which are mounted on the sloped concrete columns. Why do we have so many new cameras? Do we need them to keep the seven cameras on the 7th floor of the Foundation Building (not counting the two cameras on the keypad locks and one camera in the stairwell) from getting lonely? Do we need more feeds to display on the new monitors at the guard desks?

I contacted Professor Alan Wolf to ask about the new cameras, and he provided a few answers. He said that many of the old cameras had fried and are no longer functioning. He also stated that the school is replacing many systems that relied on Windows XP, since that operating system is now retired. In a way, this is a sensible course of action: replace cameras as they break down around the school, and update obsolete systems. But what the students see is an accumulation of more and more security systems attaching themselves to every surface around the school. It is no secret that the many cameras placed around the seventh floor lobby, Foundation Building, exist for the protection of President Jamshed Barucha and the staff in his office. Whenever I see new cameras being installed, I tend to assume that their purpose is to record the students, rather than protect the students.

Does this mean that we are simply moving further and further into a culture of surveillance? I am reminded of Jeremy Bentham’s architectural design for a prison system known as the Panopticon. The prison would be a circular structure, in which a single guard could sit in the center and look into all of the pie-wedge-shaped cells at once, without being seen by the prisoners. The underlying idea is that the prisoners would never act out because of the ever-present possibility that they were being watched, whether or not a guard was actually present.

The fact that many of our cameras are no longer even operational makes the idea of the Cooper Panopticon even stronger. When the students’ only way to show their dissent against the administration is through public outcry, the administrative body can sleep soundly at night knowing that it will have a record of the names and faces of every dissenter. Or at least that’s what they want us to think. Is it reasonable for there to be cameras around the school buildings? Yes, absolutely. But it has become difficult to trust that the school is taking such actions in our benefit when it has been putting so much effort into trying to protect itself in the midst of internal conflict.

(§ continued on back)

CODE B: HACK BLOOMBERG

KEVIN SHENG (EE ‘18)

On the evening of Friday, November 7, over two dozen Cooper students gathered in the New Academic Building to spend all night hard at work. While this may seem like a common trend among the student body, these students weren’t there to study for midterms or to complete mountains of homework. Instead, they gathered in the Menschel Boardroom for a night of food, programming, and fun. Code B, a mini-hackathon sponsored by Bloomberg and organized by Cooper graduates, began on Friday night and lasted until the following morning.

Participants began streaming in at around 6:00 PM, greeted by free Bloomberg swag and Chipotle. After they had all gathered and divided into teams made up of up to three members, Christopher Hong (EE ‘13, MEE ‘14) explained the objectives and rules of the competitions. Unlike typical open-ended hackathons, this “uniquely Bloomberg” competition instead had each team work towards one goal: making money. The objective of each team was to develop a program that could trade equity stocks on a simulated stock exchange. “We didn’t come up with a completely new design for something; rather, we were faced with a problem and told to come up with the best solution, making the competition more active compared to other hackathons.” said Eli Soffer (EE ‘16).

Starting with $1000, the competitors were to create an algorithm, in any programming language, to automatically purchase and sell 10 individual securities, each with market values updating every second. At the end of a 30 minute period, the team with highest net worth, the combined value of their available cash and owned securities, would be crowned champions. A secondary competition was held to develop a user interface for the stock trading programs. Briefed on the objectives of the competition, the 14 teams began development of their programs, their eyes on the grand prize of either a quadcopter drone or a Playstation 4.

The participants were just as varied as their approaches. For many, this hackathon was a new and novel experience, while for others it was something they had done several times before. Some were there for the free food and swag, some were there just to enjoy the experience, and some were there to win first place, enticed by the idea of their very own drone or PS4. For everyone involved, however, it was a learning experience. Freshman Gordon Su (EE ‘18) said, “Even though we didn’t win, I learned a lot about programming and finance and met a lot of really cool people.”

The Hack Street Boyz, consisting of juniors Eli Sof-

(† continued on back)

Peter Cooper IN THE FUTURE

JAKE POTTER (ME ‘16)

EPISODE TWENTY

FACES OF COOPER: MARCUS LAY

RUCHI PATEL (ChE '18)

Photo Credit: Winter Leng (ChE '18)

The Cooper Pioneer had the chance to sit down and chat with the newest faculty member of the chemistry department, Marcus Lay, about his postdoctoral fellowships and the food NYC has to offer.

The Cooper Pioneer: What did you do before coming here?

Marcus Lay: I obtained my Ph. D. in analytical chemistry from the University of Georgia in Athens, GA. The focus of my research was the electrodeposition of compound semiconductors (i.e. CdSe, CdTe) for use in optoelectronic energy conversion applications. I used electrochemical scanning tunneling microscopy (STM) to determine how various electrochemical potentials could be used to grow high-quality crystal structures. STM is an exciting analytical tool because it allows you to actual visualize atoms and molecules. From these images, you can deduce information about the types of intermolecular forces that are driving the atoms to form new bonds in the presence of an electrochemical potential. After obtaining my Ph. D., I completed two separate postdoctoral fellowships. The first was a National Research Council Postdoctoral Fellow at the Naval Research Laboratory in Washington, D.C. It was there that I first began research involving uncovering the enhanced electrical properties of single-walled carbon nanotubes (SWNTs). The work centered on developing methods of growing SWNT networks for developing better chemical sensors. SWNTs are ideal for this application because they are exquisitely sensitive to vapors that approach their surface. This is because SWNTs are like a single atomic layer of graphite (called graphene) rolled into a tube; every one of their atoms is a surface atom! So, any change in their immediate environment changes their conductivity markedly, allowing one to make simple "chemiresistive" sensors that merely measure a change in conductivity to sense potentially dangerous gasses. Next, I served as a Postdoctoral Scientist at Columbia University, here in NYC. There, I studied the self-assembly of molecules on graphite using STM. The ability of STM to produce high quality images of atoms and molecules was quite useful in determining the physical forces that help to guide molecules to assemble into complex two-dimensional nanoscaled structures.

Most recently, I was an Associate Professor at the University of Georgia (UGA) in Athens, GA and a cofounder of the National Science Foundation-funded Center for Nanoelectronic Materials (CNEM). My research focused on uncovering and controlling the amazing novel properties of nanoscaled materials through surface engineering and electrochemistry. We used a variety of analytical tools to study these materials, like scanning confocal Raman spectroscopy, atomic force microscopy, UV-vis/near infrared spectroscopy, and electrical transport studies of semiconductor devices.

As part of that work, I guided the research of Ph. D.- and M.S.-degree seeking graduate students, as well as a large number of undergraduate researchers. We met in regular group meetings to plan new experiments, present data and discuss the significance of recent findings. We developed new methods of depositing SWNTs onto surfaces and then optimizing their electrical properties using electrochemistry. Our work was at the interface of chemistry, engineering and physics, so I learned to work with students from a wide variety of backgrounds during this work

TCP: Why Cooper?

ML: During my time at UGA, I worked with over 30 undergraduate researchers in my group. I observed that well motivated undergraduate students were capable of working at a level that equaled, or even exceeded that of Ph. D. students. Four undergraduates that I have worked with even ended up coauthoring manuscripts that were published in prestigious scientific journal. Cooper Union is well known for its well-prepared and dedicated undergraduates, so I was very excited about the opportunity to teach and do research here.

TCP: What are you most excited about?

ML: Well, beside the opportunity to start an active research group at the Cooper Union and begin publishing manuscripts with undergraduate authors, I would have to say studying nanomaterials. Bulk materials that we see every day take on entirely new and unexpected properties when you reduce their size down to the nanometer range (1 nm = 1 billionth of a meter). For example, we don't think of pencil lead, or graphite, as being a good electrical conductor. But, when that same form of carbon is the size of a carbon nanotube (~ 1 nm x 1000 nm), it is one of the best conductors and strongest materials ever known! This gives them a very promising future in technology and structural engineering. It is expected that carbon nanotubes soon will find their way into the many electronic devices that we use every day.

TCP: What are some of your interests and hobbies?

ML: I love to sample many different types of cuisines that the city has to offer, from Peruvian to Middle Eastern to Ukrainian to Korean and everything in between. It's great to feel like you're traveling around the world without having to leave the city. One hobby I enjoy a lot is cooking international food. I've learned to make Indian-inspired curries from scratch and it's fun to vary the ingredients, test the outcome and then use that information to make a new concoction. It's a lot like what we do in the laboratory, but you get tasty results instead of publications. ◊

FUNKY SMELL CAUSES A SCENT-SATION

PRANAV JONEJA (ME '18)

Over the last few weeks, several students have raised a stink about the mysterious foul odor that was emanating from the 5th floor of the NAB. The Pioneer sniffed around to investigate the source of the stench.

One theory suggests that the lockers in the vicinity might have something to do with the smell. Maybe someone left some food over a weekend (or two), letting it putrefy and making the hallways smell rancid. If this were the case, perhaps its time to remind students that the locker area is a shared space – a few bad eggs shouldn't ruin it for everyone! Personally, I smell this tirade of puns getting stronger. Who nose when it will end!?1? Others have the impression that some abhorrent business in the nearby bathrooms could have soiled the freshness of air on the entire floor.

In the case that this theory is true, the pungent person responsible for this fetid feat certainly should not hold his or her nose up high in pride. Any way you cut it, it's clear that everyone shouldn't have to suffer the tainted air quality!

Mercifully, this smelly situation has now been resolved thanks to the office of buildings and grounds. So one can hope that the only unsavory thing still wafting around The Cooper Union is my scents of humor.

Failed puns:

1) It just doesn't make scents!
2) Reeks of poor hygiene skills typically only found near the electrical engineering labs.
3) Pungent person responsible for this fetid feat should not be conflatulated… er congratulated. (groaaan)

COOPER CARES AND PINKS

WINTER LENG (ChE '18)

The morning of Oct 19th was the coldest one we had had in 2014 fall semester. Tushar Nichakawade (ME '18) and Krishna Thiyagarjan (ChE '18), the co-founders of Coopercares, hid their pink shirts inside their jackets and went to Central Park with Dean Dahlberg, Dean Anita Raja, and member of the Society of Women Engineers, Jackie Le (CE '16). They joined the "Making Strides against Breast Cancer Walk" with thousands of other supporters of the American Cancer Society.

On the early morning of that day, supporters , all in pink, came to Central Park and took a 3-mile walk to spread awareness of breast cancer and raise money for the American Cancer Society. The scene of thousands of supporters in pink walking away together sent a message to all breast cancer fighters: "You are not alone, we care about you, we pink about you." Pink on that day became a color of extraordinary inspiration, passion, and warmth.

Tushar and Krishna are freshmen in Cooper Union, sharing a dream to solve health problems and to do research in medicine. They co-founded Coopercares this September and hope more students interested in medicine and human health will join this new society. During the walk, they had the opportunity to talk about their dreams and futures with the other ACS supporters like Dean Dahlberg and Dean Anita Raja. Tushar Nichakawade said Coopercares is planning to co-operate with Teach For America to raise awareness of health problems in New York City. ◊

(‡ continued from front)

the institution.

With respect to my role, I am a Senior Major Gifts Officer. My job is to build relationships with donors who make significant gifts to Cooper.

TCP: How and when was the Cooper Fund started?

JD: The Cooper Fund was established two years ago to focus on the urgent need to raise current funds to support Cooper's work in educating its students. Donors can make gifts to the Annual Fund as well as for restricted purposes such as student grants and fellowships, academic enhancements, faculty support or venture funding.

It is important to thank our donors for their support, and so we recognize donors who made gifts totaling $10,000 or more in the prior fiscal year in the Cooper Fund Leadership Circle. One of the ways we recognize these donors is by establishing a scholarship in the donor's name. Students are selected by the academic leadership for the honor of being one of these named Cooper Fund scholars. We ask these students to help us thank donors by writing letters to them, as students can be our best ambassadors. These students also have the opportunity to network at a reception honoring the Cooper Fund Leadership Circle donors.

TCP: What are the logistics between the Annual Fund, alumni donations, and student scholarships?

JD: Many alumni donations are directed to the Annual Fund. The Annual Fund supports the educational costs for our student body including tuition scholarships and financial aid.

TCP: What are the criteria for which students are picked for the program?

JD: The leadership in each of the schools selects students to be named Cooper Fund Scholars based on academic accomplishments, leadership, and service to the school.

TCP: What are the future goals of the Cooper Fund Scholar program?

JD: The future goals of the Cooper Fund Leadership Circle are to increase the number of donors that contribute a total of $10,000 or more in a fiscal year, and by doing so to increase the total amount contributed by our leadership donors.

(§ continued from front)

On Professor Wolf's recommendation, I contacted William Mea, who is now in charge of general safety and security at Cooper Union. He stated that the cameras serve as a deterrent to crime and violence around the school, and they provide a record of any crime and violence that does occur. He says that there are no plans for additional cameras around the school, though they still need to assess the effectiveness of the new system. In my email to Mea, I asked him whether he believes that we are entering a culture of surveillance, and he responded that "the reality is that our lives and actions in public spaces are indeed watched and recorded. I will leave this reality to others to debate its value to our society."

Clearly, the intention of these new cameras is, indeed, to increase the safety of students. Why, then, is my first reaction to such measures always to question the integrity of the administration? When even something as banal as this brings into question the relationship between the student body and the administrative body, it is clear that we cannot avoid a direct address of the underlying problems. Or, more accurately: we can avoid it as long as we want, but more and more of these systems will begin to fall under the scrutiny of both parties. ◊

(† continued from front)

fer and Jason Schmidt (EE '16), whose unique algorithm essentially made them into the broker of all trades and allowed them to take advantage of the system and other participants, took home the grand prize, a drone. Team Team, consisting of Freshmen Shalin Patel (EE '18), Ross Kaplan (EE '18), and Gabe Korgood (CE '18), and Team Rocket, consisting of Mark Mchedlishvili (EE '17) and Xiangling Kong (EE '17), due to their UI, were both awarded with second place. Christopher Hong , who graduated from Cooper just last year, said, "In finance, there are many approaches to succeed and those who succeed strike the perfect balance between strategy, creativity, and skill. Overall, I am very happy with the solutions coded to the problem - Cooper never ceases to amaze!"

Finally, at 9:00 AM, 15 hours later, the competition concluded. Exhausted, the competitors gladly packed up their belongings and went home to their welcoming beds.

The competition was sponsored by Hack@Bloomberg and organized by several Cooper alumni with ties to Bloomberg. Christopher Hong, Stefania Samojlik (ME '13), John Zhao (EE '06), Michael Yagliyan (EE '08), all part of the research and development team at Bloomberg, coordinated the event with the help of Jolie Woodson from the Center for Career Development and others from Bloomberg's recruiting and R&D teams. ◊