The Pioneer

OCTOBER 3, 2016
VOLUME 96, ISSUE #2
pioneer.cooper.edu
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TEN DAYS IN MEXICO CITY

THIRD-YEAR ARCHITECTS’ TRAVELLING STUDIO CLASS

PRANAV JONEJA (ME ‘18)

This semester, third-year architects are studying architecture in the Mexican capital region—but they’re going about it in a way that’s never been done before at Cooper. In fact, it’s not even technically at Cooper. On September 23, the entire Architecture Class of 2019 embarked on a trip to the Mexican capital and returned just yesterday. Travelling with them was Dean of Architecture Nader Tehrani as well as Prof. Mersiha Veledar, Prof. Maria Gonzalez Pendas, Prof. Michael Young and Mauricio Higuera. Mauricio planned the logistic intricacies—he even has a 3-foot-by-6-foot map of Mexico City hanging in his office, with pins marking all the sites they intend to visit.

Their itinerary was packed with “site visits, exploring buildings not open to the public and discussions with expert scholars,” according to Dean Elizabeth O’Donnell, Associate Dean of the School of Architecture. In her experience, “once you’re an architect, you’re no longer a neutral tourist. Even though you’ve seen photos, and designs and models of the structures, visiting the thing itself is so important.” She referred to the works of architect Félix Candela she taught the same students about last year. She added, “To study something abstractly—through photographs and structural concepts—is one thing, but to actually climb the shell and feel the curvature in your bones and walk the scale yourself is another thing entirely.”

Such a trip is unprecedented. The idea to incorporate a travelling portion to the curriculum originated from a student, Kevin Savillon (Arch ’19), while in discussion with Dean of Architecture Nader Tehrani. Faculty said that Dean Tehrani’s immediate interest in having an ‘on the ground’ research component made the trip academically compelling and ultimately possible. It took over two semesters of meetings between Savillon, Dean Tehrani and others to make the trip happen. They just had to figure out how to incorporate it in the jam-packed architecture curriculum and then pick a place to go.

The trip to Mexico is folded into the curriculum halfway through the students’ Cooper career. It is part of the requirements for Analysis Studio, a class in which the students each pick a work of architecture and conduct research through nearly every lens imaginable—from studying street-grid traffic to learning about how climate effect and solar conditions affect the design. In previous years, third-year Design Studio classes picked buildings around a theme, like libraries or focused on precursors to modernism. But they never had the opportunity to visit the sites they studied so intensely. That’s what is different about incorporating this trip in Design III.

The question on their mind while choosing where to go was “what would be the most culturally and experientially powerful choice” that was not too far away (so as to keep costs down). Indeed, costs were an important deciding factor. The trip was funded within the School of Architecture’s Special Project Fund—that is to say, within the budget of the school, without any outside donations. So is that justified in the context of the Cooper Union’s steep budget cuts and demands for even more cuts coming soon to reduce deficit spending?

The idea is to fund this trip in this way this year and then get it endowed by an outside donor for years to come. Of course, there were other projects that the Special Project Fund would have been spent on but now must be foregone. Still, the value of this trip is substantial and enduring. Not only is the trip valuable to the travelling students’ own practice, but the trip also fosters bonds with other architecture scholars internationally but also builds an incredible archive of global work and understanding that will be familiar to future Cooper architecture students.

This trip in the present has the potential to radically change the students’ practice and identity now and even decades from now. ◊

“Mexico city seems to be a collage of different cultures and eras, and it is precisely this mixture what Mexicans feel represented by. It is apparent in the architecture we have seen the influence of the country’s heritage and geographic location: from Barragan’s use of color to the way a great amount of buildings play with rain water, such as Ramírez Vázquez in Museo de Antropología.” **- Mireya Fabregas**

“Apart from the architectural riches Mexico has to offer, I find the traveling studio to be a great way to get to know the my fellow students and the professors. First time excitement not only on a geographical base, but also in terms of social and intellectual interaction. I could not have imagined a more delightful introduction to The Cooper Union!” ***- Bastiaan Vandersanden***

Photos provided by the Arch. Class of 2019. More photos on instagram @cu_mx

“There’s a moment so surreal when one physically enters a space that has only been experienced through literary references and secondhand representations. The implementation of a traveling portion within the ‘analysis’ studio gives students the opportunity and fulfillment of experiencing a built structure in-person in tangent to its site, culture, and history.

Five days after visiting the building that I will be analyzing for the entire semester, my class took a trip to School of Architecture at UNAM (Universidad Nacional Autónoma de México). During that visit, we were shown the ‘Archive of Mexican Architects’, wherein I found countless original drawings of the Museo Tamayo. There were drawings of construction details, isometrics of electrical mapping of the building, to the details of screws used to holster up the skylights—none of which were digitized or copied and stored elsewhere.

But what was even more interesting and enlightening about traveling to Mexico were the conversations that I have had with professors and historians about the history of the building, the construction and political process in developing the project, as well as their personal experiences in visiting the building 30 years ago.

I hope this experiment of traveling abroad in tangent to the analysis semester proves successful and continues for years to come. Cheers to Dean Nader Tehrani for taking a risk and making this program come to life!” ***- Kevin Savillon***

This trip was so fantastically educational for me. I come from an incredibly monotonous suburb in a country without much cultural identity, so the opportunity to be immersed in a place with so much heritage and ambition that translates architecturally was so great and really moving. ***- Joyce Li***

JOINT STUDENT COUNCIL RATIFIES NEW CONSTITUTION

MATTHEW GRATTAN (ChE ‘19)

The Cooper Union Joint Student Council ratified an entirely rewritten constitution on Tuesday, September 20. It replaced the previous constitution, which had not been revised since 1998. The document became effective immediately with 28 votes in favor, six against, and two abstaining. The overhaul of the 1998 constitution occurred over the summer and the new document was written by the six-member Constitution Committee including Chris Curro (MEE ‘16), Daniel Galperin (ChE ‘18), Julian Mayfield (Art ‘18), Waseem Nafisi (Art ‘18), Celine Park (Arch ‘17), and Clara Zinky (Art ‘18). Initially, Vaughn Lewis (Arch ‘19) was involved but was later replaced by Mayfield, who also serves as student trustee.

The revision was prompted by the 1998 document’s ineffectiveness at outlining policies for voting or bringing forth resolutions—arguably the two main functions of JSC. In order to pass a resolution, the constitution mandates a 70% quorum and a 70% approval vote—that means a minimum of 14 of the 20 members must be present and 70% of those present must vote yes. In addition, the new constitution establishes a ballot system, rather than voting by a show of hands. A procedure for proposing resolutions is suggested, but intentionally leaves room for alternative methods.

“We tried to make a much smaller body that could act more efficiently and be more effective.”
- Chris Curro (MEE ‘16)

The body of the Joint Student Council has been reduced in size to 10 engineering members, 5 architecture members, and 5 art members. The previous constitution established 15 architecture, 16 art, and 20 or 21 engineering representatives. The revised number of representatives was intended to facilitate discussion. Compared to the previous policy, “the committee felt that 10-5-5 was a more appropriate breakdown,” explained Curro. “We tried to make a much smaller body that could act more efficiently and be more effective.”

The proportion of council members from the Engineering School was increased to reflect the school’s population. The Art and Engineering Schools have an approximately equal ratio of council members to students, while on the other hand, the Architecture School is slightly overrepresented so as not to have too few architects on the council.

“Although, a few people were able to make the time commitment over the summer, that doesn’t mean that their opinions or values are hierarchized over those of the entire council.”
- Emily Adamo (Art‘17)

The requirement of a 70% majority prevents the Engineering School from unilaterally outvoting the other two schools. “I don’t think it’s unreasonable at all,” said Jeremiah Pratt (EE ‘19) regarding the representation policy, “it would be near impossible for Engineering School to be the dominant voting bloc.” In addition, the constitution was amended such that if an entire school votes against a resolution, then that resolution would not pass. Although there are measures to prevent the Engineering School from dominating in terms of votes, the increased representation of the school does not rule out the possibility that engineers could dominate the dialogue in the Council.

The 10-5-5 representation policy proved to be a point of contention at the ratification meeting. “It essentially cuts the school in half,” commented Maya Krtic (Arch ‘17) on the possibility that the new composition of the Council might pit engineers against artists and architects. Krtic is a proponent of an equal number of council members from each school—or at least a compromise of 8-6-6. The variety of opinions expressed on the policy reflects the contrasting ideas on the role of Joint Student Council. Should the Council represent each of the three schools as separate entities, or should it represent the collective student body?

The new constitution outlines an enforceable attendance policy to address low levels of attendance in previous years. If a member is absent twice without delegating an alternate both times, then that member is “expelled from both the Council and their respective student council.” The policy was viewed by some as excessively harsh and even an overreach of JSC to be able to remove members from the student councils of the individual schools.

Notwithstanding, in order to have a functional student council, the attendance of the members is needed. The four mandatory meetings per semester are scheduled in advance (as required by the new constitution), and council members who may be absent have the discretion to appoint any alternate they deem fit. The constitution intentionally does not specify who may serve as an alternate and leaves the clause open to interpretation. “I understand the contention over the attendance policy,” said Pratt, “but it’s important for this new JSC to function well, because the accountability policies under the old constitution were ineffective.”

The writers of the constitution intended to allow council members more discretion while simultaneously increasing transparency. For example, vote tallies and how each member (or their alternate) voted on a resolution are made public. In addition, minutes from each JSC meeting will be published. “A member is not merely a mouthpiece,” explained Curro, “they are meant to be focal points—nodes with lots of connections.” The idea is that Council members will be well equipped to act in the “best interest” of their constituents because the they will have access to a wider body of information from their fellow students, their respective school councils, and Joint Student Council.

The rewriting of the JSC Constitution over the summer was put in motion at the end of this past school year. According to Daniel Galperin, it was agreed upon at the last meeting of last semester to vote on the new constitution at the first meeting of this semester. “It was good that the decision came in the first meeting,” commented Zhenia Dementyeva (Arch ‘20), “the three schools sometimes contended with each other, so it was better to push for a decision.”

Despite this agreement, some still felt that the timeline was rushed, especially since not all of those interested in the writing process were able to devote time over the summer. In addition, there appeared to be no contingency if the new constitution was not accepted at the first Council meeting. “I think generally that rewriting of the constitution was a good move, and I support most of what is written in the document, but the process by which it passed worries me,” said Krtic.

The meeting itself had some tense moments, and the conversation felt “almost scripted” in the way that it was led, according to Dementyeva. “Although, a few people were able to make the time commitment over the summer, that doesn’t mean that their opinions or values are hierarchized over those of the entire council,” expressed Emily Adamo (Art ‘17). There appeared to be pressure to commit to the deadline agreed upon last semester and hold a vote, which ironically was a simple show of hands rather than a closed ballot as outlined in the new Constitution.

Should the Council represent each of the three schools as separate entities, or should it represent the collective student body?

Although there is perhaps some uneasiness about the upcoming year for JSC, the Constitution also includes a clause establishing a yearly revision process. Ultimately, no amount of deliberation or planning can completely prepare JSC for potential issues, and throughout the coming year, the new Constitution will continued to be tried and tested. ◊

HACK COOPER

BRANDON QUINERE (CE ‘19)

There’s a scene in the TV series *Silicon Valley* where the gang at Pied Piper recruit a young programmer known as “The Carver” to configure their application to the cloud. After spending the night going through each line of code to fix an error, he crashes on the couch. “You said you could code for 48 hours straight.” An extremely lethargic Carver replies, “How do you think I do that? Adderall.” While there were no traces of Adderall at Cooper’s third annual student hackathon over the weekend, there was a whole lot of caffeine.

HackCooper was held over a 24-hour period in the NAB, opening the doors of our building to students eager to explore their maker side. Whether you were new to hacking or already adept at a programming language, all students were encouraged to register and participate in this weekend-long event in the hopes of winning from a selection of prizes.

Using the resources at hand as well as their own individual skillsets, participating students at HackCooper teamed up with one another to brainstorm through the night and develop an original project. “Cooper’s hackathon is all about giving students the time and resources to discover and explore work that really interests them,” said coordinator Zach Tzavelis (ME ‘19) on the goals of HackCooper.

Submitted team creations were evaluated by a judging panel and appropriately awarded in a number of categories including Most Technical Hack, Best Data Privacy Hack, and the biggie: Best Overall Hack. Prizes for each award varied, given the wide variety of sponsors supporting the event including Facebook, LinkedIn, Bloomberg, Viacom, and Autodesk.

Mentors from the sponsors were also available for mentorships throughout the night, allowing students to communicate one-on-one with industry professionals about their hack. In addition, various tech talks were given in both Rose Auditorium and classrooms. Furthermore, Major League Hacking, the official student hackathon league backing HackCooper, made available different software packages and hardware for teams to use in their projects. And of course, in typical hackathon fashion, there was much “swag” to be given out.

Designated classrooms and labs were open for teams to use, allowing them to camp out in their workspaces and develop their creation before the submission deadline in the morning. Because this was an overnight event, student coders were aware of the imminent risk of sleep deprivation, but excessive caffeine consumption was definitely not encouraged. The onsite rep from Major League Hacking, Li Chen, put it best: “If you’ve never had a Red Bull before, tonight’s not the night to try it for the first time.”

Concert.fish team working. Photo by Wentao Zhang (ChE ‘19).

By the morning, familiar classroom arrangements were left unrecognizable as teams tirelessly worked to submit their hacks on time. After a preliminary round of judging on Sunday afternoon, the participants and judges gathered in Rose to see the eligible teams present and demo their projects onstage. Winners were determined and announced shortly after these final demos. This year’s submissions can be found at: http://hackcooper2016.devpost.com/submissions

Best Overall Hack went to Concert.fish, a project made with the intent of making music listening more collaborative through listener feedback. Concert.fish was developed by the team consisting of Rafi Mueen (BSE ‘19), Michael Lendino (EE ‘20), Andrey Akhmetov (EE ‘20), Richard Yee (Art ‘18), and Michael Ossienov. The team was granted an all-expenses-paid trip to the Facebook headquarters in Menlo Park, CA to participate in Facebook’s own hackathon. ◊

ON THE PRESIDENT'S AGENDA

PRANAV JONEJA (ME '18)

At the cabinet level of the administration, this summer has been as busy as ever.

The Acting President, various VPs, all the Deans, and other administrators have been wrapped up working (1) on finding places to spend less money, (2) planning for Cooper's accreditation process, and (3) thinking about the search for new Deans.

What follows here is a brief overview of what's on Acting President Bill Mea's mind right now based on an interview for The Pioneer.

Budget Cuts and overall Financial Health

The short version:
From Bill Mea's perspective achieving financial health means, in the short-term (3 years): balancing how much is spent every year versus how much money comes in, and then in the long-term (20 years): putting money back in the savings account so we have a safety net and are working towards paying back our loans. All the while, there is utmost priority on returning to free.

The long version:
Before this year, the last major update from Bill Mea was the Budget and Financial Projections published in February 2016—a document that made big waves because it enumerated for the first time how much money it would take to return to free. (Recap: The document outlined the $15 million gap between how much money we spend annually right now versus how much we should spend every year while giving free tuition. The gap must be closed with spending cuts or additional revenue. The cuts, however, must be sustainable—not just cut now only to be added back later—and additional revenue cannot be from tuition).

At the time, the most pressing issue was immediately cutting $3 million from the annual budget within two years. The progress on that is excellent: in the first year (this year), $2.2 million has already been sustainably cut from this year's budget. Bill Mea: "Currently, the budget for this year is imbalanced—we are spending more than we bring in. By 2019, we will have a balanced budget, but that will still include money from tuition. The goal is of course to create a balanced budget that does not depend on tuition, and that's a real challenge."

In anticipation of that, the Board of Trustees asked Mea's administration to come up with even more cuts than that. Some of these cuts are effective immediately, such as choosing a new company to conduct Cooper Union's annual audit has resulted in lower fees; while other cuts will be rolling out soon this year, like "trimming down on consulting expenses and travel costs." Yet still more cuts will be in place three years from now.

Bill Mea and other sources all-but-revealed that the cuts coming very soon would include "changes in personnel costs"—a euphemism for firing people.

At the Free Education Committee meeting in June, a major topic of discussion was a study of how "The Cooper Union has more non-instructional staff per student than institutions in a similar geographic area, of similar size, offering similar degrees and even of similar academic reputation." In simpler terms, we have a lot of administrators, directors, secretaries, assistants, etc. on full-time payroll compared to pretty much any other place—and it's unsustainable. To be clear, these are not cuts in faculty positions or "positions that impact students directly", but rather administrative roles only. This will be happening very soon, this year itself. Mea assured that the decisions will be disclosed publicly soon, but also requested that the matter remain private at first to "honor and be just to people [affected]." As such, The Pioneer is not seeking this information at this time.

The full picture of financial health extends beyond simply balancing the amount spent compared to the amount of money coming in. According to Mea, the Board's discussion of financial health has shifted with the help of the recently appointed Financial Monitor—an outside company with financial expertise Cooper is legally required to consult following the terms of the lawsuit settlement. The Financial Monitor has helped define overall financial health to include not only balancing the budget but also replenishing savings and reserves. Bill Mea: "We have depleted every reserve, there's nothing left. It's like an individual person that every month gets their pay and every month spends all that pay, and they have no savings account. So when the car breaks down or you lose a job [or any other unforeseen expense or loss of income], there is nothing to fall back on." The importance of this kind of thinking is clear: "When we get back to free, the last thing we want to do is not be free again [due to a lack of savings]."

Certainly, it is gratifying to see real and effective action towards returning to free with emphasis on staying free thereafter.

Acting President Bill Mea. Photo by Wentao Zhang (ChE '19).

Middle States Accreditation

The preparation for the accreditation process is well underway, led by co-chairs Prof. Daniel Lepek and Director of Campus Enterprise Applications Brian Cusack (both Cooper alumni). Committees are being formed to assess Cooper's compliance with standards set by the Middle States Commission on Higher Education. The accreditation process involves drafting a self-study report—a place for Cooper to reflect and assess its own conduct and processes. Of particular note are Standards related to Support of the Student Experience, Ethics and Integrity, and Governance, Leadership and Administration. Bill Mea: "This does represent an opportunity for us to identify where we should improve" and it's a chance to affect real change in these areas. All students are invited and highly encouraged to get involved in the accreditation process by getting in touch with Lepek or Cusack.

Search for Deans

Acting Dean of Engineering Richard Stock has been in his position for one year now. Bill Mea: "He's done a tremendous job as dean—like I knew he would—bringing the school together and helping it move forward." According to rules negotiated with the faculty union, Stock is allowed only one more year as a temporary dean and Mea recognizes that time is running out to find a full time dean. Until now, the search for a new dean has been on hold until a new president was found. "Now that [President-elect] Laura Sparks has been named, I went to Stock and through him I have asked the engineering faculty to begin forming a search committee for a new dean. Knowing that these processes take some time, I wanted to get it started." Each department (the four engineering majors, plus chemistry, physics and math) will have representation on this search committee. "When Laura [Sparks] gets here in January, she will then be working with that committee."

Mea had only positive things to say about Acting Dean of Art Mike Essl. Bill Mea: "He's really done a great job already." And there is no rush to find a replacement since he only started as Acting Dean in July of this year. ◊

MEET THE FIRST YEARS: DILARA SEYMAN

GABRIELA GODLEWSKI (CE '19)

Meet Dilara Seyman (ME '20). Photo by Kavya Udupa (BSE '19)

Where are you from? And how did you hear of the Cooper Union?

I'm from Istanbul, Turkey. My friend and I were searching schools online and came across The Cooper Union. My friend had met someone at summer school a few years ago who is now a sophomore at Cooper. He told me that his friend loved Cooper and that he was extremely happy there. The next week, when my international college counselor and I were working on my college list she also mentioned Cooper as an option. She knew about Cooper because a student from my high school applied here after a someone from Cooper visited my school that year.

What attracted you most to Cooper?

I was already impressed with what I had read online about Peter Cooper's philosophy and the history of Cooper. So, when my counselor said I should apply, I decided to do so. After looking at the Common App for Cooper I realized I liked the essay topics and was pleased with the fact that the administration at Cooper was actually interested in the students' backgrounds, personalities, and thoughts.

So tell me more about Istanbul and your life there before coming here.

I volunteered at animal shelters for eight years, and consequently, I took care of a lot of dogs and cats. I used to take the sick puppies and older dogs home as they needed extra care. I would nurse them so that the puppies could be adopted and the older ones could spend their last days in a warm and loving atmosphere. Since I lived in the suburbs next to the biggest forest in Istanbul—the Belgrade Forests—there were a lot of stray dogs who I would feed as well. One of my three dogs was rescued from a shelter and another one is a stray that followed me home.

How does New York compare to Istanbul?

Istanbul is much cleaner than New York, but there are still a lot of similarities between the two. At times, I don't notice I am in a new city. However, Turks are much closer to each other, and hence I feel a bit lonely here. However, thanks to my totally awesome roommates and friends I am much happier than I was when I first arrived.

How are you enjoying living in New York so far?

My favorite part about New York is Central Park. We have some big forests in suburban parts of Istanbul, and all my life I lived either right next to Marmara Sea or the Belgrade Forests. Growing up, we always had a yard or garden, so I am used to being close with nature. Even though Istanbul is near a lot of forests, there are not a lot of parks.

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FACES OF COOPER: DIEGO MALQUORI

ANTHONY PASSALACQUA (CE ‘18)

Can you give us a little background about yourself?

My academic background is relatively simple. I started with physics, and I got a doctorate in astrophysics. I published some articles on the evolution of galaxies and quasars, and then I gradually moved to philosophy. It was not a rupture, but a long transition, in the sense that even while I was working as a researcher in astrophysics I started giving conferences on the philosophical foundations of cosmology.

Later on I moved to Barcelona, Spain where I collaborated with the philosophy faculty of Ramon Llull University and taught courses about epistemology and the philosophy of science. At the same time, I decided to pursue my second doctorate in philosophy. I wrote a master’s thesis on the concept of time - [translated] “The Concept of Time - Some Thoughts on Kant and Einstein,” that compares idealistic philosophy on the conception of time and the theory of relativity.

The effect of the 2009 crisis on Europe, however, lasted several years, and I couldn’t continue my collaboration with the university, even though I was the director of a research group. I had to find another means of survival so I taught mathematics, physics, and philosophy at a high school for four years.

Afterwards I went back to doing research but instead of continuing my work—which is the natural thing to do when working on a thesis—I decided to focus on how artists express the conflict between the objective and subjective dimensions of time. Therefore, my thesis, entitled “Time and Temporality in Contemporary Art,” focused on contemporary art.

How long were you in the field of astrophysics before you started to transition into the philosophy of science?

If you say “before you started the transition,” then it’s difficult to say, because my transition started even before concluding my first doctorate in astrophysics. I was always fascinated—and I’m not saying this just because I’m a philosophy professor—by the fact that we were trying to reconstruct such a complex reality. Of course, I didn’t pretend, and I’ve never pretended, to reach the final, absolute truth.

This was the biggest difference between myself and some of my colleagues. I got the impression that some of them pretended to know the final answers about the Big Bang theory or the nature and evolution of galaxies. To me, it was a very fascinating subject, and I put forth all my effort in order to make a worthwhile contribution, but it was clear that it was just speculation and that the truth, if it exists, was very far from our model. And it was just a model. Sometimes the results of our model are not so far from what we observe and we can compare the two. Maybe it’s just by chance that we arrived at this similarity, but the nature of what we are trying to describe is beyond not only our mathematical capabilities, but even our brains’ capacity. But I think that it’s still worthwhile to put in the effort, because in trying to reconstruct such a complex reality, we are coming out of Plato’s cave. This desire to reconstruct the external reality moved us from a trivial way of living, to a different attitude, with respect to all reality, not just with respect to astrophysics.

Can you tell us a little bit about your travels?

The first place I went to was Italy. Then I did my first doctorate and research project in Paris. After that I spent one year in Israel, at a post-doctorate fellowship but moved to Mexico after the September 11 attacks. I spent three years in Puebla working as an astrophysicist, at the National Astrophysics Institute.

Meanwhile, I spent three intervals of three or four months in the Tata Institute of Fundamental Research in India. After that I spent about ten months in Barcelona, and then, started teaching the philosophy of science and another of my interests, the philosophy of music.

Meet Professor Malquori. Photo by Yifei Simon Shao (ME ‘19).

What do you feel your role as a professor is for students here, and do you think that’s different from what you’ve seen abroad?

Even though it’s been just one month, I’ve had the opportunity of getting to know the students and the teaching dynamics and I have been positively surprised. European universities adapt a more passive conception of teaching so sometimes students give presentations, but only as official, formal assignments. We don’t have round table discussions moderated by the professor where we share our opinions. But these discussions are useful as the professor helps express what students already know at an intuitive level. It’s important that one participates and not just be a passive spectator. It’s also more useful for me as a professor, as I have the opportunity to understand what the students are grasping. I can also learn from students because they have interesting ideas that can stimulate discussions and because if they don’t understand something, I can fine tune my explanations.

Do you have any advice to offer the students here?

I will just say what I say to all my students, at any level: try to be curious. Something I have realized from my experiences is that it’s very important to think about art, literature, and many other things. This can make you a better, more complete person, but also in your own work, this allows you to have a wider view.

To be a good physicist, even, you need to be involved in other kinds of thoughts. If you just focus on one, specialized thing, you’ll be good at that field, but as soon as the conditions are slightly different, you will be lost. So I advise students to be curious, travel, and try to see a different point of view.

Even if in the end you decide “I prefer my country, my city, my point of view,” that’s fine, but first you have to go out, live, and see the other perspectives. Later, if you come back to your own place, you will have a much wider viewpoint. Travel both physically, and mentally, and move away from a narrow point of view, which is a problem in both science and in society.

There is an important American physicist, David Tong, who points out that one of the problems with contemporary science is the fragmentation of knowledge. We need to open our minds, and Cooper students are in a very positive environment for this. ◊

THE BLACK BOX BETWEEN SCHOOL AND WORK

ROBERT GODKIN (ChE ‘18)

You’d think that with the internet, your friends and family, and all the help you get at school you would know the ins and outs of easily transitioning from school to the work place—if that’s what you wish to do. But with many resources comes a lot of confusion and too many opinions to listen to all of them.

A few years ago when Cooper had the Peer Mentorship program, where freshmen were paired up with upperclassmen, the freshmen valued the experience and in one case said that “I might have failed some classes if it wasn’t for my mentor giving me tips on time management and class selections.” That program unfortunately seems to have been phased out and has now been replaced with the Career Mentorship Program run by our own Career Center.

A largely successful program, the Career Mentorship Program connects students of varying interests and majors to Cooper alumni of similar interests and allows the student to dictate and take control of what they want in this relationship. Students are able to discuss career goals, career paths, general interests, and seek all the advice they need. Participation has grown in the past few years, with the number of alumni that want to participate exceeding the number of students that apply to the program. Students who are happy with the relationships return to the program, but are often paired with other alumni. The student-alumni connection is incredibly important, and makes it much simpler for Cooper students to understand how their predecessors made their way from Cooper to where they are now.

People love talking about themselves, so this is the best chance to figure out what you can give to them and what they can give to you. Networking and conversing with people who have more experience than you are *never* one-sided. Those who are established and respected in the workplace have been out of school for (probably) a long time. If they cannot translate how they’ve gotten to where they are, how do they expect their company to grow and allow a new generation of employees to prosper? This is where the student comes in and listens to what they have to say.

Be ready to dedicate time and do your research on those you speak with and their respective careers. Prepare yourself a list of questions to ask with regards to the company where your person of interest works, but don’t forget to consider questions that are on a ‘different level’ too, for example: “What about the company makes you want to stay and work there?” A good distribution of ‘on-topic’ and ‘off-topic’ moves in your questions and answers can separate you from the others: no one wants to hear about the classes you take. All mechanical engineers take Mechanics of Materials. All chemical engineers take Organic Chemistry. What allows you to stick out is the work you may have put in those classes outside of the class itself: scientific journals, news articles and projects are all worthy of conversation!

Mentors can be helpful with regards to easing you into being able to connect with a professional; however, if you look online, there are dozens of articles and posts on why you need a mentor. Though many people may say this, it is more so up to you—the person without (much) experience—to train yourself. You could dedicate time to connecting with people who can assist you in your career. Any established professional connection can turn into your own personal mentorship program. Events where either employers or professionals are present are good opportunities for you to go and find someone who might help you plan your future. As an example, when Career Coach John Crant visited Cooper last semester to speak about the importance of networking, not only were students attracted to this event, but professionals came in to speak with the students. I had the opportunity to speak with representatives from a variety of engineering consulting firms, and had simply asked them why they chose to come to a largely student based event. The most common answer: to interact with the students and hear what they are up to; new projects, new research topics, anything and everything new.

To summarize: work on your projects, attend networking events, get business cards, and actually reach out to the people who have given you their information. They are opening the door for you, and simply want you to walk through it and discuss what makes you you, and what makes them them. A conversation about why you both enjoy the latest Dan Brown novel, or why you have a mutual hatred for particular, poorly structured crosswords may be worth more than asking a professional what you can do to succeed at a company. ◊

BENEFITS OF THE CARBON TAX

MICHAEL PASTERNAK (ME ‘17)

You may have heard of the Carbon Tax as a proposed solution to climate change. What you may not have heard is that, among economists, it’s the preferred solution to climate change. According to a report from The Institute for Policy Integrity at the New York University School of Law from 2015, 77% of economists with relevant publications answered that the US should cut its emissions no matter what actions other countries take, while another 18% said that American emissions cuts would be warranted if many or all other countries commit to reducing theirs. The recent Paris agreement, which established climate mitigation goals with 180 countries, including China and the US, within reason, would satisfy “many or all other countries committing to reducing theirs.” This amounts to an effective 95% of economists with knowledge of the energy economy “supporting action on the climate.” The survey also asked the experts about the most economically efficient method of reducing carbon pollution. Eighty-one percent said a market-based system (carbon tax or cap and trade system) would be most efficient, while 13% answered that coordinated performance standards and programs that prioritize cleaner fuels and energy efficiency would be most efficient.

So why a carbon tax? Simply put, it’s the free market response to hidden costs.

Carbon pollution does cost a lot of money to America, coal pollutants in general even more on top of that. For example, an article in *Forbes* from 2012 states that, controlled for amount of energy produced, coal is directly responsible for one hundred thousand times more deaths than nuclear, which is the least deadly form of energy in their analysis, closely followed by hydroelectric. A carbon tax is a direct acknowledgement of the reality of the situation, that coal and oil are actually hugely subsidized right now, since the costs of clean-up and health outcomes far outweigh the cheaper energy. A carbon tax simply allows the market to correct for it so that rather than pay for huge oil spills and catastrophic climate change, we’d promote sources of energy without those massive drawbacks.

It’s also worth noting that on a cost basis a carbon tax is almost certainly a pro-nuclear policy. In the US, coal power is followed by nuclear power quite closely in cost per unit of energy produced. In Europe, nuclear energy is actually cheaper than coal. That’s mostly because in Europe many more plants of the same type are built, and at a higher density. Specifically, France is very good at building nuclear plants quickly and cheaply because they are a primarily nuclear energy state. It would be completely reasonable to assume the same process would occur in the US if we follow in the footsteps of Europe and impose a carbon tax on the energy sector.

So why haven’t we? There’s a number of reasons. The first is that our country has an undue amount of influence imposed by moneyed interests, and there’s simply a lot of money already invested in oil and coal. This has led to opposition to renewables from the Right and opposition to nuclear from both sides of the aisle. The Carbon Tax, despite being the single most mainstream economic idea to address climate change, was only proposed by two major politicians in recent memory, Bernie Sanders (whom I believe we all know) and Bob Inglis. Inglis, a Republican, is famously splitting from his party in supporting a “revenue neutral” Carbon Tax. What that would mean is that any proceeds from the tax would be given back to the citizenry through tax rebates for low income farmers, truckers etc. who would feel increased prices in fuel very sharply but may be less able to field those costs. That, I believe, is the reasonable conservative response.

Other critiques of the tax, such as the idea that businesses will simply leave and go to countries without any tax on carbon, simply haven’t been borne out in Europe where carbon taxation already exists. In fact, most analyses show Europe’s energy economy booming following their aggressive response to climate change mitigation. Particularly in France and Denmark, nuclear has essentially replaced coal in baseload generation with renewables providing variable generation to fill in the gaps. There’s a conversation that should be happening about the particulars of the tax, but it’s very clear that in terms of quickly and effectively addressing the problem, it’s the ideal solution.

So what’s next? We need to pressure our leaders to support nuclear and renewables either through a carbon tax or whatever else our “greatest political minds” can come up with. Sometime in the next couple of weeks (I’ll make sure it’s on Facebook) I will be leading a letter writing campaign on behalf of the New York chapter for the volunteer advocacy group NAYGN (North American Young Generation in Nuclear). Read the letter, and if you agree, sign it! It shows local lawmakers that people actually do care about this stuff and could lead to more positive action like the recent subsidy on nuclear generation in New York state, pushing the conversation towards carbon-free sources of power generation. ◊

DRAWBACKS OF THE CARBON TAX

ANTHONY PASSALACQUA (CE ‘18)

To begin, the Republican platform is most likely wrong on the science of climate change. I am no climatologist and neither are most politicians, so I will take the safe route and agree with what seems to be the prevailing theory amongst trained scientists—humans have a measurable impact on the climate of the Earth due to our carbon based emissions. With this truth out of the way, I will now argue against the carbon tax, which seeks to reduce carbon emissions by taxing companies that emit a lot of carbon. It seems a fairly straightforward and simple solution: if companies have to pay to emit pollutants, then they will stop pumping out pollutants. However, like many simple solutions, this is only skin deep, and does not address the problem adequately.

The first problem lies in the fact that many large scale manufacturing operations, of the type which tend to emit hundreds or thousands of tons of carbon, tend to be on the slim slide, profit wise. Environmental regulations and large corporate taxes make them hard to maintain in the United States. This is why many—as Republicans truthfully point out—have already moved to smoggier pastures with the passing of NAFTA.

Being that the remaining operations in the United States are necessarily less profitable than they once were, it stands to reason that additional taxation could easily push them over the edge, from the black into the red. In a less globalized world, this would be the end and the problem of emission would be solved. However, we live in a world of free trade agreements, and the problem becomes significantly more complicated.

Capital, in our increasingly globalized world, is extremely easy to move, and often moving it does not carry a large tax burden. This effectively means that if a factory is just barely in the red in the United States, it can move to Mexico or China, and leverage the cheap labor and small import taxes of the United States to once more become profitable. This carries along with it its own moral problems of exploitative labor and hurting the American economy in exchange for helping the global economy at large, but we will set those aside for now and focus on emissions.

So our hypothetical factory has moved to, say, China, for the sake of our example. At this point they are operating within an entirely new legal framework. No longer are they bound to even the now laxer rules of the United States Environmental Protection Agency, but instead to the Chinese Ministry of Environmental Protection.

With disasters ranging from the infamous smog of larger Chinese cities to huge explosions on the streets resulting from greased palms signing off on bogus plans, the MEP is not exactly a robust organization. This means that the company which has only just moved overseas can go back to its old ways, and with a few bribes here and there, pollute the environment to its heart’s content in order to grow profit.

In this way, a carbon tax actually serves to set back the progress we’ve made in reducing emissions and cleaning up the environment. The company in question in fact does not reduce the emissions it puts out, as the carbon tax was meant to cause, but instead moves overseas where it can pseudo-legally increase its emissions. By backing a carbon tax, one effectively backs even worse carbon based emissions, and only worsens the climate change that said emissions are causing.

This is hardly the only downside of American businesses moving overseas. Think what you want of the minimum wage of the United States, right to work states, and the like, but it is a fair claim to make that the average factory worker of the United States is significantly less exploited than the average factory worker of China (where, I must remind the reader, companies such as FoxConn have had to put up nets outside of their dormitories in order to stymie suicide attempts).

Furthermore, this arrangement means that the lion’s share of taxes that the company will be paying will go to the Chinese treasury, rather than that of the United States, directly hurting the American economy by reducing its tax base.

To shift gears, the Republican platform actually goes even further in the opposite direction of the carbon tax, seeking to make environmental regulations laxer. The argument continues thusly: supposing that reducing regulations makes a business that has moved to China once again profitable in the United States, then companies will once again move back to the States from abroad. Here they will have to adhere to the laxer-than-now but stricter-than-in-China environmental policies, thus helping the environment. Of course, this argument also relies on the fact that other parts of the Republican platform would also make it less profitable in general for companies to operate oversees; that, however, will be left for another time.

I would be lying if I made the claim that these are the reasons that most Republicans have in attacking the use of the carbon tax. Many, including our nominee, believe that climate change is a lie made up by China in order to damage the United States economy. However, I hope that this presentation of a deeper look at the carbon tax has revealed that it is likely a poor solution to the problem of carbon based emissions. ◊

MEET THE FIRST YEARS: DILARA SEYMAN (ME ‘20) [CONT’D]

GABRIELA GODLEWSKI (CE ‘19)

The few parks in Istanbul were also far from the city center whereas Central Park is right in the middle of Manhattan.

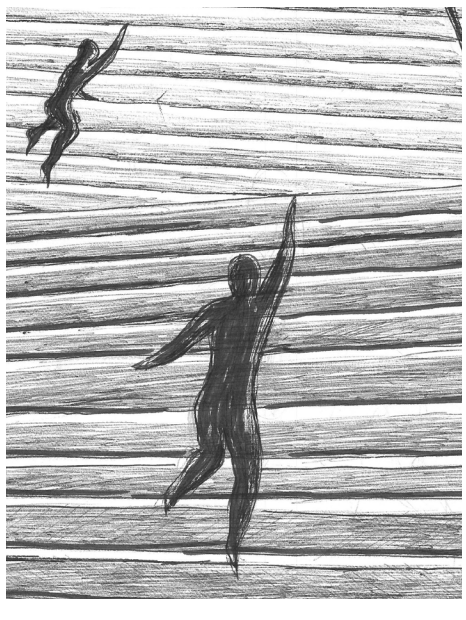
What attracted you most to Mechanical engineering?

When I was ten years old, the door of our living room fell and I was the one who repaired it. That moment was the first time I realized how much I enjoyed figuring out how something works, what’s wrong with it, and how to fix it. I always loved spending time around machinery but it hadn’t occurred to me to be an engineer up until that point. The moment I put the door back in place and saw it was fully functional was when I knew I wanted to solve mechanical problems as a career.

As I grew up, I discovered more and more about what mechanical engineers did, and it made me more excited than I could ever imagine to be. When I was 16, I studied in the United Kingdom, the birthplace of modern mechanical engineering. By then, becoming a mechanical engineer was the main goal in my life. Besides that, I volunteered a lot in my community. I worked at the dog shelters, but I also worked with children who had leukemia, helped with arts & crafts for paralyzed people, and read to the elderly at the nursing home. I realized that in everything I did, helping others and making strangers’ lives easier were what made me happy. Since engineers are the ones that make the world a better place by bringing economical and practical solutions to everyday problems, I believe being an engineer will enable me to work for and contribute to the advancement of humankind.

What else are you hoping to get out of Cooper?

I am looking forward to start thinking like a real engineer, especially knowing how things work and being able to mentally draft objects just by looking at them. I also am excited to be able to discern when and how to improve them. ◊



CONSENT WORKSHOP MANDATORY AT FIRST-YEAR ORIENTATION

TANDIS SHOUSHTARY (Art ‘20) | JUAN JOSÉ GARCÍA (Art ‘20)

On September 2, the last day of first-year orientation before classes started, crowds of first-year art, engineering, and architecture students filled the Great Hall to begin their mandatory full-day Healthy Relationships and Consent Workshops. After some welcoming remarks by Dean of Students Chris Chamberlin, and an introduction to Grace Kendall, newly appointed Title IX Coordinator and Director of Student Diversity and Inclusion, students were able to attend the first of three workshops of their choice in the new full-day program aimed at educating students on the topic of consent in college communities. The event was led by Anti-Oppression Resource and Training Alliance (AORTA) representatives.

Interview with Chris Chamberlin, Dean of Students

How did you get in contact with AORTA?

We actually got in touch with them a couple years ago, we were working with some students to bring a group to campus to talk about consent and do consent-related activities, and AORTA was one of the groups we found. We used their help for two consent workshops last year.

How did students engage with the workshop last year?

Last year, it wasn’t really a part of orientation. Attendance for the first one was not mandatory, so I think we had about four to eight students show up. It was a good workshop, but it just wasn’t what we were looking for in terms of turnout. So we reconvened, and we went back and forth about making a consent workshop mandatory because it almost seems counterintuitive to make a consent event mandatory. Still, we felt that the content was important so we made it mandatory and had a larger turnout for the event. It was good but it was also different, because it was a large space and it didn’t allow for a lot of one-on-one interaction, so some people get lost in the back. We learned a lot from that experience.

There are certain federal and state statutes requring that certain information must be given to students—such as Title IX, and The Violence Against Women Act on the federal level, and under New York law Enough Is Enough. Years ago, we used an online training to fulfill legal requirements, but based on feedback from last year, we wanted to make it offline, real-time and part of orientation. Last year, quite frankly, it was sort of thrown at the students at the last minute, and some of them didn’t want to be bothered. Once classes start it’s very difficult to find time when people are free, so we knew that if we didn’t get it in during orientation [this year] it would’ve probably never happened.

Tell us more about the change in format.

A lot of the credit goes to AORTA. I met with them to discuss the pros and cons of what had happened last year, and how we could appeal to an audience in different ways. People may want to focus on different areas, and some of the topics can be really personal for folks and people have different experiences that they can bring to the table, so we wanted them to have the ability to pick and choose what they wanted to do. We came up with this conference-style day where there are three different block periods during the day and in each of those periods there would be a series of four workshops; students can select the workshop they go to.

The idea was to give people a spectrum of choice in some broader areas of consent in general, like how to help build a positive community, and also focus on some more narrow topics, like how to support a survivor. We have no formal survey yet, but the general feedback from students has been very positive.

Why do you, personally, think these workshops matter at college communities, specifically at Cooper?

In particular, because Cooper is a college, and students are in that age range where they’re changing from their parents’ care to becoming young adults and living on their own—and doing their own thing. In the research, this period is called the “red zone”, particularly with first year students.

At Cooper we have three really rigorous academic programs, and so we have a niche body of very high-achieving students, some who may come from a more specialized high school background.

The small size of the school means that it can be a really small, intimate environment, but that can be a downside sometimes. This is the kind of place where you can’t fade into the background, and that’s why some of the tools, like bystander intervention, were really important to our community at Cooper.

Interview with Kane Huyn (Art ‘20)

What did you think of the day as a whole?

I thought it was a very rigorous day, I learned an intense amount of information… Some moments within the workshops especially the ones related specifically to the queer and trans community were very taxing… Overall it was a very humbling experience, more in relation to the personal stories shared by fellow students during the workshops, rather than the information being offered by the reps

Why do you think it is (or isn’t) important to have events like these for college communities, specifically at Cooper?

I think it’s super important to have events related to social integrities and conduct because no matter how much students of our age think we know about how to handle situations that we find ourselves in, we can never know enough. Events like the consent workshop not only teach lessons that some may have never learned, they conjure discussion and deeper interaction between the student body. It’s impossible to be completely aware of everyone’s stories and lives, and for me, workshops that humble you and bring you closer to others around you are extremely helpful to the bettering of yourself as a person and a participant of an active community.

Interview with Ariana Freitag (EE ‘20)

Which workshop was your favorite?

I found the ‘Consent in Queer and Trans Communities’ workshop the best because I felt like I was surrounded by people that I felt safer around talking about things that I wouldn’t want to talk about with non-LGBT people. Also, I really like the topics we talked about and the people who hosted that workshop.

What did you think of the day as a whole?

I thought that the day was really valuable, and I’m glad that we were required to go, but it was also a very long day. I think the organization that hosted the workshops did a great job, but by the end of the day, I felt almost overwhelmed by how much we had to sit through.

Did you like the format of the workshops?

Yeah I appreciated that [the format was conference style rather than a lecture]. I do wish some were even more interactive though.

Why do you think it is (or isn’t) important to have events like these for college communities, specifically at Cooper?

I think that people brush consent and sexual violence under the rug at Cooper because it’s such a small school, but the matter of fact is that rape is an epidemic at every college or university campus, including here. It’s important for the administration to set a precedent at the beginning of someone’s Cooper career that rape and sexual violence is not okay. Yeah, you might not want to spend time talking about these topics, but it’s extremely important to stop rape on college campuses. I just hope the support for victims and survivors started with this event will be continued by the actions that the administration takes when rape or sexual violence is reported.

Interview with Valerie Franco (Art ‘19)

What was the format like when you attended the workshop last year?

It was just an hour-long lecture with the entire first-year class. That was it. I don’t actually know if it was really an hour, but it wasn’t an all-day event.” *[Editor’s note: it was two hours].*

How did the students engage with the lecture?

People weren’t taking it seriously; some people kept on laughing and making irrelevant comments. It just wasn’t well-structured and they kept on making us participate and answer questions but in general nobody was interested. At one point someone raised their hand and asked “why do we need to learn about this? It’s so obvious.” which just showed how many people in the community are largely unaware. I remember thinking “if it were so obvious, we wouldn’t have so many cases.” It was just a complete disaster.

Why do you think events like these matter at college communities, especially at Cooper?

“I think it matters because colleges are so diverse, specifically Cooper. It’s important to assure that, even if you have been educated on it before, people have a good understanding of what consent is and its repercussions.”

What do you wish had been different about the workshop you attended as a freshman?

“I wish it had been more informative, it wasn’t even really a lecture but more of a talk on what we had completed on the online courses.”

According to the Association of American Universities, approximately 23% of women report being sexually assaulted while in college. If you’ve experienced sexual violence and would like a confidential resource to talk to, The Office of Student Affairs is open on the third floor of The Cooper Union Residence Hall. ◊

HALLOWEEN IS HERE

JEREMIAH PRATT (EE ‘19)

Ghouls, gargoyles, once again it’s that time of year for your favorite spooky paradise, complete with pumpkins, hold the spice, and cheesy fog effects made with dry ice. Nobody cares if you’re naughty or nice, because tricks and treats go hand in hand this month, and each and every one of us has a skeleton hiding underneath our skin, rattling and chattering away to the din of Monster Mash on repeat, you’d better believe it. While we’re all “hella hype” for this, the greatest 31 days of the calendar year, this writer thinks it best to make absolutely clear a few points of etiquette we’d do well to remember, lest our friends and professors all resent us come November.

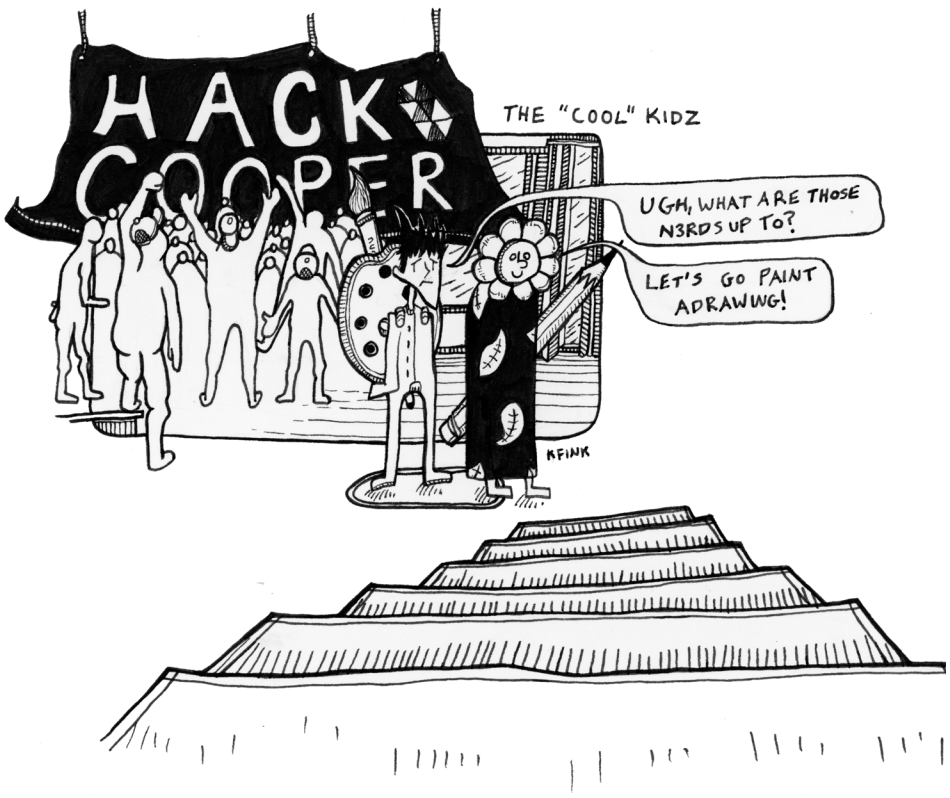
1) Though your lectures may fill you with dread and fear, and your snoring classmate sets a stormy atmosphere, and the room seems to scream “HALLOWEEN!” for all to hear, please, resist the impulse to let out a gleeful cackle from the back of the class like a demon-possessed jackal. The only thing spookier than sitting through class is being asked to leave it and never come back.

2) Do NOT throw a Halloween party in the ICE lab.

3) While you may have 31 costumes, one for each day and night, not everyone here always does (though they might!), so take care when approaching a strange looking bloke on the corner of St. Mark’s in a green denim coat. Please try and trust me, don’t mess with a crusty, they aren’t in costume and your slip-up could cost you, so it’s best to keep your excitement to yourself.

4) Wearing all black to a party and proclaiming “I’m an architect” is a cop out.

5) Last but not least, don’t you ever forget, that each monster among us has a heart in their chest, and we all love to spook and we all love to scare, but we all love to smile and we all love to care. The spirit of Halloween is good-spirited fun, so don’t ever do nothing that might hurt someone. Brew your potions with love, cast your spells with good cheer, compliment your friend’s outfit, buy your buddy a beer, go ahead and give a fright. But, let no one live in fear, during this, the absolute best time of the year. ◊



MILES OF MOVIES: THE MAGNIFICENT SEVEN

MILES BARBER (CE ‘18)

The Magnificent Seven, remake of the 1960 film of the same name (which was itself a remake of the 1956 Japanese film *Seven Samurai*), tells the story of seven gunslingers and knife-throwers who band together to defend a small western town from a ruthless capitalist named Bartholomew Bogue. The first scene in the film sets up the stakes and throws the film into motion as Bogue visits this town, leaving many dead and the rest terrified to stand up to him without some help.

They find that help in the form of seven men including Sam Chisholm (Denzel Washington), Joshua Faraday (Chris Pratt), and Goodnight Robicheaux (Ethan Hawke) around whom the film centers. Most of them have unique personalities that help you distinguish each one on more than just a physical level, making them more memorable. The performances, however, vary in authenticity. Denzel Washington and Ethan Hawke give the only performances that felt like they actually belonged in this old-style western. Coincidentally, their characters, Sam Chisholm and Goodnight Robicheaux, are the only ones with real backstories, as they have some history in the Civil War. Chris Pratt’s Joshua Faraday seemed like he was trying way too hard to mix his “wild west” cowboy character with his character from *Guardians of the Galaxy*. The result was a performance that was quite fun, but just felt a little out of place in the film.

Performances aside, the film did a great job on a narrative level. Each facet of this straightforward tale makes sense as events lead into each other. The two shootout scenes in the film are very intense, featuring some truly fantastic stunts, many great practical effects, and some hilarious moments.

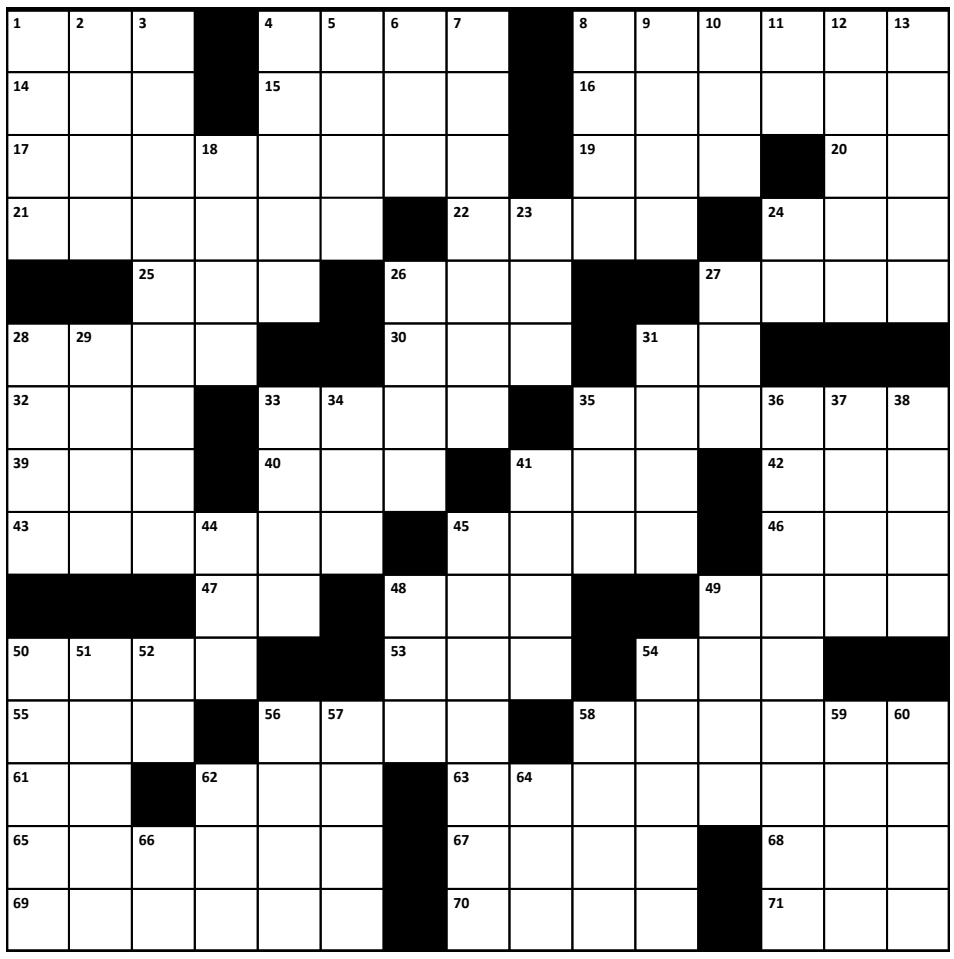
On a technical level, the film was also quite good. The mountainous landscape is perfectly captured in some beautiful shots that really show off not just the natural beauty of the area but also how great it looks at night. There are a couple shots of distant clouds around dusk that just make you appreciate how amazing the Midwest looks. The final confrontation is also beautifully captured in a mix of wides and closeups to show off both the stunts and the scope. Add in a great score by James Horner (sadly passed) and Simon Franglen and you have a pretty well-made western.

Overall, *The Magnificent Seven* is a well-made film that proves a worthy remake of the 1956 film. It adds little new content, its characters are a little thin, and Chris Pratt’s humor may be a little out of place, but the music, cinematography, and intensity of this film make it worth your time. ◊

Grade: B

CROSSWORD PUZZLE

TOBIAS STEIN (CE ‘18)



ACROSS:
1. Afternoon sleep
4. Hand on the holy book, of office
8. Famous duck
14. Free as ___ and water
15. Joint mitzvahs
16. Higher Ed. Inst. Embroiled in lawsuits
17. Before birth
19. Tennis/volleyball, between game and match
20. Bailed out auto giant
21. It’ll make an ass out of you and me
22. Diminished
24. Music genre
25. __ __ pinch
26. Don’t open one at the bar, use cash
27. Painted faces and long tongues
28. Masonry containers
30. Poetic sphere
31. Appliance giant
32. Lemon drink
33. SpongeBob’s pet
35. Belgian cartoon
39. Garner or Anniston, casually
40. Lowly worker, insect
41. Lubricate
42. British West Point equiv. ___ Sandhurst
43. Author middle initial, last name
45. Master Splinter’s group, pizza lovers
46. Dial 0 for ___(Abbrv.)
47. Keep calm, carry...
48. T’was the night before
49. It’s a long story... in verse
50. Why so many centrifuges?
53. Prevailed
54. Marathon Oil stock ticker
55. Into the lion’s _____
56. End of prayer
58. Get six points (football)
61. Agrawal
62. Indignation
63. Say this and you’ll be welcomed
65. Type of Bush + Q
67. Platypus feature
68: “Give __ __ break!”
69. Fire starters
70. Canine command
71. A pretty secure shell

DOWN:
1. Annoying auto slogan “... KNOW HOW”
2. Shown on TV
3. Head of state
4. Type of care, controversial
5. Pay to play, _____ up
6. Federal program, reduce impact of imports
7. First to summit Everest, surname
8. Trash online scheduling system
9. Miners’ quest for _____
10. Squirrel snack
11. To be, first person first person singular
12. Propane or butane abbrv.
13. Down in the...
18. Female habit wearers
23. ____ and flow
24. Smallest state
26. Legal wrongful act
27. I’m a Barbie boy
28: 5th pillar of Islam
29. Poems of praise
31. Thin layer of gold
33. Not happening without pain
34. Big Blue college town, ____ Arbor
35. Pewter component
36. Verb classification, more specifically doing something
37. Zulu regiment
38. Drug agent
41. Writing on the wall
44. A long, long time
45. Televised basketball on a certain network
48. Ram’s mate
49. Cooper Professor, Lessac-Chenen
50. Icons, subjects of worship
51. Update the natutical chart
52. Indefinite article
54. Teeming with testosterone
56. Middle east liquor
57. 10^{-3} fractional equivalent unit abbrv.
58. Big bash, kind of ball
59. Foot appendages
60. The Ropen, Underworld Bride character
62. Verb type abbrv.
64. Musical chart topper
66. Nike competitor abbrv.