$$F_G = \frac{Gm_1 m_2}{r^2}\hat{\mathbf{r}}$$

NIGHT OF THE WOLF

"GPA-DROPPING HORROR!"   "3/10... ABOVE AVERAGE!"

THE PIONEER : A COOPER UNION PRODUCTION: "NIGHT OF THE WOLF"

STARRING PETER COOPER EDITED BY MATTHEW GRATTAN KAVYA UDUPA DIRECTOR OF PHOTOGRAPHY WENTAO ZHANG

EXECUTIVE PRODUCER VICTORA SOBEL JACOB JACKMAUH ART DIRECTOR SAM JIANG

PREMIERING MAY 10 AT 10AM IN THE GREAT HALL AND ROSE AUDITORIUM

PREET BHARARA SPEAKS IN GREAT HALL

GABRIELA GODLEWSKI (CE '19) | MATTHEW GRATTAN (ChE '19)

Preet Bharara, the former United States Attorney for the Southern district of New York, spoke to a packed Great Hall on Tuesday night, April 6—or as he put it—"improbably [addressed] a captive audience in a legendary hall where Abraham Lincoln once spoke." The "sold out" event was part of the 2017 John Jay Iselin Memorial Lecture Series, which commemorates the tenth president of The Cooper Union.

The lecture gained notoriety after the Trump administration fired Bharara for refusing to resign his post as U.S. Attorney. The incoming administration had previously allowed Bharara to keep the job but later changed its mind, as Bharara clarified. The free tickets available online were all reserved prior to the event, and the remaining seats—and standing room—were offered to Cooper students, faculty, and staff via a lottery. The event was also live-streamed on YouTube.

President Laura Sparks introduced the event, calling the evening "quintessential Cooper Union." She also stressed the importance of the Great Hall as the venue of many keynote speakers that influenced social and political change, such as Bernie Sanders, W.E.B. Du Bois, Susan B. Anthony, and Abraham Lincoln.

When President Sparks wrapped up her introduction, Preet Bharara took the stage, making his first public appearance since his firing. Bharara immediately warmed up the audience with a few jokes about crowd size, then spoke about his former career as an attorney general. Bharara has worked on gang-violence, local terrorism, and financial corruption on Wall Street, for which he is most known.

Bharara recalled his background as an immigrant from Punjab, India to the United States and how the opportunities in his new country played a big role in his

Photo by Yifei Simon Shao (ME '19).

success today. He praised the nation's system of laws, which despite flaws, allow every child the opportunity to rise higher than their parents could ever hope. "All of that," he added, "says a lot more about America than it does about me." Bharara also addressed hate crimes made against Indian Americans and immigrants. He praised the man who intervened

and saved lives at a shooting in a bar in Kansas.

Bharara then turned his focus on the current state of politics. He first addressed the rumors about his own political aspirations: "I have no plans to enter politics," he said, "just like I have no plans to join the circus—no offense to the circus." He urged Americans to hold their political leaders accountable for their actions whenever necessary, and encouraged his listeners to welcome dissenting opinions.

At the end of the lecture, President Sparks returned to the stage to ask Bharara questions written by the Cooper community. When asked if he had advice for his successor, Bharara replied, "don't make the mistakes I made" and "be true to what you think is right." Sparks also asked why he thought he was fired. Bharara retorted, "beats the hell out of me!" and added that "there was a specific decision to change one's mind." ◊

MICHAEL BENJAMIN KENDIS

MAY 3, 1998 - APRIL 9, 2017

Michael Benjamin Kendis, known affectionately to his closest family, friends and classmates as Misha, was a gentle, poetic soul who saw the world as a canvas of colors. He had a sharp, clear intuitive sense of whim, relishing the comical absurdities of quotidian life. A consummate appreciator of kind people, primordial innocence, unusual objects, uplifting music, visual arts, moving images, Japanese anime and good jokes, he was grounded in reality and daydreams. His mind—fragile, ever sensitive, purposeful and idle—overflowed with a strong sense of finding the hushed beauty in ideas, desires and pursuits.

Born on May 3, 1998, into a family from Kiev, Ukraine, he spent his first year of life in Brooklyn, New York, before his parents and sister relocated to East Brunswick, New Jersey. They were later joined by his maternal grandmother, Stephanie Filatova, in the early 2000s to enjoy the peaceful, friendly surroundings of suburban New Jersey where his talents and creative prowess were nourished.

Many things came naturally to Misha—whether playing piano, winning swim competitions, stealing the show in musical theater performances or leaping to great heights as a ballet dancer. He performed as Mendel in "Fiddler on the Roof" and Peter Quince in Shakespeare's "A Midsummer Night's Dream" at East Brunswick High School as well as the Sr. Pirelli in the musical thriller "Sweeney Todd" at French Woods Performing Arts Camp.

He was a member of Regional Chorus, went on to be the second highest ranking baritone in NJ All-State Chorus and then was invited to Eastern Chorus, performing at many national venues east of the Mississippi River--in-

cluding at Carnegie Hall in New York—often singing Russian romance songs. He also took part in a North Jersey Russian language theater troupe and most recently was a studio assistant at the Hot Wood Arts Center in Red Hook, Brooklyn.

Misha dreamed of becoming a denizen of New York City and got his chance as a student of the School of Art at Cooper Union in Manhattan, where he spent his last days. He admired the literary and artistic traditions of his Russian-American heritage, placing an importance on speaking the Russian language and staying connected with his family. He frequented galleries to see the works of his avant-garde, abstract expressionist, minimalist and futurist artistic heroes such as Joan Mitchell and Wassily Kandinsky and could be found around Astor Place with a Virginia Wolf, Boris Pasternak, Nikolai Gogol or Susan Sontag book by his side. He joins the universe of Gertrude Stein's

roses and Anna Akhmatova's historical prose (among his favorite poets) in leaving family and friends with a lifetime of precious memories. This would make him happy.

He is survived by his parents, Alex Kendis and Marina Filatova-Kendis, of East Brunswick, New Jersey; his sister, Nikola Paula Kendis, of Berkeley, California; his aunt, Elina Kendis, of Brooklyn, New York, and his first cousin, Maxim Mikaloff, his material grandmother Stephanie Filatova, his paternal grandmother Yana Lisitsa and many more cousins, aunts, uncles and friends who were touched by his presence. Rarely has a tender being sparkled so bright with such a quiet confidence of infinite expression. He will be missed and always remembered.

We want to remind the campus that the Office of Student Affairs will be holding a gathering for those who wish to come together in an informal way to process feel-

ings and reactions stemming from the loss of Misha. The gathering will take place on Thursday, May 4, 2017 at 4:15 p.m. in the Menschel Room located on the 4th Floor of the Student Residence Hall. All are welcome.

On Friday, May 5, 2017 we will be holding a celebration of Misha's life. This take place from 5 p.m.-7 p.m. in the Peter Cooper Suite on the 8th floor of the Foundation Building. This will be an opportunity for members of the community to come together and share their memories of Misha. Materials will be provided for students to share their thoughts in a note, a letter to Misha's family, a drawing, etc. We will gather everything together and present it to Misha's family.

We want to remind the campus that we have expanded counseling available each day for the rest of the semester through the Office of Student Affairs. Student should reach out to the Dean of Students, Chris Chamberlin, at chamber@cooper.edu, or our Student Care Coordinator, Cassandra Jolicoeur, at jolicoeu@cooper.edu, for any support or assistance.

Students should also be aware of other resources available to anyone needing help or support. NYC Well is a 24/7 service where you can connect to someone anytime - any day. You can call 1.888.692.9355 (1.888.NYC.WELL) or you can text "Well" to 65173.

The National Suicide Prevention Lifeline is a national network of local crisis centers that provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. The Lifeline can be accessed by calling 1.800.273.TALK (1.800.273.8255).

THE COOPER DRAMATIC SOCIETY PRESENTS: "A PLAY"

OLIVIA HEUIYOUNG PARK (ME '19)

The Cooper Dramatic Society put on their spring show, "A Play," in the Rose Auditorium from April 7 to April 9. Directed by Toby Stein (CE '18), this production was completely student run—including the set, costumes, lights, and sound. Even, the screenplay was written by Jack Pannell, Stein's high school friend.

The beginning of the play almost parallels "Romeo and Juliet," with playful banter between two friends about love and women followed by the cliché love at first sight after a recent breakup. The play follows the path of a traditional romantic comedy, as all the main characters end up in romantic pairs. Everyone seems to have a good time, until there's an air raid and one of the characters, Florence (Christina Byers (ChE '19)) dies and leaves her partner Will, (Dennis Burgner (ChE '18)) crying alone.

The play ends.

But not really.

The play repeats itself, filling the audience and Will with confusion. All the other characters seem to have forgotten that all of this had happened already, and Will struggles in vain to try to tell the other characters that everything has had happened before. Later it is revealed that the two hotel staff, Hubert (Kelsey Mitchell (Art '18)) and Morris (Daniel Zabari (EE '20)), and the manager, Herman (Harsho Sanyal (CE '20)) are also aware that events are repeating, and the two hotel staffs explain to Will that everything is just a play, and everything simply repeats, following the script.

With some slapping, gun-shooting, and screaming, "A Play" introduces a whole new concept of breaking the fourth wall, highlighting the fact that although actors and audience will move on once the play is over, the characters will not, and will be forgotten with the play once it ends.

The fast-paced, quirky, intriguing, and impressive play brought together the Cooper community, from administrators and students to alumni and parents, and made them question the definition of reality and one's identity. ◊

Photos by Wentao Zhang (ChE '19).

CULTURE SHOW 2017: WOLF TANK

Above: Ballroom Dance Team performs the waltz. Photo by Sage Gu (CE '19).
Above right: President Laura Sparks joins the South Asian Society in the closing number of the Culture Show held on April 15, 2017. Photo by Jiaqi (Ivy) Cheng.

NEWS BULLETIN

MATTHEW GRATTAN (ChE '19)

Student Trustee Election Results
Mary Dwyer (ME '19) won the majority of the votes in the school-wide election for Student Trustee against Irisa Llana (Arch '21). Dwyer received 116 votes, and Llana received 81. The Board of Trustees will interview both candidates and select one to be a voting member of the board for a two-year term. The new student trustee will replace Jessica Marshall (EE '17) and join Julian Mayfield (Art '18), who was elected last year. The selected candidate will also serve on the Governance Committee and the Academic and Student Affairs Committee.

The student body selected the candidates in a ranked-choice system, where voters picked the candidates in their order of preference, so the total number votes do not correspond to the total number of voters. Votes were cast online April 5-11.

Dean Baker to Leave Cooper
Vice President of Community Affairs and Dean of Athletics Stephen Baker will retire on June 30, 2017 after 51 years of experience. In his letter, which was sent as a campus-wide email, Dean Baker expressed his gratitude to the Cooper community, and he added: "I know when I leave that I am leaving the college and its scholar-athletes in very capable hands as it continues to carry on our great traditions."

"Many thanks, Steve," President Laura Sparks wrote in the same email, "for all you have done and created for The Cooper Union."

Dean Baker closed his letter with the usual "thanks and C.U. later."

BUY HIGH, SELL LOW: QUANTUM MECHANICS IS USELESS? I THINK NOT.

TANAY TRIVEDI (BSE '19)

Many engineers at The Cooper Union assert that quantum mechanics isn't useful in real world applications. Shown below, however, is a quick summary of how one can use the concepts of probability and quantum theory to derive a prolific conclusion of quantitative finance: The Black-Scholes equation.

As a part of the PH-214 course, Optics and Modern Physics, students learn how functions can be used to predict probabilistically the spatial and temporal locations of free and bound particles. One of the primary PDEs that inform the probabilistic location of a free particle is called the Schrödinger Equation:

$$-\frac{\hbar^2}{2m}\frac{\partial^2 \psi}{\partial x^2} + V(x)\psi = i\hbar\frac{\partial \psi}{\partial t}$$

This equation relates the wave function of a free particle (ψ) in its double space derivative to its single time derivative.

Another relevant operation in quantum mechanics is the Hamiltonian operator:

$$-\frac{\hbar^2}{2m}\frac{\partial^2}{\partial x^2} + V(x)$$

Both equations hold relevance in the world of quantitative finance, because of the base understanding of quantum mechanics that is the same in financial markets: there is no way to know exactly what is going to happen to a competitive market price, just as with a particle, for sure.

Last issue, my esteemed colleague Padraic McAtee published on the use of discrete tree models and fast Fourier transforms in the pricing of financial products called options contracts. Not covered in his article, and necessary for the derivation made below, is what the price of an option contract is based on and, in turn, how to apply the theories of probability and random walk in quantum mechanics to the world of financial products. Options are generally thought of as functions of:

- S - the underlying asset price, in this case the price of a stock in a company

- σ - the volatility of the underlying asset price.

- μ - the risk-free interest rate. The idea is that financial analyst should always consider the returns on an asset in comparison to the returns on a risk-free investment, like a government bond

If we model the underlying asset price as a linear combination of deterministic factors (like the management of the company, quality of the product, market share, etc. etc.) and a stochastic factor (another word for random movement), the total differential of S is:

$$dS = \mu S dt + \sigma S dZ$$

S is the asset price, μ is the risk-free interest rate, dt is the differential time quantity, σ is the volatility and dZ is the differential of a random number. If we take this and attempt to create a total differential for the value of the option contract, then we get the following formula:

$$dC = \frac{\partial C}{\partial t}dt + \frac{\partial C}{\partial S}dS + \frac{1}{2}\frac{\partial^2 C}{\partial S^2}dS^2$$

If we assume that a trading firm keeps the ratio between options and shares fixed for investment concerns, so that

$$\frac{\partial C}{\partial S} = \text{constant}$$

We get the vaunted Black-Scholes formula for option price:

$$rC = \frac{\partial C}{\partial t} + r\frac{\partial C}{\partial S} + \frac{1}{2}\sigma^2 S^2 \frac{\partial^2 C}{\partial S^2}S^2$$

This equation is incredibly similar to both the Schrödinger Equation and the parabolic heat diffusion equation. If the reader wants to verify this, take the transformation that maps stock price to space:

$$x = \ln S$$

By simple comparison to the Schrödinger Equation, we can see the Black-Scholes Hamiltonian is:

$$\left(\frac{1}{2}\sigma^2 - r\right)\frac{\partial}{\partial x} - \frac{1}{2}\sigma^2\frac{\partial^2}{\partial x^2}$$

This is used as the final solution for the Black-Scholes equation, which uses the Feynamn-Kac path integral. Unfortunately, I do not have the space to lay this out; in addition, most undergraduate students have not yet learned stochastic calculus to perform this calculation without a Ph.D. thesis paper in hand! The final form of the Black-Scholes equation looks a little like this:

$$C(S,t) = S\,\text{cdf}(d_2) - Ke^{rT}\text{cdf}(d_1)$$

Here "cdf" is a cumulative distribution function and

$$d_1 = \frac{\ln\left(\frac{S}{K}\right) + \mu t}{\sigma\sqrt{T}}$$
$$d_2 = d_1 + \sigma\sqrt{T}$$

Complex it is, but the important underlying assumptions and models are very similar to the material taught in undergraduate physics courses. ◊

For more reading, consult:

Utama, Purqon. *Feynman path integral application on deriving black-scholes diffusion equation for european option pricing*. Journal of Physics: Conference Series 739 (2016) 012021.

THE GOLDEN CRICKET PROJECT

SAM JIANG (ME '19)

For many, there's still a mental block on munching on bugs, but more and more people are embracing insects as an environmentally-friendly source of protein. Ranching bugs is considerably less resource-intensive than raising traditional livestock, but there's some nutrients we just can't get out of insects—like vitamin A! This summer, Professors Medvedik and Janjusevic at the Kanbar Center are kicking off a new project as part Cooper Union's STEM Program, with the ultimate goal of improving the nutritional value of edible insects.

Vitamin A deficiency is incredibly prevalent in poorer countries, and is especially dangerous—children without enough vitamin A are in danger of going blind. While rich in protein, crickets lack β-carotene, a precursor of vitamin A, and many other essential nutrients. Foods rich in β-carotene—such as carrots, or the genetically engineered Golden Rice—have a trademark yellow-orange color. The goal of the Golden Cricket Project is to use genetic engineering to create a cricket rich in both protein and β-carotene, which the body can synthesize into vitamin A.

Here's the thing with genetic engineering, though: The more complex the organism, the harder it is to rewrite its genome without messing something up. Although we think of insects as fairly simple organisms, it's still too difficult to genetically coerce the cricket into producing β-carotene on its own. Bacteria, on the other hand, grow rapidly, with some strains easily absorbing foreign genetic information, making them perfect candidates for β-carotene synthesis.

Before moving further, let's have a small review session on high school biology. DNA codes for proteins, and proteins facilitate biological processes, like the production of vitamin A from β-carotene. In order to create a bacteria that produces β-carotene, the DNA sequence for every protein involved in β-carotene synthesis needs to be inserted into the bacterial genome. This bacteria will then be fed to the crickets; they will live and reproduce in the crickets' gut, constantly churning out β-carotene, eventually turning the mundane cricket into a Golden Cricket.

Before the Golden Cricket can be made, many other issues need to be addressed. First and foremost is determining which bacteria to genetically transform into a vitamin factory. Professor Medvedic discusses potentially using common probiotics: "We'd like to use *Lactobacillus*, but maybe the type that we choose isn't suitable for cricket gut." Professor Janjusevic's solution to that potential problem is to isolate and analyze an existing gut microbe, guaranteeing that the resultant β-carotene factory will be able to survive within the cricket. The final genetically-engineered microbe needs to be able to produce β-carotene *and* thrive and reproduce within the cricket in order to be considered a success.

Aside from technical difficulties, this project faces other, less scientific long-term hurdles. Most of Western society is still heavily opposed to eating insects, but the Golden Cricket itself is targeted towards undeveloped nations where vitamin A deficiency is a real issue. In the media, there's also a lot of misinformation and fear-mongering surrounding the use of genetically-modified organisms. Both of these are issues that can potentially limit long-term adoption of organisms like the Golden Cricket. ◊

The Cooper Union BSU Presents

CURATED BY ALFRED DUDLEY III

BACKGROUND 19

ARIEL JACKSON
CHRISTIAN MARTIN
FIRELEI BAEZ
MAJA GRIFFIN
JASPER MARSALIS
DEVIN KENNY
JAIRO SOSA
ANTARA MORFE
ANDREW ROSS
JHAKAI DESHONG
MILES THOMAS
ATISHA FORDYCE
WILLIAM VILLALONGO
JULIAN JEFFERSON
LAUREN HOWIE
IAN BURNLEY
MARK GIBSON
CHRISTIAN NOELLE
JUSTIN USHER

WORKS BY BLACK COOPER UNION STUDENTS AND ALUMNI

OPENING NIGHT
APRIL 25TH
6PM–9PM

LOCATION:
41 COOPER GALLERY AT
41 COOPER SQUARE
NEW YORK NY 10003

OPEN THROUGH THE 28TH
11AM–6PM

PERFORMANCE AT 7:30PM AND 8:10PM!

THANK YOU FOR CONTINUALLY TEACHING ME

EMMA FAITH HILL (ART '17)

When I found out, I was in a world history class with freshmen and sophomores (I was making up a credit to graduate). I was checking my phone every ten minutes and finally it came. The minute I saw it, I no longer saw it because I was crying. My teacher asked me if I was okay and a girl across from me gaped, figuring it out, "oh my God she got in." I picked up my bag and ran out of the classroom and across campus to the visual arts building, rushing into the director's office, heaving with salt water, "I did it!" She hugged me with a mother's embrace, and a sense of fulfillment ensued for the last month of high school.

When I arrived, I was in a gold mini skirt with black tights and a black ruffled top. I only knew two upperclassmen, both of whom had been my TAs at a summer camp a few years before. When I arrived, one of them was perched on the stoop of the Foundation Building with their friends all around them. Upon seeing each other, we excitedly hugged, and I could smell their body sweat as I saw their armpits unshaven in a black muscle tank. Their hair was cut to the cheekbone. They were beautiful and unlike bodies I had hugged before. I went home and changed my clothes: jean shorts, sneakers, and a striped t-shirt from the boys section of a vintage store. I felt excited and alone. I put on the bright red lipstick that my best friend from boarding school gave me before we parted, and went to my first class feeling hot as fuck, legs criss-cross-apple-sauce while Dennis Adams lectured for four hours. We went around and said our names, where we were from, who our favorite artists at the moment were. In my outfit I was confident: "I'm Emma, I'm from a boarding school in Michigan, I'm into Laurel Nakadate and Isamu Noguchi's set pieces for Martha Graham." He told me I would like his class.

I would start putting more effort into my classes, my peers, my teachers, the people in the school who were not the institution but my partners in education.

The majority of my first semester was spent at BHQFU, going to parties, and spending the entire day before my drawing and 2D class locked in the dorm with my room-
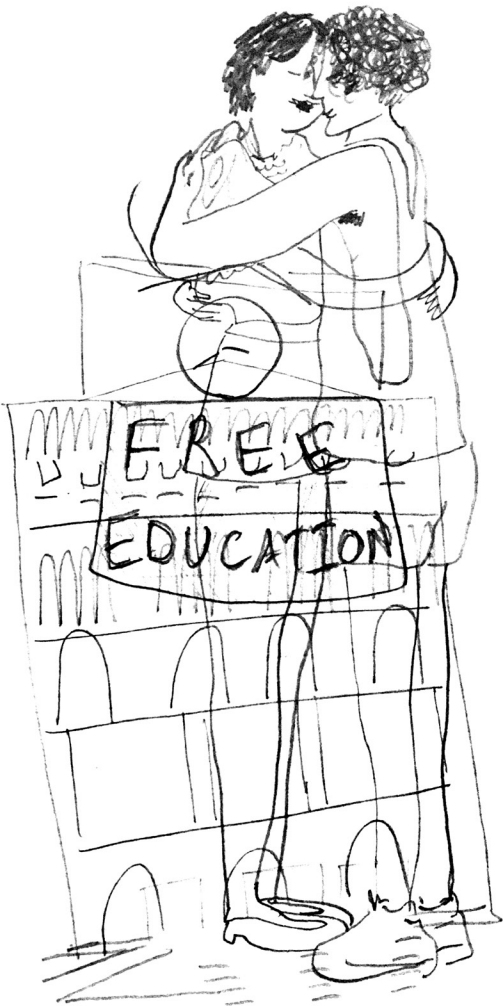
Artwork by Emma Faith Hill (Art '17).

mates, finishing the assignments. During this time, countless—truly countless—conversations were held with my peers, discussing how we felt about the institution we barely knew, given it's current political climate. I started out quite active, going to all of the Free Cooper meetings, spray painting over Banksy outside of the NAB, glaring at the Fishhouse, wishing Jamshed wasn't living there—until I made a decision: Since the administration was not in support of the utopia I craved, I would not put my effort into it. I would start putting more effort into my classes, my peers, my teachers, the people in the school who were not the institution but my partners in education.

On the night of that decision, I, in dramatic freshmen fashion, decided to cut an entire ream of hot pink paper into hearts.

Around ten on a Friday night I stuffed them in my bag and, not knowing where the security cameras were, proceeded to toss the cut-outs down all of the stairwells with a pounding heart. I came home with adrenaline pulsing in me; the only feeling I was capable of was infatuation with the idea of loving something that no longer existed: The invention of Cooper I had conceived of before I came.

Everyone at this school has their story for, 'where were you when you got in?' but I think a more revealing question for recent years has become, 'what do you think you just got into?' A free education? A half-off education? A community of like-minded people? A community of 'genius?' An institution that will grant you financial security after graduation?

I thought that getting into Cooper would mean that I was better than everyone else and that it would always stay that way–– meaning, after I graduated I would have no trouble getting jobs or residencies because having Cooper Union on your resume was the Golden Ticket of the world. As someone who is about to graduate, I can assure you, none of that is the case. Cooper is not a free pass to life, it is the opportunity to try. It is free studio space, the grouping of bodies in critiques, the stairs for smokers, the green room with a piano and safety to yell, the stage with its histories and ghosts, the chance for an exhibition, the lobby for having parties, the couch for naps, the communal sketchbook, the neon stairwells, the candy in the library, the professorial offices for chatting, crying, and drinking wine.

It is the experience of education without financial consequence, revealing a desire for knowledge and freedom you'd never realized you'd needed before.

It is the arms of someone you barely know, revealing a desire for a kind of being you'd never realized you could be before.

It is the experience of education without financial consequence, revealing a desire for knowledge and freedom you'd never realized you'd needed before.

When the person I initially hugged had their senior show, I signed their book with something along the lines of, "Thank you for continually teaching me." After this I purposefully contorted my initials so that they would not know who had written it. I was embarrassed at having not known and at having learned. But, as I leave, sentimental, introspective, curious and scared as ever, I no longer share this timid repose. I whole heartedly sign off to the person hugged, to the peers and teachers who have supported me, to the idea and actuality of free education, to The Cooper Union: Thank you for continually teaching me. ◊

EFH.

MILES OF MOVIES: YOUR NAME

MILES BARBER (CE '18)

Every once in a while, a movie comes along with rave reviews and high expectations, but it's a few months before it makes it to my area. (This film was released in Japan in 2016 but not until quite recently in the U.S.) All of the things I heard, the amazing animation and the great story, really built up the anticipation. And then, in a rare twist, this film exceeds my expectations. *Your Name* is the best anime film I've ever seen, and I think it's one of the best traditionally-animated films ever made.

The premise is fairly easy to understand: Two people, a country girl and a city boy, randomly wake up inside each other's bodies for a day at a time. Some days they're swapped and some days they aren't. They slowly learn more about each other and accidentally mess up days of each other's lives to great comedic effect. Each lead very different lives with different dreams and as-

pirations, which really blends well to make this story engaging. Due to some twists and turns in the story, they become determined to find each other. And all of this happens around a gorgeous comet event. It might seem a little cheesy, but it works for the movie. It certainly worked for me.

This film is perfectly paced. It draws you in from its first scene and never lets go. I was thoroughly invested in the characters and incredible premise right from the start. And just when it seems like a chapter in the story is going to overextend itself, there is some twist that blows your mind while simultaneously fitting perfectly into the movie. The film wraps itself up in a nice bow that leaves you satisfied with what you've seen and eager to experience the film again. You really feel like a lot of time has passed in this story, and parts of it actually create a profound sense of nostalgia.

The technical aspects of the film were, as expected, fantastic. The animation leaps off the screen, especially in the rural landscapes where the girl lives. There are so many gorgeous shots of the landscape that feel incredibly real. The animation also handles lighting very well. There is a scene at twilight that feels incredible, and the comet is illuminated beautifully in the sky as it passes overhead. There is just something incredibly magical about the way this film is animated. While there are plenty of computerized effects, they somehow blend with the traditional, hand-drawn animation really well and don't feel jarring.

Something else that I found impressive about this film is how well it manages to flesh out its characters and put them in realistic relationships. Not once did a character's actions feel contrived or strange; instead, they just make sense. The differ-

ences in the lives of these characters are so well-realized in this movie. Even though this type of story is on the complicated side, I never felt confused or lost at any point in the story; it was all clear and powerfully directed.

There is something in this movie for everyone. Whether it's from the touching story, the great twists, the genuine mystery element that takes form when the two characters try to find each other, the gorgeous animation, or the premise alone, *Your Name* will leave it's mark and you'll never want it to end. ◊

Grade: A+

CROSSWORD

AMANDA LOMBARDO (ME '19)

ACROSS:

1. Sticky road substance
4. *Lion King* antagonist
8. "My Shot" lyric: "The problem is I got _ __ _ brains but no polish"
14. Just a number
15. Operative vocal performance featuring an expressive melody
16. 1987 buddy cop film, ____ *Weapon*
17. Fried cephalopod
19. "____ to the Top," a classic HSM tune
20. "Yes' in Spanish
21. That's not a fedora (and stop wearing it)
22. Pioneers of West Coast Hip-Hop
24. ___ Tac Toe
25. "Just a number"
26. It's easy as 123
27. Flat, thin, round object
28. Don't forget to pack these for Dean Baker's annual winter trip!
30. This truck type will help move your stuck car
31. __ and behold
32. Communist Chinese Chairman
33. Ke$ha banger; "This place about to ___"
35. Sounds of amazement / astonishment
39. *Law and Order:* ___
40. "Losing My Religion" artist
41. After one
42. Kanga's son in *Winnie the Pooh*
43. Code for numerical representation of characters (abbrv.)
45. The Incredible ___
46. *Star Wars* droid minus 3
47. American Eagle, American Express commonality
48. To stick or point out
49. ___ your appetite
50. Don't go!
53. Fake Aussie ostrich
54. East Asian species of carp, used for decoration
55. 7th floor study lounge is the best place to take one
56. ___ Fett, also the bet part of bubble tea
58. Basketball legend Chamberlain
61. Highest level courses offered in most American public schools
62. Common citation format (abbrv.)
63. Facebook's main page name
65. Expression used in describing someone eating a lot of food
67. Rules, regulations
68. Head of a company (abbrv.)
69. Gradually wears away
70. Video sharing website (abbrv.)
71. "No Scrubs" artist

DOWN:

1. Sensitivity in approaching difficult issues
2. The original .io
3. He is very _____, going to church every Sunday
4. Brazilian musical genre and dance style
5. Colloquial term for "crazy"
6. ___bnb
7. ROYGBIV
8. Original Susan Storm in the *Fantastic Four* franchise
9. Lion horoscope
10. "I ship them, they're my __"
11. Thorium symbol
12. "Wonderwall" artist
13. Sudden movement; "Look at the ____ of the wrist"
18. Highest and most extensive mountain range in Europe
23. #womancrushwednesday
24. Common calculator brand (abbrv.)
26. Smallest unit of matter that retains properties of an element
27. Homer Simpson exclamation
28. Messaging service for standard texts (abbrv.)
29. Bar on Tenth Street, ___sutra
31. ___, but don't touch
33. Soft, pale French cheese
34. Garland of flowers commonly worn in Hawaii
35. Harry Potter had one as a pet
36. Engineer, artist, and _____
37. Famous blue diamond, currently housed in D.C.'s Museum of Natural History
38. Noise of 35 down
41. Desmond ___; skirt piece worn often by ballerinas
44. Headgear fitting closely to the head
45. Is that even ____ possible?
48. "Please clap"
49. Physics professor at C.U.
50. Potions professor at Hogwarts
51. Large, long-nosed herbivore, similar in shape to a pig
52. Term used by gamers to describe a player/character dominating the game (abbrv.)
54. Rock band known for their black and white face paint
56. Dog who loves clues
57. Quaker's most well-known product
58. URL starter
59. Electric sea creature
60. "What's up __?"
62. London subculture made famous by model Twiggy
64. Ingestion of food
66. Opposite of 50 across

STUDENT TRUSTEE FORUM

Irisa Llana (Arch '21) and Mary Dwyer (ME '19) at The Pioneer's *Student Trustee Forum. Photo by Pranav Joneja (ME '18).*

OLI'S SWEET MESS: BUTTER LANE

OLIVIA HEUIYOUNG PARK (ME '19)

East Seventh Street hosts a plethora of small shops and stores, each one boasting its own unique traits. This issue, I visited Butter Lane Cupcakes, a compact store filled with laughter and the sweet aroma and warmth of freshly baked goods.

This small shop specializing in cupcakes and other baked goods is easy to pass by. I accidentally stumbled onto this place last year while waiting in line for Big Gay Ice Cream, actually. The line for the ice cream

Photo by Wentao Zhang (ChE '19).

shop was way too long, but I was still craving something sweet. Disappointed, I turned back, and viola, I was welcomed by a bright yellow sign that read, "Butter Lane."

Once you enter, you'll be greeted with a small counter featuring their various cupcakes, freshly baked and frosted every day with natural ingredients. The store has an open kitchen style, so you get to see and smell the cupcakes and other baked goods. Sometimes you can also see a group of people taking a cupcake baking class in the back.

What distinguishes Butter Lane from other cupcake shops is that you get to customize your cupcakes right on the spot. You choose from one of the three cupcake bases available (vanilla, chocolate, and banana), and pick one of 15 signature frostings (like fresh raspberry, rich espresso, and fluffy coconut), or you could ask for the seasonal flavor which is currently green tea. Once you've made your choices, they take the freshly baked cupcake of your choice and frost it right in front of you. The combinations are endless (48 to

be exact), and not only are these cupcakes beautiful, they're also not too sweet unlike most cupcake shops, so that you can really taste the different flavors and savor them!

If you're super indecisive like me, feel free to ask the employees for suggestions. I loved all of the combinations the employee suggested, and because they don't use excessive amounts of sugar, I could have stuffed myself with several cupcakes in one sitting without getting sick. The cupcakes are super moist and soft, each base having its own unique taste and texture. The frosting nicely compliments the cupcake with a touch of flavor and sweetness, not overpowering the base cake. You can either choose to order in person or online in advance and pick up for later.

Each cupcake is $3.25, but if you get more than four, they drop to $3 a cupcake. They also have other baked goods such as cookies and muffins, and several drink options. For example, they serve "frosting shots" for $2, which are basically small cups full of frosting of your choosing. Their cupcake baking class, "Cupcake 101," is $75 per session, and you can sign up on their website (www.butterlane.com).

Next time you're craving something sweet, stop by Butter Lane and grab a cupcake with some tea or coffee for a real treat for both your eyes and mouth! ◊

Address: 123 E. 7th St. New York, N.Y. 10009

Hours: Sunday-Thursday 11am-10pm, Friday-Saturday 11am-11pm