thetech.com

Volume 138, Number 35



WEATHER THU: 16°F | 6°F FRI: 21°F | 9°F Sunnv SAT: 30°F 21°F Partly Sunny

Thursday, January 31, 2019

# MIT, other schools raise concerns over Title IX draft rules

## Barnhart: new regulations would impose 'courtroom-like procedures'

By Jessica Shi and Patrick Wahl

MIT has joined with other educational institutions to raise concerns over the proposed Title IX regulations that the Department of Education released for public comment last November.

The Association of Independent Colleges and Universities in Massachusetts (AICUM), American Council on Education (ACE), and Association of American Universities (AAU) all published statements this week. MIT is a member of these associations and helped shape their comments, according to Chancellor Cynthia Barnhart PhD '88 in an email to the MIT community Wednesday.

'[W]e are convinced that if the proposed regulations become final as currently written, it will become more difficult for colleges and universities to effectively address sexual harassment and discrimination and to ensure a safe campus environment," Barnhart wrote.

The proposed regulations would require universities to implement "quasi-judicial" proceedings, in particular through cross-examination during live hearings.

"The draft rules impose onerous courtroom-like procedures that will likely involve outside lawyers and perhaps retired judges - changes that could have a chilling effect on reporting, could lead to delays in case resolution, and could erode the role faculty and staff play in upholding institutional values," Barnhart wrote.

The statements by the associations argued that there are alternative, less adversarial means of ensuring credibility, such as allowing written questions and interviews by neutral investigators.

The statements also claimed that the proposed regulations subject universities to "an unprecedented amount of federal control when it

comes to how to investigate and adjudicate allegations of sexual harassment," as the AAU statement put it.

This has resulted in a set of highly prescriptive, "one size fits all" rules that fail to take into consideration the varying needs of different institutions, all three statements said, and the federal government should instead allow universities to develop policies that are best suited for their communities.

Several other aspects of the proposed regulations were discussed in the statements as well.

The AAU statement argued that the proposal's stipulation that universities require the same standard of evidence in sexual misconduct hearings as in hearings for other violations, like plagiarism, is misguided. The statement claimed that in sexual harassment cases, "factfinding is more nuanced, complicated, and most often dependent on witness testimony," and therefore should not be lumped with all other violations in determining how evidence is considered.

The AICUM similarly contrasted sexual misconduct proceedings with faculty revocation procedures, which are governed by state and federal laws that are out of the control of

In cases of sexual misconduct, MIT currently uses a "preponderance of evidence" standard, which means "more likely than not," rather than the higher "clear and convincing evidence" standard, Sarah Rankin, MIT's Title IX coordinator, said in an interview with The Tech

Another one of the regulations appears to require institutions to dismiss complaints that do not meet the Department's definition of sexual harassment or that occurred outside the institution's "program or activity."

Title IX, Page 2



Volunteers baked an approximately 600-pound peach pie Jan. 26 as part of Bad Ideas Weekend 2019. The oven was constructed from cinderblocks and foil spanning approximately 5-7 feet in diameter.

# Hayden Library to close for renovations at end of fall 2019

Renovations to include a café, significant expansion of 24/7 study space, and flexible teaching and event space

By Sharon Chao

NEWS EDITOR

Hayden Library is set to undergo renovations, with construction expected to begin in January 2020. The library will close at the end of the fall 2019 semester and reopen in fall 2020.

The renovations include a café, significant expansion of the 24/7 study space, greater variety of study spaces (for both individual and group work, with both quiet and conversation zones), and flexible teaching and event space, according to Brigham Fay, director of communications of MIT Libraries, in an email to The Tech.

"The world has changed substantially since Hayden was first built, along with the ways that people discover, consume, create, and share information. [MIT] Libraries wants to be responsive to these

changes and incorporate these new realities into physical library space," Fay wrote.

MIT Libraries staff and the Office of Campus Planning have recently completed pre-design activities with Kennedy Violich Architects.

"At 70 years old, Hayden is a prime candidate for renewal, and its architecture offers opportunities to reconfigure space without requiring a full renovation of Building 14," Fay continued. "Hayden also plays a key role on campus because of its prime physical location and size. It has potential to bring together members of the MIT community across departments and schools, in ways both formal and informal to support research and learning."

Ideas about renovations first began with the October 2016 report by the Task Force on the Future of Libraries, which led to the creation of the MIT Libraries Space Planning Group in December 2016. The group presented a report to Provost Martin A. Schmidt PhD '88 in April 2017 containing an overall vision for MIT's library spaces and specific recommendations for renovations, Fay wrote.

According to the group's website, it identified four primary functions of library space: holding (showcasing book collections more effectively); learning (having a variety of different spaces to accommodate the wide range of student needs); community (using the spaces to host community events) and creating (making sure that the spaces inspire creative work).

MIT Libraries is also currently exploring an active learning classroom for Barker Library that is flexible and can double as additional study space, according to Fay.

# Working group formed to rename GRT, GRA positions

A working group is looking to propose a unified name for the Graduate Resident Tutor and Graduate Resident Advisor positions, according to co-chair Jared Berezin in an email to *The Tech*.

Graduate Resident Tutor is the name used to describe graduate students who serve as mentors in the undergraduate dormitory communities they live with. Those who serve in similar roles in fraternities, sororities, and independent living groups are known as Graduate Resident Advisors.

The working group has been reaching out to members of the MIT community to solicit ideas for a better name that "more accurately reflects [GRTs'] role in residential communities," Berezin, who is also head of Random Hall, wrote.

The working group includes GRAs, GRTs, undergraduates, Division of Student Life staff, and heads of house, according to Berezin. In addition to proposing a new name, the group also aims to revise the GRA and GRT hiring agreements.

"I think everyone agrees that tutoring is not the main role of [GRTs]," Mary Tellers, a GRT and co-chair of the working group, wrote in an email to The Tech, but "the longevity of the term and the ubiquity of the "acronym makes that mismatch unimportant to most GRTs and students."

"Naming is difficult because there is no one word that fully encompasses the [GRT] role: resource, supporter, listener, adviser, etc.," Tellers continued.

— Melody Wu

#### **IN SHORT**

Wind chill as low as -14 °F is forecasted for today. Be careful and wear protective clothing when going outside.

Registration day is Feb. 4, and the first day of classes is Feb. 5. Good luck with the start of spring term!

Undergraduate registration for third quarter physical education classes will be open until Wednesday, Feb. 6 at 1 p.m.

**Groundhog Day is Saturday**. Let's hope the groundhog doesn't see his

Interested in **joining** *The Tech*? Stop by for dinner Sunday at 6 p.m. or email join@tech.mit.edu.

Send news and tips to news@tech.mit.edu.

#### **EXAMINING LOVE THROUGH DANCE**

Nederlands Dans Theater 2 stages an evocative exploration of love. ARTS, p. 5

#### WHAT NUCLEAR IS MADE OF

The Mesoscale Nuclear Materials Group hopes to optimize the materials used to make nuclear reactors. SCIENCE, p. 6



#### **SPREADING RUMORS**

The MIT Shakespeare Ensemble puts on their IAP show; we interview members of the cast and crew. ARTS, p. 5

#### **SHUTDOWN STORIES**

MIT researchers recount the shutdown's effect on their work. SCIENCE, p. 6

#### SECTIONS

Opinion	•	•	•	•	•	•	•	•		
Arts									.5	
Science									.6	
Fun Pag	e	S							.7	

2 THE TECH
THURSDAY, JANUARY 31, 2019

## Rules unclear on TIX scope, comments claim

Title IX, from Page 1

"This language implies that an institution is prohibited from moving forward under its own campus disciplinary procedures to address a violation of its own code of conduct for sexual misconduct if that conduct falls outside the boundaries of the proposed rule's definition," the ACE wrote. "We believe this is a serious mistake."

Different sections of the proposal also provide somewhat contradictory views on the issue, the statements noted, causing uncertainty as to whether universities would continue to be free to pursue complaints beyond the scope of the Title IX guidelines. It is unclear, for example, whether incidents that occur during school-sponsored study abroad programs qualify.

AICUM also took issue with the requirement that all evidence be shared with both parties for inspection. It wrote that the policy "could require institutions to share highly confidential information about a complainant, respondent, witness, or other third-party," which could "raise significant reputational and other concerns for the individuals involved."

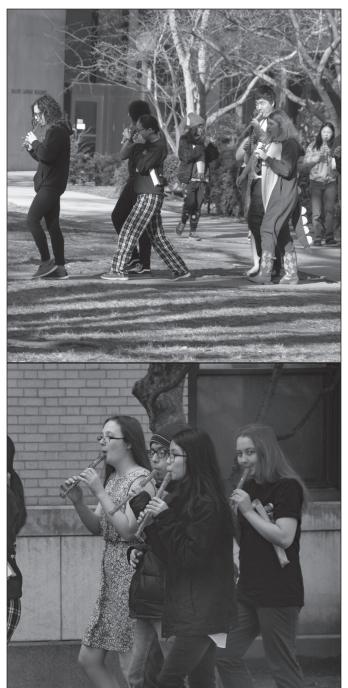
The ACE additionally outlined a number of ways in which the proposed regulations could positively affect institutions' abilities to address sexual harassment, such as clarifying that an institution may immediately remove a respondent from campus if they pose a serious risk to others, and providing more flexibility in how long the grievance process may take.

"We do not yet know how [the Department of Education] will respond to our feedback or when to expect final regulations," Barnhart wrote. "In summary, we do not believe that the proposal will achieve the Department's objective of promoting a fair process for all parties nor will it promote learning environments that are safe and free from sexual harassment and discrimination."



KEVIN LY—THE TECH

Chris "Petey" Peterson leads the baking of an approximately 600-pound peach pie as part of Bad Ideas Weekend 2019. Volunteers began helping construct the pie at daybreak Jan. 26.



An ensemble of recorder players parades the parallels of East Campus Jan. 26 playing complex pieces filled with overlapping

phrases of dissonance. The performance, part of Bad Ideas, culminated with the iconic "Hot Cross Buns."



KEVIN LY—T

One Bad Ideas event involved trying to bake 2<sup>n</sup> cookies where n = 13. After utilizing several kitchens throughout EC to maximize throughput, the effort produced approximately 2<sup>11</sup> cookies (2,048) by the evening of Jan 26.

Do you like **telling stories** about your life?

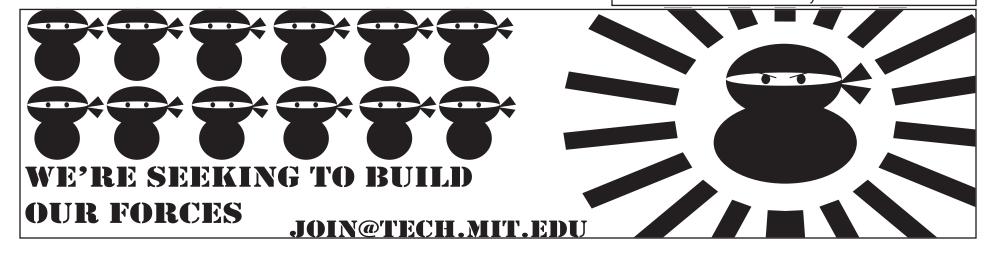


Are you dying to share your **latest discoveries?** 

Join **Campus Life @ The Tech** and share your stories with our 15,000+ readers!



E-mail join@tech.mit.edu



Thursday, January 31, 2019 THE TECH 3



# Got a lot on your mind?

Share some thoughts with us! Write for Campus Life. join@tech.mit.edu



# 3rd Annual **Data Science & Analytics Career Fair / Networking Night**

MIT Media Lab, 6th Floor Tuesday Feb 5, 2019 5:30-8:30pm

**FREE** (MIT ID required for entry)

To register & drop your resume, please visit: www.AnalyticsFair.mit.edu

> to bake 2^n cook<mark>ie</mark>s where n = 13. After utilizing several kitchens throughout EC to maximize throughput, the effort

MANAGEMENT

BUSINESS ANALYTICS

**OPERATIONS** RESEARCH CENTER

#### Companies attending include:

**Analysis Group Arrowstreet Capital Bain & Company** Bertelsmann **BMW Group Capital One** Citadel **Dell EMC** 

**Digitas Fidelity** 

Google DeepMind iRobot

**McKinsey & Company McKinsey QuantumBlack MFS Investments** 

**MIT Lincoln Laboratory** Oracle

Raytheon Sabre

**Starbucks Trip Advisor** 

Walmart Wayfair

... and more!

# 23rd MIT European Career Fair

Saturday, February 16th, 9 AM - 4 PM

Register Now



euro-career.mit.edu















































**Publisher** Charlie J. Moore G

**Editor in Chief** Emma Bingham '19

**Business Manager** Christopher Wang '19

**Managing Editor** Áron Ricardo Perez-Lopez '20

Executive Editor Patrick Wahl '18

NEWS STAF

News Editors: Sheila Baber '21, Sharon Chao '21, Jessica Shi '21; Features Editor: Whitney Zhang '21; Associate News Editors: Kaitlyn Hennacy '20, Zoe Anderson '21, Soomin Chun '22; Staff: Mark Goldman G, Anshula Gandhi '19, Billy Woltz '20, Sandhya Kalavacherla '21, Jocasta Manasseh-Lewis '21, Christina Warren '21, Rujul Gandhi '22; Meteorologists: Erik Lindgren G, Vince Agard '11, Lily Dove '18, Jordan Benjamin '19, Sarah Weidman '21.

PRODUCTION STAFF

Editors: Eber Nolasco-Martinez '20, Ivana Alardin '21, Jenny Chan '21; Associate Editor: Joanna Lin '22; Staff: Sara Wilson '20, Alvin Zhu '21, Nicole Teichner '22; Illustrators: Taksapaun Kittiakrastien '14, Max Evans '18, Jessie Wang '19.

OPINION STAFF

**Editors:** Steven Truong '20, Fiona Chen '21; **Staff:** Michael Beautyman G, Claire Lazar G, Keertan Kini '16, Isaac Silberberg '16.

SCIENCE STAFF

**Editor:** Nafisa Syed '19; **Staff:** Jordan Harrod G, Quinn Brodsky '22, Joanne Yuan '22.

SPORTS STAFF

**Associate Editor:** Ahaan Rungta '19; **Staff:** Souparno Ghosh G, Yida Wang '19, Yueyang Ying '19.

ARTS STAFF

Editors: Ivy Li '20, Torri Yearwood '21; Associate Editors: Ethan Vo '19, Johnson Huynh '21; Staff: Alexandra Sourakov '18, Lila Jansen '19, Mariam Dogar '20, Rona Wang '20, Erica Weng '20, Max Langenkamp '21, Lani Lee '21, Nyssa Miller '21, Leah Yost '21, Alana Chandler '22.

PHOTOGRAPHY STAFF

Editors: Mahi Shafiullah '19, Ethan Sit '21; Associate Editors: Alexander Sandberg G, Ho Yin Au '13, Sabrina Cheng '21; Staff: Adrian Butterworth '18, Jisoo Min '19, Lily Bailey '20, Damian Barabonkov '20, Amy Shim '20, Leon Yim '20, Johnny Bui '21, Adib Hasan '21, Sarah Wang '21, Shinjini Ghosh '22, Assel Ismoldayeva '22, Kevin Ly '22, Ping Xu.

CAMPUS LIFE STAFF

Staff: Chloe Yang '19, Patricia Gao '21, Tafsia

COPY STAFF

Copy Chief: Josephine Yu '20; Associate Copy Chiefs: Adira Balzac '21, Jonas Kantola '21; Staff: Yaseen Alkhafaji '21, Jiaxing Liu '21, Samuel Nitz '21, Maisha M. Prome '21, Kendall Yu '21, Ayomikun Ayodeji '22, Jack Dinsmore '22, Clinton Reid '22, Cindy Zhang '22, Sophia

BUSINESS STAFF

Advertising Manager: Thomas Wang '21; Staff: Angela Leong '18, Aaron Zeng '18, Catherine Looby '19, Marissa Steinmetz '19, Katherine Wang '19, Mindy Wu '19, Justen M. Holl '21, Sharon Lin '21, Adelynn Paik '21, Sophia Chan '22, Pranit Nanda '22.

TECHNOLOGY STAFF

**Director:** Jiahao Li '18; **Staff:** Greg Steinbrecher G. Kayva Ravichandran '20.

ADVISORY BOARD

Paul E. Schindler, Ir. '74, V. Michael Bove '83, Barry S. Surman '84, Deborah A. Levinson '91 Karen Kaplan '93, Saul Blumenthal '98, Frank Dabek '00, Satwiksai Seshasai '01, Daniel Ryan Bersak '02, Eric I. Cholankeril '02, Nathan Collins SM '03, Tiffany Dohzen '06, Beckett W. Sterner '06, Marissa Vogt '06, Andrew T. Lukmann '07, Zachary Ozer '07, Austin Chu '08, Michael McGraw-Herdeg '08, Marie Y. Thibault '08, Ricardo Ramirez '09, Nick Semenkovich '09, Angeline Wang '09, Quentin Smith '10, Jeff Guo '11, Joseph Maurer '12, Ethan A. Solomon '12, Connor Kirschbaum '13, Jessica J. Pourian '13, Aislyn Schalck '13, Anne Cai '14, Jessica L. Wass '14, Bruno Faviero '15, Kali Xu '15. Leon Lin '16, Kath Xu '16, Anthony Yu '16, Colleen Madlinger '17, Lenny Martinez Dominguez '17, William Navarre '17, Katherine Nazemi '17, B. D. Colen.

EDITORS AT LARGE

**Brand Manager:** Nathan Liang '21; **Contributing Editor:** Vivian Zhong '19.

PRODUCTION STAFF FOR THIS ISSUE

**Editors:** Eber Nolasco-Martinez '20; **Staff:** Nicole Teichner '22; **Copy Editors:** Josephine Yu '20, Adira Balzac '21, Ayomikun Ayodeji '22, Sophia Zhi '22.

The Tech (ISSN 0148-9607) is published on Thursdays during the academic year (except during MIT vacations) and monthly during the summer by The Tech, Room W20-483, 84 Massachusetts Avenue, Cambridge, Mass. 02139. Subscriptions are \$50.00 per year (third class). POSTMASTER: Please send all address changes to our mailing address: The Tech, P.O. Box 397029, Cambridge, Mass. 02139-7029. TELEPHONE: Editorial: (617) 253-1541. Business: (617) 258-8324. Facsimile: (617) 258-8226. Advertising, subscription, and typesetting rates available. Entire contents © 2019 The Tech. Printed by Graphic Developments, Inc.

**LETTER TO THE EDITOR** 

# From greatness to gratuitousness

Fewer than 100 years ago, a generation of Americans persisted through a Great Depression and World War to establish the United States as the preeminent country in the world across multiple dimensions: economic productivity, elementary- and university-level education, and military capability. Many of our grandparents contributed to what has been called the "Greatest Generation," one exemplified by personal responsibility, humility, work ethic, and prudent saving.

In 1960, John F. Kennedy announced that "the torch has been passed to a new generation of Americans, born in this century, tempered by war, disciplined by a hard and bitter peace, proud of our ancient heritage, and unwilling to witness or permit the slow undoing of those human rights to which this nation has always been committed, and to which we are committed today at home and around the world."

Undoubtedly, we often romanticize the America of that day and age, but the hope and optimism in President Kennedy's rhetoric were clear. His vision for America was one of progress, one where every generation feels a duty to strengthen American achievement and preserve our moral leadership among the community of nations.

Since then, the torch has been passed once more to the baby boomers (my generation), and I'm sad to report we have hardly been able recipients. The world we leave our children pales in comparison to that which we inherited from our forefathers. It's a world that's more than one degree warmer, about which we have done little despite being one of the highest per-capita emitters of carbon dioxide. The United States is now a country where, compared with 1960, we live in homes more than twice as large, consume 25 percent more calories, are 30 pounds heavier, and spend 30 times more on durable consumer goods.

Even those who preach the value of restraint and give of their money and time to benefit or educate others seem unable to escape the vice of the Rapa Nui of Easter Island, whose moai serve as a testament to the excesses of material glorification. The mansions occupied by the likes of Al Gore and Bill Gates may well be run by solar power, but that hardly offsets the environ-

mental cost of home construction (in one case a home of 66,000 square feet -56 times larger than the average home of the greatest generation) — to create shrines that authenticate their personal wealth.

So, what term describes us? The "Worst Generation" seems too easy. Maybe, to continue in the spirit of alliteration, we should acknowledge the title of the "Gratuitous Generation," one that has glorified unwarranted excesses. Our careless pursuit of the superfluous has manifested in a manic, consumer-driven culture, fueled by an indefensible high level of carbon emissions. It is these self-inflicted wounds that put our entire American experiment at risk.

In both repairing America's reputation and sparing our planet from further harm, the MIT community possess a powerful voice to drive positive progress. Our students and alumni must remain on the front-lines of devising technology that addresses the root cause of our changing climate and adapts vulnerable people to worsening climate impacts. But more than that, we must set an example and new expectation for the American lifestyle, because a worship of the material and a carbon neutral existence cannot go hand-in-hand.

— Charles Theuer '85

#### **OPINION POLICY**

**Editorials** are the official opinion of *The Tech*. They are written by the Editorial Board, which consists of Publisher Charlie Moore, Editor in Chief Emma Bingham, Executive Editor Patrick Wahl, Contributing Editor Vivian Zhong, and Opinion Editors Steven Truong and Fiona Chen.

**Dissents** are the signed opinions of editorial board members choosing to publish their disagreement with the editorial.

Letters to the editor, columns, and editorial cartoons are written by individuals and represent the opinion of the author, not necessarily that of the newspaper. Electronic submissions are encouraged and should be sent to *letters@tech.mit.edu*. Hard copy submissions should be addressed to *The Tech*, P.O. Box 397029, Cambridge, Mass. 02139-7029, or sent by interdepartmental mail to Room W20-483. All submissions are due by 4:30 p.m. two days before the date of publication.

Letters, columns, and cartoons must bear the authors' signatures, addresses, and phone numbers. Unsigned letters will not be accepted. *The Tech* reserves the right to edit or condense letters; shorter letters will be given higher priority.

Once submitted, all letters become property of *The Tech*, and will not be returned. Letters, columns, and cartoons may also be posted on *The Tech*'s Web site and/or printed or published in any other format or medium now known or later that becomes known. *The Tech* makes no commitment to publish all the letters received.

**Guest columns** are opinion articles submitted by members of the MIT or local community.

#### **TO REACH US**

The Tech's telephone number is (617) 253-1541. Email is the easiest way to reach any member of our staff. If you are unsure whom to contact, send mail to <code>general@tech.mit.edu</code>, and it will be directed to the appropriate person. You can reach the editor in chief by emailing <code>eic@tech.mit.edu</code>. Please send press releases, requests for coverage, and information about errors that call for correction to <code>news@tech.mit.edu</code>. Letters to the editor should be sent to <code>letters@tech.mit.edu</code>. The Tech can be found on the World Wide Web at <code>http://thetech.com</code>

# Do you have a question for President Reif?

Join *The Tech*'s news department! *join@tech.mit.edu* 

# **Likeness of love**

#### Nederlands Dans Theater 2 presents four explorations into human connection

#### **Nederlands Dans** Theater 2

**Presented by Celebrity Series of Boston** 

**Boch Center Shubert Theatre** 

Jan. 26-27

#### By Carolyn Fu and Daniel Rodríguez Amor

It was not about loving. It was about making love: mechanically, practically. Then it was about the performance of love; a farce between partners, put on first for outsiders, then for one another as well. Finally, it was about the experiment of love: a bewildering process of trial and error.

In their second visit to Boston, Nederlands Dans Theater 2 (NDT2) staged four exquisite treatises of how we try to love one another. As the younger, more experimental sister to the Nederlands Dans Theater, NDT2 was originally founded with the goal of feeding young talent into the main company. However, it soon took on a life of its own, attracting choreographers to create their most exploratory work on the company's blank canvas of impeccably skilled, vibrant young dancers. As the evening clearly demonstrated, the classicallytrained dancers possess a superlative ability to soak in any form of choreographic language, to convey the full volume of each choreographer's unique message.

In the opening piece by Edward Clug, dancers use his extraordinary movement vocabulary to look for the titular mutual comfort in one another. They interlock with one another, pushing and pulling like mechanisms in search of resonance, before disengaging for their next potential partner. Clug enables this disinterested functionality through the use of pas de deux so seamless that it is hard to tell whether one dancer is lifting his partner off the ground, or if she is in fact pulling him into the air — draining their relationship of all intentionality.

Sol León and Paul Lightfoot then explored the performative aspects of love through a piece that was at once comedic and dark. Set against a background of generic cabaret and salsa tunes, Sad Case is a parody of the ornate mating dances we put on and an exposé of their soul-crushing nature. Flirtatious scenes, taken straight out of a club, are portrayed in jerky and exaggerated ways with adages pushed to an almost vulgar degree. Throughout this, the dancers maintain macabre expressions, almost shocked at what their bodies are

In a similar fashion, Wir sagen uns Dunkles conjures the mating dances of pi-



Dancers from Nederlands Dans Theater 2 convey their unique language of love.

geons, through an incoherent assemblage of short pieces. Dancers' motions grow increasingly stuttered, and their props and costumes (from shimmering pants to hankerchiefs to fake eyelashes) grow increasingly illogical. Like birds, they mindlessly employ the next shiniest object at hand to catch the attention of a potential mate.

Lastly, León and Lightfoot returned with perhaps the most thematically bewildering piece of the night. SH-BOOM! portrayed a series of male dancers in their underwear

(or less) trying to assert themselves within an oppressive coterie of women in severe black dresses. They navigate one another, in both triumph and fear, and in the end their relationship is even more of a question mark than when it began.

Overall, the evening was rich with possible interpretations enabled by an innovative set of choreographers let loose on a cast of deft dancers. We left the theater inspired, invigorated, reflective, and in eager anticipation of NDT2's Boston return.

#### THEATER REVIEW

# Rumor has it...

#### ...that you shouldn't spread rumors — they may come true



Ernie (Kim Dauber '18) picks up the phone.

By Erica Weng

Eight overdramatic men and women, a suicidal deputy mayor, and an unruly gun converge one night during a fated anniversary party. We all know what ensues: Rumors galore. This past weekend, MIT Shakespeare Ensemble nulled off the farcical hilarity that was the IAP performance of Neil Simon's Rumors. Full of wit, character, and uproarious laughter, the show is yet another example of the humor that the Ensemble is capable of.

The play opens in a living room the night of the 10th anniversary houseparty of Charlie and Myra Brock, the deputy mayor of New York City and his wife. Ken Gorman (John Bond '19) — Charlie's lawyer and best friend — and Chris Gorman (PJ Hernandez '20) — Ken's wife — are the first partygoers to arrive. When they pull up to Charlie's house, they hear a gunshot — Charlie had just tried to shoot himself in the head but luckily only managed to blow off his earlobe. Being a paranoid lawyer and wanting to protect the reputation of his best friend, Ken brainstorms with Chris how to keep Charlie's attempted suicide a secret from the other partygoers. But as more couples arrive — Lenny and Claire, Glenn and Cassie, Ernie and Cookie — the scene become too suspicious to keep the truth under covers. What is real, and what is mere rumor? As truth and lie banter back and forth across the stage, the audience can hardly tell one from the other.

Perhaps one of the most hilarious traits of Rumors is its eccentric cast of characters eight minds with chaos enough to spin up tall tales, with reason enough to notice when something is amiss, and with heart enough to strike a chord with audience members. Eryn Gillam '21, director, shares her vision: "I really wanted to focus on having balanced characters. It's easy to play most of the characters as just absurd, but I wanted to make sure these people seemed like they could be real despite all the chaos of the play." Hunter Richardson '19 loved

playing the "sassy and pretentious" Claire saying, "She's always mischievously playing with Lenny or lifting an eyebrow at Ernie. Her reactions to every person are different, but still playful, sassy, and sarcastic like she just can't help herself... She's truly an unstoppable force." Alena Culbertson '22 plays Cassie, who is always too used to getting what she wants, saying that her favorite scene was, "[...] when I enter and immediately start flirting with another woman's husband. It's such a bold move, and the lighting and hair changes really helped me embody this pissed-off woman who was doing a lot of things I would never do in real life." Joseph Bonavia '22, the actor behind the blood-and-thunder Lenny, saying, "Even when he was calm he was still such a melodramatic character... his blunt and often rude demeanor was a fun challenge for me. Lines like 'Bang! Bang! Ya bastard!' were a lot of fun."

Many moving parts had to come together in a mere three weeks for the show to be a success. "From having lights and costumes and a set to locating a performance space and publicizing the show, the behind-thescenes of how a production happens involves a lot of communication and cooperation," says producer Anjali Nambrath '21 Johnson Huynh '21, co-technical director alongside Montse Garza '22, explains how making the coffee table required more effort than expected; as some boards for the table surface were bent, so he had to cover it with other boards. "I think that audience members definitely didn't notice how there seemed to be two-by-fours sandwiched in between larger pieces of wood for the coffee table. I, on the other hand, still go to sleep knowing that my lovely coffee table's true surface wouldn't see the light of day." Set designer James Drayton '21 comments on how set designing for this show was rather different than designing for a Shakespeare show: "My challenge was less to say 'here's

#### Rumors

**Written by Neil Simon** 

**Directed by Eryn Gillam** '21

Performed by the MIT **Shakespeare Ensemble** 

W97 black box theater

Jan. 25–26

all the stuff,' and more to say 'the script tells me what it needs; how do I arrange it in the space to make it pretty to look at?'

Despite the time crunch, the cast and crew wove so many little details into the show that escape your notice if you aren't paying close attention. For example, as Eryn explains, "Myself and the actors tried to add small background action to make the scenes feel dynamic. Officer Pudney has only two lines in the play, but I wanted the actress to make her presence evident in the background. The actress playing Pudney [Cami Ramirez-Arau '16] and I spent a while brainstorming things she could do in the background to be present despite her silence. If you paid attention, you could see her eat a pretzel, poke around in the jackets, try to open the basement, and sometimes take a drink despite being on the job. It was the atmosphere of collaborative humor that lead to most of these ideas... so much of the play emerged organically from what started as jokes in rehearsals."

All in all, an outstanding performance from the Ensemble. Keep your eyes peeled for their upcoming Spring semester performance of the Shakespearean comedy, Measure for Measure!

Buffers Im-Python Edit Options Tools Python from new\_skills import \* def learnMarketableJobSkills(): return linux, OSX, javascript, applescript, perl, python, PHP if self.interest == True:
 print "E-mail join@tech.mit.edu" ---:---F1 joinTechno.py 

LAB SPOTLIGHT

# Towards the future of nuclear energy: materials

The MIT Mesoscale Nuclear Materials Group aims to understand material performance for safe use of nuclear energy

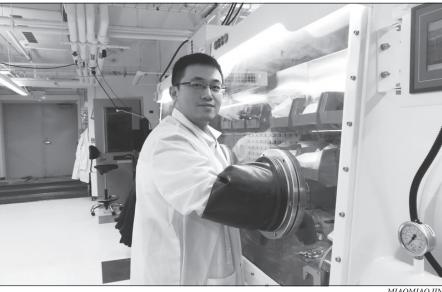
By Miaomiao Jin

Clean energy is the key to sustainability for present and future generations. One form of clean energy, nuclear energy, comes from the splitting of atoms, during which a huge amount of energy can be harvested to generate electricity. In the U.S., nearly 20 percent of electricity is generated through nuclear power, and it has been more 60 years since it became a part of the energy portfolio. To maintain sustainability, reduce carbon emissions, and address the concern of global climate change, nuclear energy has played and will continue to play a significant role in the future. For nuclear energy to make further improvements on economics and safety, a new generation of reactor designs (Gen-IV) have been pursued.

Materials have always been a key aspect in developing the advanced reactor systems where safety and durability are of top priority. Nuclear reactors present an exceptionally harsh environment for materials due to a combination of high temperature, serious corrosion, and intensive radiation. The Mesoscale Nuclear Material (MNM) Group, built in 2013 and led by Michael P. Short, aims to address problems of material performance by reinventing our understanding and measurement techniques of nuclear materials degradation. The MNM lab focuses on developing new methods and experimental equipment to simulate material behavior in real systems that will push forward the frontier of material understanding and design towards clean, carbon-free, and affordable nuclear energy resources for the future.

Weiyue Zhou G, a fifth-year PhD student in the group, is determined to take the initiative of resolving the unknowns in a Gen-IV reactor design known as the molten salt reactor (MSR), which is designed with ultra-reliable safety features such as non-proliferation and accident tolerance. He said, "As MIT graduate students, we are always aiming at the future, and I want to do something that will benefit society." Since the study is first of its kind, and there are a lot of challenges resulting from the extreme environment (high temperature and intense radiation), he decided to build an experimental facility from scratch. Zhou wanted to uncover the mystery of structural material performance, specifically the material corrosion process in molten salt with intense radiation. Such understanding is of utmost importance in assessing material reliability during reactor operations. To investigate this, Zhou designed a detailed blueprint of the experimental facility, with concurrent corrosion and irradiation to the material samples at 650 °C, which approximates the operating temperature in MSR. The neutron radiation field is mimicked using a proton beam. For the safety of the experimentalists, not only do they need to consider the high temperature, but also the radiation issue to human health. The harsh conditions require additional shielding so that the gamma rays produced during the experiment will not pose a health concern. With three years of persisting efforts devoted to optimizing the design and resolving technical problems based on various failed practices, the facility finally made its debut with a successful test on alloys.

The experiment uses a particle accelerator to generate high energy protons and pass them through a metallic sample foil. Protons penetrating through the sample



Weiyue Zhou is a graduate student in the Mesoscale Nuclear Material Group investigating the unknowns of molten salt reactors

introduce radiation damage to the sample. At the other side of the sample foil, a reservoir holds molten fluoride salt at 650 °C. Overall, the molten salt corrodes the materials, under the influence of proton irradiation damage. Zhou performed multiple experiments to elucidate temperatureinfluenced corrosion rates and the mechanisms of irradiation-affected corrosion in molten salt.

From the preliminary results, the group found that proton irradiation decelerates the corrosion of model alloy samples in molten salt. It is highly unexpected as radiation normally exacerbates material performance significantly. Zhou noted that if further experiments can confirm that radiation slows down structural material corrosion in MSR, then one could conduct testing with just a corrosive experimental condition to evaluate material corrosion resistance as the worst scenario. Using a single condition would significantly speed up the material development cycle for MSR, as radiation experiments require more demanding treatment due to reactivity. This facility developed by MNM readily allows for a rapid, inexpensive, and safe testing for candidate structural alloys for MSRs. Zhou emphasized, "Our work effectively pushes forward the frontier of material understandings in this field amid the increasing popularity in MSR nowadays."

# What happens to science when the government closes?

MIT faculty and students face research roadblocks during the government shutdown

By Jordan Harrod

STAFF WRITER

The longest government shutdown in U.S. history

After five weeks of confusion and protest, President Trump relented on his demands for border wall funding when airports across the Northeastern seaboard were forced to temporarily ground their flights due to lack of FAA and TSA employee attendance. The shutdown forced several research agencies to halt their work, including NASA, the FDA, the NSF, the USDA, NOAA, and NIST. It also disrupted the work of research agencies not directly impacted by the shutdown, including the NIH and the DOE, as much of their work necessitated access to agencies that were closed.

It should come as no surprise that MIT researchers did not make it out unscathed. Sixty-six percent of funding for research on MIT's campus is provided by the federal agencies, with much of that funding coming from the NSF and NOAA. Proposals for new or renewing federal funding were not processed during the shutdown,

leaving researchers in limbo and potentially without adequate funds to support current projects. Students directly funded by these agencies were in hot water both in the lab and at home, as some did not receive paychecks during this time. And although the government has now reopened, the shutdown has and will continue to have a lasting impact on their work.

MIT researchers wrote to *The Tech* to recount how they were impacted by losses of funding, cancelled conference sessions, missed opportunities for collaborations, and more:

"I'm a post-doc fellow at the Whitehead Institute, and I'm supported by an NSF grant. Given the way my feladministered. I haven't been able to access my fellowship funds (which pay my stipend) since the shutdown started. My research per se hasn't been greatly affected, as the Whitehead has been very supportive and helped me to set up a way for me to access my funds for research before the shutdown started.

However, I recently returned from the Plant and Animal Genome conference, and there were plenty of signs of the shutdown evident there: canceled sessions and talks, and people not being able to even talk about their research in one-on-one conversations."

> – Becky Povilus, Postdoctoral Fellow in the Gehring Lab, Whitehead Institute

"The shutdown has prevented me from seeing the reviews of my most recent proposal, and that in turn has prevented me from discussing the situation with my program manager (who can't talk to me anyway during the shutdown). There is a Feb. 15 proposal deadline (which may be extended, but who knows?), which would be my last chance to get a proposal in before all of my research funding vanishes this summer."

> — Edward Boyle, Professor of Ocean Geochemistry in the Department of Earth, Atmospheric, and Planetary Sciences

"Our lab, the MIT Civic Data Design Lab (led by Sarah Williams) contributed to an exhibit on the future of transportation at the Cooper Hewitt Design Museum in NYC, on display through March 31. Because the museum is operated by the Smithsonian Institution, a federal entity, it has been closed since Jan. 2. This means that for four weeks, our exhibit has been closed to the public, and we have been unaware whether viewers would have the opportunity to see it again before the end of its run."

Griffin Kantz, Masters Candidate in City Planning in the Department of Urban Studies and Planning

"For my thesis, I am researching the barriers to socioeconomically diverse visitation at National Park Service Units, As my thesis proposal plains, I obtained MIT funding to support my research to travel out to Los Angeles for case study research. I planned to meet with NPS staff in LA. but was unable to do so due to the shutdown.

I was also planning to visit NPS staff in DC to research ways to integrate my findings into park planning practices. Due to the shutdown, this visit was canceled. My thesis was majorly impacted by the shutdown."

- Tessa Buono, Masters Candidate in City Planning in the Department of *Urban Studies and Planning* 

While some of these losses can be recovered, the Continuing Resolution passed by the Senate and signed by the President will only save them for three weeks. If Congress cannot pass another spending bill that funds the government past Feb. 15, the government will shut down once more.

Want to be Editor in Chief of *The Tech*? Most EICs start as news writers.

THURSDAY, JANUARY 31, 2019 THE TECH 7

## Duck

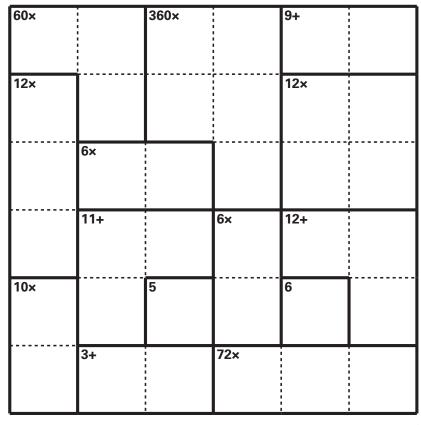
Solution, page 8

7			8		6			
	6	1		3				4
				4	1			8
9	5	2			4		8	
	8		5			2	3	9
5			6	7				
<b>6 5</b>				9		3	7	
			4		3			6

Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

# **Sparrow**

Solution, page 8



Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1-6. Follow the mathematical operations for each box.

# Not All at Once by Sally R. Stein

Solution, page 8

#### **ACROSS**

- 1 50-yard footrace
- 5 Recedes, as the tide
- 9 Walk through water 13 "Do \_\_ others . . .'
- 14 Tightly stretched
- 15 Brother of Cain
- 16 When planes are due in: Abbr.
- 17 Helen of \_\_ (mythical abductee)
- 18 Pekoe and Earl Grey 19 Gradually, with small
- amounts
- 22 Take advantage of
- 23 Source of solar power 24 Stack, as of papers
- 27 Ambulance destinations:
- 30 Remove, as a tree branch
- 35 "Without further \_\_ . . . '
- 36 Farmer's products
- 38 More uncommon
- 39 Gradually and reliably
- 42 Indian abode in westerns
- 43 Spew lava

- 44 Bullfight cheer
- 45 State with confidence
- 47 Tall guys' sports league: Abbr.
- 48 Cold War adversary: Abbr.
- 49 Do-it-yourselfer's package 51 Roads that often cross
- 53 Gradually, as to pay off a
- 61 Center of an apple
- 62 Operatic solo
- 63 "Very funny!" 64 Feature of a tied necktie
- 65 General standard
- 66 Days before holidays
- 67 Cravings
- 68 Wild guess 69 Centers of hurricanes

#### **DOWN**

- 1 Sword fight
- 2 Prefix meaning "against"
- 3 Sculpture often in parks
- 4 Throws a party
- 5 Suffix for kitchen

- 6 Sharp point on a ranch's wire fence
- 7 Harbor markers
- 8 Tablet computer implement
- 9 Light bulb measure
- 10 Aid and \_\_ (assist in wrongdoing)
- 11 Hand out poker hands
- 12 Otherwise
- 20 Feeling suspicious
- 21 Doing the same old thing
- 24 Ravioli or spaghetti 25 Does nothing
- 26 Circular road paths
- 28 Judge's attire
- 29 Reject rudely
- 31 Armed conflict
- 32 Black-and-white cookies
- 33 Chops down, as a tree
- 34 Chicken cooked in hot oil
- 36 Courtroom assistants 37 Movie ticket remnant
- 40 Tiny
- 41 Muscle twitch
- 46 Business moguls
- 48 Admiral's employer: Abbr.
- 13 15 16 19 24 | 25 | 26 35 36 40 42 44 45 49 51 52 62 63 64 65 66
- 50 Fortune-teller's \_\_ cards
- 52 Giggling sound
- 53 Disgusting, to a child
- 54 "\_\_ of your business!"
- 55 Remove clothes wrinkles 56 Butterfly-catching
- 57 Former Italian coin
- 58 Baby sheep

implements

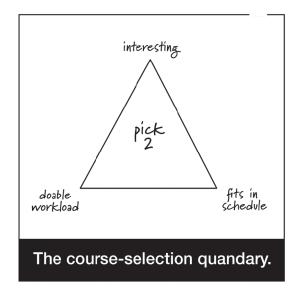
59 "My country, tis of \_\_ . . ."

NEUNFUNEUN FUNEUNFUNEUNFUNEUNFUNEUNFUNEUNFUN

60 Backtalk

## **Start-of-semester** woes

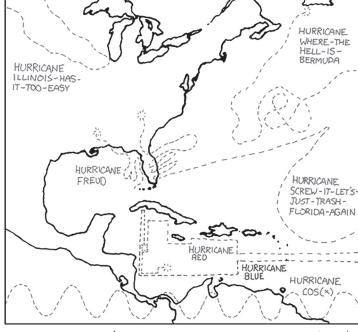
by Samyu Yagati





roe

## [453] Upcoming Hurricane



Express, but aimed a bit more to the west. It's just a matter of time. York and flooding Manhattan - something like the 1938 Long Island I'd like to see more damage assessments for hurricanes hitting New DO YOU WANT TO BE LIKE SHERLOCK HOLMES?

THE TECH IS LOOKING FOR INVESTIGATIVE REPORTERS.

DO YOU LIKE ASKING TOUGH QUESTIONS?

DO YOU ENJOY NOSING AROUND AND COLLECTING EVIDENCE?

IF SO, WE WANT YOU ON OUR TEAM!

We are a loving, local, professional couple (Harvard grad 2008, MIT Ph.D 2005)

seeking a special woman to help build our family

If you are a college-educated (undergrad or grad),

healthy, attractive caucasian woman age 21-29, please contact our representative at Iwagner@csedinc.com, or call (508) 460-0400.

Generous compensation provided.

No travel required.

give the gire of h

JOIN@TECH.MIT.EDU

Become an Egg Donor







#### Solution to Duck

2	1	7	4	8	3	5	9	6
6	4	8	1	9	5	3	7	2
5	3	9	6	7	2	8	4	1
4	8	6	5	1	7	2	3	9
1	7	3	9	2	8	4	6	5
9	5	2	3	6	4	1	8	7
3	9	5	7	4	1	6	2	8
8	6	1	2	3	9	7	5	4
7	2	4	8	5	6	9	1	3

#### Solution to Sparrow

from page :

6	2	3	1	4	5
3	5	6	4	1	2
4	6	1	5	2	3
1	3	4	2	5	6
2	4	5	3	6	1
5	1	2	6	3	4

#### Solution to Crossword

					fr	om	pa	ige						
	D	Α	S	Н		Е	В	В	S		W	Α	D	Е
	U	Ν	Т	0		T	Α	U	Т		Α	В	Е	L
	Е	Т	Α	S		T	R	0	Υ		Т	Е	Α	S
	L	T	Т	Т	L	Ε	В	Υ	L	T	Т	Т	L	Ε
			U	S	Ε			S	U	N				
Р	Τ	L	Ε		Е	R	S		S	Α	W	0	F	F
Α	D	0		С	R	0	Р	S		R	Α	R	Ε	R
S	L	0	W	L	Υ	В	U	Т	S	U	R	Ε	L	Υ
Т	Ε	Р	Ε	Ε		Е	R	U	Р	T		0	L	Е
Α	S	S	Ε	R	T		N	В	Α		U	S	S	R
				κ	Т	T			S	T	S			
П	N	T	N	S	Т	A	L	L	M	E	N	Т	S	
С	0	R	Е		Α	R	ī	Α		Н	Α	Н	A	
v	_		=		N		É	24		=	1/		6	

#### 15,745 SF office space in Cambridge with parking

#### 810 Memorial Dr Cambridge Fl 2 | Available for lease in April 2019

At the crossroads of MIT, Harvard and Boston University

24/7/365 access FOB key; Elevator Handicap access

Fitness center Community room

Kitchen

Near Whole Foods, Dunkin Donuts, Trader Joe's, Alive & Kicking Lobsters, Riverside café, and Micro Center

Close to the Charles River bank, 5 parks



At the corner of River St and Memorial Dr. near the Cambridge exit ramp off Mass Pike 90

Garage parking 2/1,000 bike rack, Zipcar

0.7 mile to Central Square T stop on the MBTA red line

Bus lines nearby:
64 (Oak Square —
University Park or
Kendall MIT)

70 (Cedarwood — Central Square)

70A (North Waltham — Central Square)





# **JOIN**

Contact: Patrick Verbeke | www.ValtiCommercial.com Tel: +1-617-230-3638 | Email: Patrick@ValtiRealEstate.com

# MIT Federal Credit Union and Earn \$500!\*

Become a new member (between 1/15/2019-2/28/2019) and you'll receive \$500 when you close on an auto loan.\*



#### AUTO LOANS

Rate as low as

- Refinance a loan from another institution
- Take advantage of President's Day special auto prices
- Great deals on auto insurance, too!

#### **READ MORE & APPLY NOW!**

mitfcu.org/*Earn\$500* 

TRUSTAGE® AUTO INSURANCE MIT Federal Credit Union members get special offers. To get quotes or just explore your options, visit TruStage.com

\*Offer restricted to new members joining between 1/15/2019 and 2/28/2019. To receive the \$500, the new member must close on an auto loan before end of business 2/28/2019. \$500 bonus will be deposited into member's MIT FCU checking account within 30 days of loan funding. Autopay to the loan from an MIT FCU checking account is encouraged.

\*\*APR = Annual Percentage Rate. Rate indicated is valid as of January 15, 2019. Actual rate may vary based on individual creditworthiness and is subject to change at any time. The rate indicated represents the best credit, a 60 month term and a 0.25% discount requiring Smart Money Rewards (SMR) membership. To qualify for SMR membership, MIT FCU must receive your current net pay, pension, or Social Security via direct deposit in excess

of \$100. If at any time your Checking Account is closed or becomes inactive (zero transaction(s) within the past 90 days or direct deposit is canceled) the rate will be increased by 0.25%. Direct deposit must be set up within 90 days. Other rates may apply for longer terms. The payment for a loan of \$20,000 for a 60 month term at 2.74% APR is \$357.20. The monthly payment for a loan of \$20,000 for a 60 month term at 2.99% APR without Smart Money Rewards is \$359.40 Some restrictions may apply. Existing MIT Federal Credit Union auto loans are not eligible for refinance. Payment of the \$500 bonus may result in tax implications. Please check with your tax adviser.

© Copyright 2019, TruStage. All Rights Reserved.