



ANSELMO CASSIANO—THE TECH

A researcher tests an augmented reality device at AR in Action 2017, a summit held at the Media Lab Jan. 17 and 18.

# Death and Mayhem Team won Mystery Hunt in 18 hours

By Isabelle Phinney

MIT's annual Mystery Hunt, a puzzle-solving competition, took place over Martin Luther King Jr. Day weekend. Ninety-seven registered teams competed to solve puzzles in order to find a coin hidden on campus.

Mystery Hunt is designed and run by the previous year's winning team so that no team may win two consecutive years in a row. The team "Setec Astronomy" took charge of this year's hunt and titled it "Monsters et Manus."

The hunt followed the general theme of the role-playing game Dungeons and Dragons. An evil being named Mystereos Cantos, an anagram of Setec Astronomy, possessed the Dungeon Master, imprisoning the players in the game.

The hunt could be completed without solving every single puzzle, which allowed both large and small teams to succeed. Puzzles were released in rounds, allowing teams who had not completed enough puzzles to progress and to still see and attempt most of the puzzles in the hunt.

Metapuzzles (metas) were divided into character, quest, and item categories. Solutions to individual puzzles in a round provided the components to solve the metapuzzle. The solution to a metapuzzle was in the form of a phrase. Once a team solved enough puzzles to figure out the solution to the metapuzzle, the team could unlock new puzzles or gain rewards.

Setec Astronomy designed 14 metas. Typically, puzzles and metas cover a broad range of topics but often include themes of MIT culture and history. This year's metas required knowledge of chemistry, Shakespeare, and musical modes, among other things.

For example, the solutions to the individual puzzles in the Despondent Dynast metapuzzle were words whose letters could be arranged into

winning hands, sans one letter, of the Chinese game Mahjong. The missing letters spelled out the solution, "Find a fourth."

Because teams varied in size from nearly 200 to less than 10, with an average size of 30, the design team needed to write puzzles accessible and enjoyable to all teams. Setec Astronomy emphasized writing solvable puzzles, with average solve times ranging from 32 seconds for the puzzle "Fruitless" to 21 hours for "Tree Solve."

Generally, larger teams progressed farther into the game. Overall, 29 teams completed the character end game, which required solving all the character metapuzzles. Seventeen of these teams completed the entire hunt and found the coin.

The winning team, Death and Mayhem, took only 18 hours to find the coin, faster than that statistic's average over previous hunts.

Setec Astronomy also included personal interactions in puzzles and visited teams to help with puzzles and keep track of progress. Some metapuzzles needed to be completed in person at a specific location and involved interaction with Setec Astronomy members.

Mystery Hunt began in 1981 and brings alumni from all over the U.S. to participate. Setec Astronomy selected the theme in March of last year and put approximately 25,000 hours into designing and running the puzzle hunt.

Mystery Hunt's budget typically runs in the range of \$10,000. This year, sponsors included Empirical, an artificial intelligence startup; Jobcase, a job search company; and Your Move, a moving company. The hunt was also sponsored by and hosted on Amazon Web Services. In addition, the MIT Large Event Fund and the UA Finboard provided financial assistance.

Puzzles and solutions may be accessed at [solutions.monsters-et-manus.com](http://solutions.monsters-et-manus.com).

## Handful of MIT students to protest presidential inauguration in D.C.

At least a dozen MIT students are getting ready to protest the inauguration of President-Elect Donald J. Trump in Washington, D.C. this Friday.

In a meeting Jan. 17, a group of around 12 students shared tips on how to deal with tear gas, arrest, and digital surveillance. The overall sentiment was one of deep distrust of the police: "they are not looking to not arrest you," a participant said, to the laughter of the room.

A few international students also expressed concerns about effects that participating in a protest would have on their visa status.

Although they are helping each other with logistics and sharing information, the students will go their separate ways in D.C., rather than stay as a group.

—Olivia Brode-Roger

# Institute finalizes Volpe site exchange MIT to develop 14 acres of land

By Emma Bingham

STAFF REPORTER

MIT and the U.S. General Services Administration finalized a \$750 million agreement on Wednesday that will give the Institute access to a 14-acre parcel of land near Kendall Square. In exchange, MIT will construct a federal building on the land.

The space is currently the site of the U.S. Department of Transportation's Volpe National Transportation Systems Center. It is located on Broadway across from the Marriott — a four minutes' walk from the Kendall MBTA station. It currently comprises two parking lots and six buildings, the most prominent of which is a tall office tower.

MIT has plans to redevelop the space, which will feature housing, retail, commercial office and lab space, and public gathering space.

President L. Rafael Reif said he envisions that the development will turn Kendall Square into a neighborhood with an "irresistible personality," where people want to "live, work and play."

Under the agreement with the GSA, MIT will construct a new fed-

eral building on four acres of the Volpe site. This is expected to take four years. Afterward, MIT will get access to the remaining ten acres.

The city of Cambridge's Kendall Square study, published in 2013, noted that the Volpe site contained "significant unrealized development potential."

The Volpe Center was built in the 1960s for use by NASA, but transferred to the DOT in 1970. DOT was seeking to modernize the facility, but there were no federal funds appropriated to do so. Instead, DOT sought an exchange partner who would help them build a new facility. In return, the partner would have the opportunity to develop what remained of the campus.

For the project to go forward, the value of the Volpe Center campus given to the exchange partner had to be equal to the cost of developing the new buildings.

Last November, the GSA selected MIT as its partner to redevelop the Volpe campus from among several entities that submitted bids.

MIT will use its investment funds for the expense. Development on the

Volpe, Page 2



ANSELMO CASSIANO—THE TECH

IAP offers a do-it-yourself bamboo bicycle workshop in which students learn how to design and build a bike. Bamboo is a renewable resource, growing as much as one meter per day.

## IN SHORT

**Choose to Reuse** will take place today on the first floor of the Stata Center. Drop-off begins at 8 a.m. An MIT ID is required to attend.

**To drop a class over IAP**, submit an online Add/Drop form anytime before turning in the final assignment or taking the final exam for the class. You do not need to get advisor approval to

drop classes over IAP.

**Friday, Jan. 20 is the final deadline** to pre-register for spring classes. Submit by 5 p.m. to avoid the \$85 late fee.

**To enter the 2017 MIT Integration Bee**, stop by 4-153 for a 20-minute test between 4-6 p.m. Tuesday, Jan. 24. The main event will be held Thursday, Jan. 26 at 6:30 p.m. in 26-100.

**Send news and tips to** [news@tech.mit.edu](mailto:news@tech.mit.edu).

## Live from D.C.

The Tech is going to Washington, D.C. Follow @thetech on Twitter for updates from the 2017 Presidential Inauguration and through the weekend.

## GRT LIFE

In the Sponge.

CAMPUS LIFE, p. 3

## WHAT WE KNOW

The case against a Senior House student. **NEWS**, p. 2

## THE BIGGEST EVER?

Giant Sudoku, giant Techdoku. **FUN**, p. 5



## STARS SING

Animation mimics Idol's success. **ARTS**, p. 4

## WINS THIS WEEK

MIT had some.

SPORTS, p. 8

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# Wet out West: rainy nor'easter possible next week

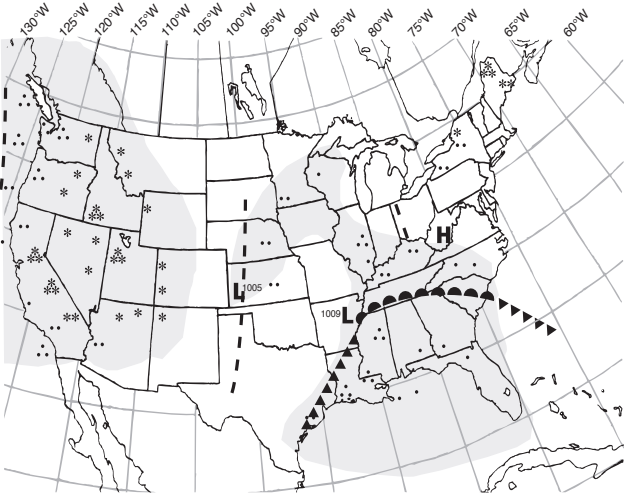
By Jordan Benjamin  
STAFF METEOROLOGIST

Across the region, relatively mild conditions will persist, with partly cloudy skies and high temperatures in the mid to upper 40s through the weekend as high pressure settles across the region. This calm period will not last long, however, as a powerful storm system is forecast to develop across the deep south over the weekend and move toward the Northeast early next week. Across the west, heavy rain and snow continue to pound the region; only 65 percent of California remains in a drought, down from 100 percent just three months ago. Incredibly, only 2 percent remains in exceptional drought, down from 21 percent and 42 percent three months and

one year ago respectively. This much-needed intense precipitation will continue in waves through early next week, continuing to bring drought relief, and across the Pacific Northwest, even some flooding concerns. In the deep south, record warmth will continue with intermittent chances for thunderstorms through the weekend. Over the weekend, a powerful low pressure system is poised to develop in the Southern Mississippi River Valley and move east, potentially bringing significant severe weather to the Gulf Coast region. Early next week, the system will slide up the East Coast toward the mid-Atlantic and northeast. The potential nor'easter may bring heavy rain to the local region and possible snow inland, but it's too early to predict possible impacts.

## Extended Forecast

**Today:** Mostly sunny. High 47°F (8°C).  
**Tonight:** Partly Cloudy. Low 31°F (-1°C).  
**Tomorrow:** Partly Cloudy. High 43°F (6°C).  
**Saturday:** Mostly Cloudy. High 47°F (8°C).  
**Sunday:** Partly Cloudy. High 42°F (6ww°C).



Situation for Noon Eastern Time, Thursday, January 19, 2017

Weather Systems	Weather Fronts	Precipitation Symbols		Other Symbols
		Snow	Rain	
H High Pressure	- - - Trough	* Showers	▽	☁ Fog
L Low Pressure	- - - Warm Front	☆ Light	•	⚡ Thunderstorm
☄ Hurricane	▲▲▲ Cold Front	** Moderate	••	∞ Haze
	▲-▲ Stationary Front	*** Heavy	•••	

Compiled by MIT  
Meteorology Staff  
and The Tech

# Student jailed for possessing weapons

Attorney: no comment on judge's reasons for 'dangerousness' ruling

By Katherine Nazemi  
EDITOR IN CHIEF

Angel De La Cruz, a student in Course 6 and a resident of Senior House, was ordered held without bail Jan. 13 for allegedly possessing firearms in his dorm room. De La Cruz is listed as a senior in the MIT directory, but entered MIT in the class of 2014.

Around 5:45 p.m. on Jan. 6, MIT police searched De La Cruz's room following a report that he may have had weapons in the dorm. De La Cruz, who is 23 years old and from Texas, was arrested after police allegedly found a pistol, a rifle, and ammunition that he was not licensed to possess.

An MIT counselor made the

report to police, *The Boston Globe* reported.

MIT policy prohibits weapons anywhere on campus. De La Cruz's attorney, public defender Bruce Ferg, told *The Boston Globe* that De La Cruz has been suspended from MIT and barred from campus.

At an arraignment held Monday, Jan. 9, De La Cruz pleaded not guilty. He was charged with two counts of carrying a dangerous weapon on school grounds, two counts of possession of a large capacity firearm, two counts of possession of a firearm without a license, possession of ammunition without a license, and improper storage of a firearm.

Under Massachusetts statute 58A, if a person is charged with cer-

tain crimes — including possession of high capacity weapons — a judge can move to hold him without bail. In that case, a “dangerousness hearing” is held.

According to that statute, to rule a person “dangerous” and keep him detained prior to his trial, a judge must find “clear and convincing evidence” that “no conditions of release will reasonably assure the safety” of the community if he were released. A person who is ruled dangerous may be held for up to 120 days.

De La Cruz was ruled “dangerous” on Jan. 13 by Judge Dominic Paratore. Ferg would not comment on which facts of the case led the judge to reach this conclusion, but said that a judge has “wide discre-

tion” regarding what they consider.

“Prior record, prior jail time, and threatening conduct” could all be taken into account, Ferg said.

De La Cruz had no prior arrest record. A press release from the Middlesex County district attorney's office prior to the hearing said there was no evidence that any threats were made toward members of the MIT community, and that De La Cruz was not violent when confronted by MIT police.

Jay Scheib, head of Senior House, and Sarah Melvin '18, president of Senior House, did not respond to requests for comment.

De La Cruz will return to court on Feb. 13 for a hearing, where the prosecuting lawyer will be Assistant District Attorney Raquel Frisardi.

# New space to feature housing, retail

Reif envisions a Kendall Square with an 'irresistible personality'

Volpe, from Page 1

site is expected to provide income for MIT in the future in the form of lease payments.

“It's important to understand that the agreement we signed today will be paid for entirely with MIT's investment funds, just as if it were a purchase of stocks or bonds,” Reif wrote in an MIT-wide email.

The MIT Investment Management Company, which handles MIT's real estate, will oversee the

purchase.

The redeveloped campus will be “mixed-use,” featuring housing, retail, commercial office and lab space, and public gathering space. New roads will also be constructed through the block to connect different parts of the Kendall Square area. In accordance with Cambridge city ordinances, MIT will ensure some affordable housing.

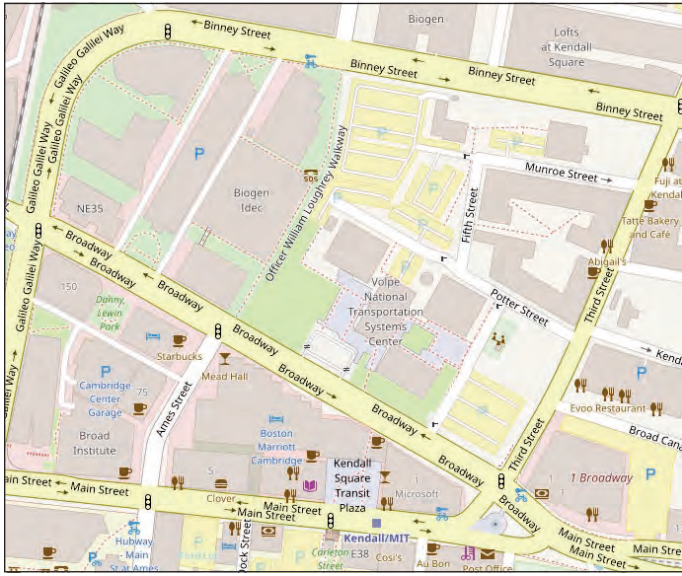
Both MIT and the city of Cambridge have appointed Volpe Working Groups to work on

the re-zoning plans for the Volpe campus. MIT's group, chaired by Steve Hall, professor in the Department of Aeronautics and Astronautics, will also include professors from the departments of Architecture and Urban Studies and Planning. Cambridge's group includes residents of East Cambridge, Cambridgeport, and Wellington-Harrington, as well as other relevant community members, such as representatives of Kendall Square businesses.

In an email to the MIT com-

munity, Reif emphasized MIT's commitment to the Kendall Square community and the city of Cambridge, saying “it is now clear that [MIT's] future success depends on making sure that Kendall succeeds *as a place...* a place that makes our city stronger, too.”

MIT will hold two community meetings Feb. 9, at noon and 6 p.m., to discuss more details and answer questions about the re-development plans for the Volpe site.



The 14-acre Volpe campus lies across from the Marriott.

## CORRECTIONS

An article published Oct. 19 incorrectly stated Ru Mehendale's class year. Mehendale is in

the class of 2017, not the class of 2020.

## Solution to At the U.N.

from page 6

PST	BOBCAT	DROP
ATE	AVERSE	IOWA
GENERAL	ASSEMBLY	
OWNS	LABELS	
DEICE	TATTLED	
ADS	ROAD	ARISE
	BIGBANG	ESPN
	SECRETARIAT	
ABLE	ELEMENT	
SOAPY	SEWN	PEP
HOTSEAT	SCENE	
	AMIDST	ANTE
SECURITY	COUNCIL	
IRAS	SHEARS	IRE
PARE	SERMON	LED

## Solution to Locked Out

from page 7

ABATE	TRACE	ETC
SOLAR	WOMAN	YEA
HAIR	RAISING	END
	TANGY	BCDE
ISLANDS	MIDEAST	
DAINTY	LARIAT	
TSPS	TEXAN	CPA
ASS	HEADING	HOT
GYM	ELLIS	PIPS
	AIRMEN	BERNIE
SUCCESS	BOLOGNA	
INKY	EUROS	
XCI	JAWDROPPING	
PAN	AGAIN	EERIE
MPG	RESTS	DRAPE







# Oh great, another singing competition

**ARTS**



**ARTS**

[illegible][illegible]

**ARTS**

[illegible]

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[illegible]

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[illegible]

**ARTS**

**ARTS**

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Want to see these teams battle it out in person?

VS

VS

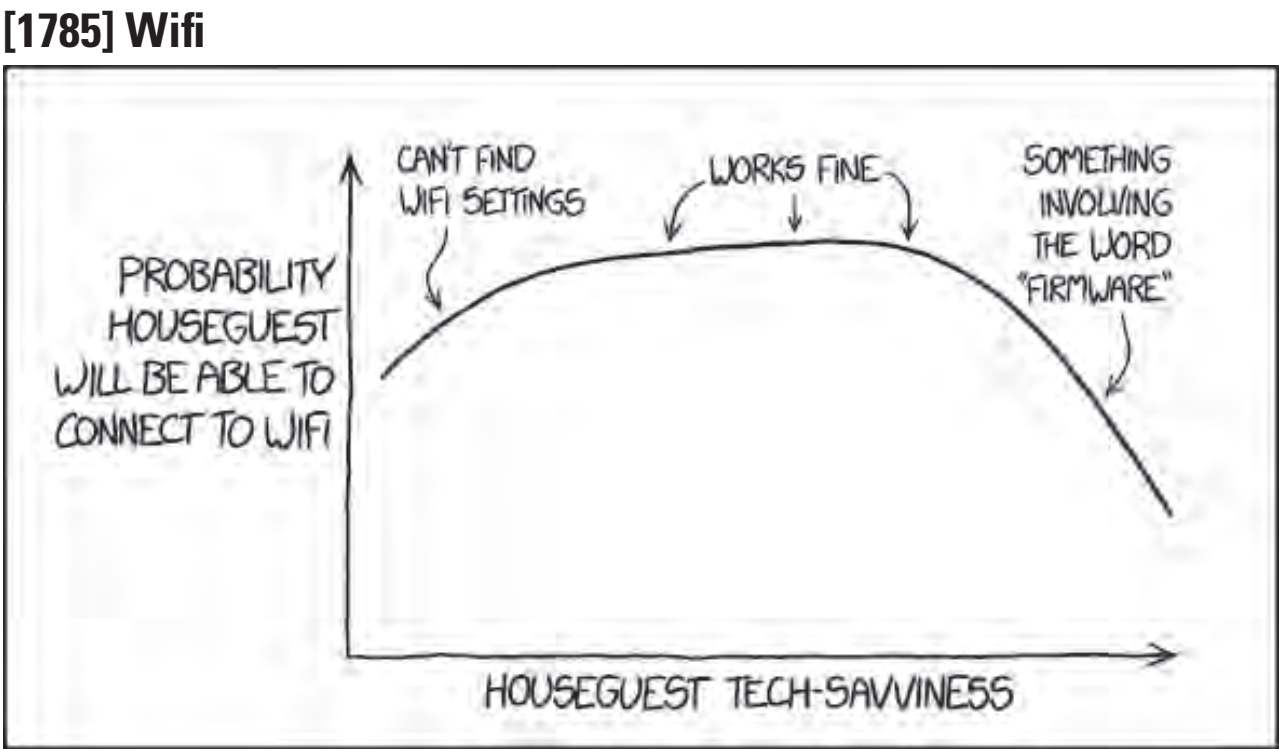
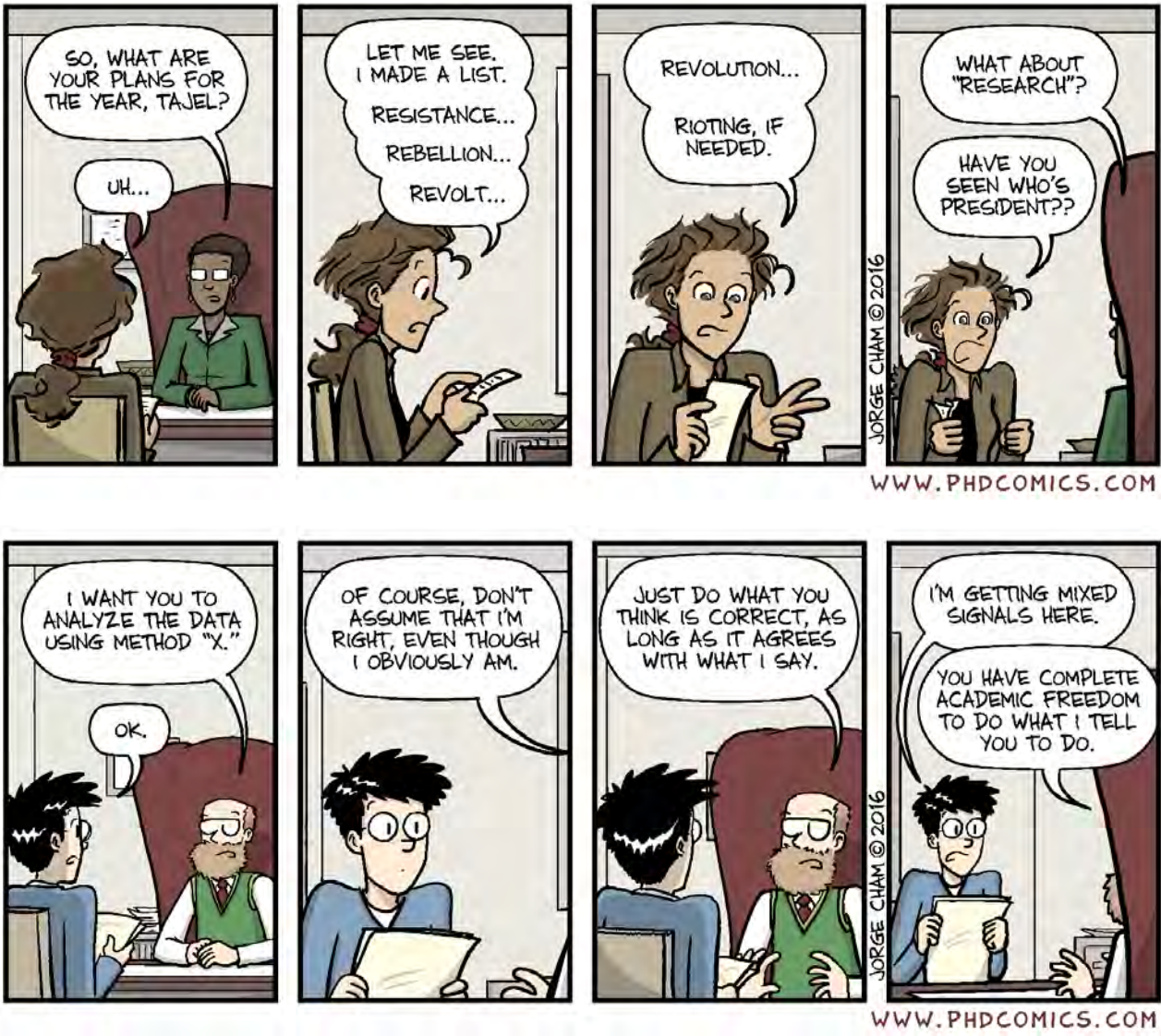
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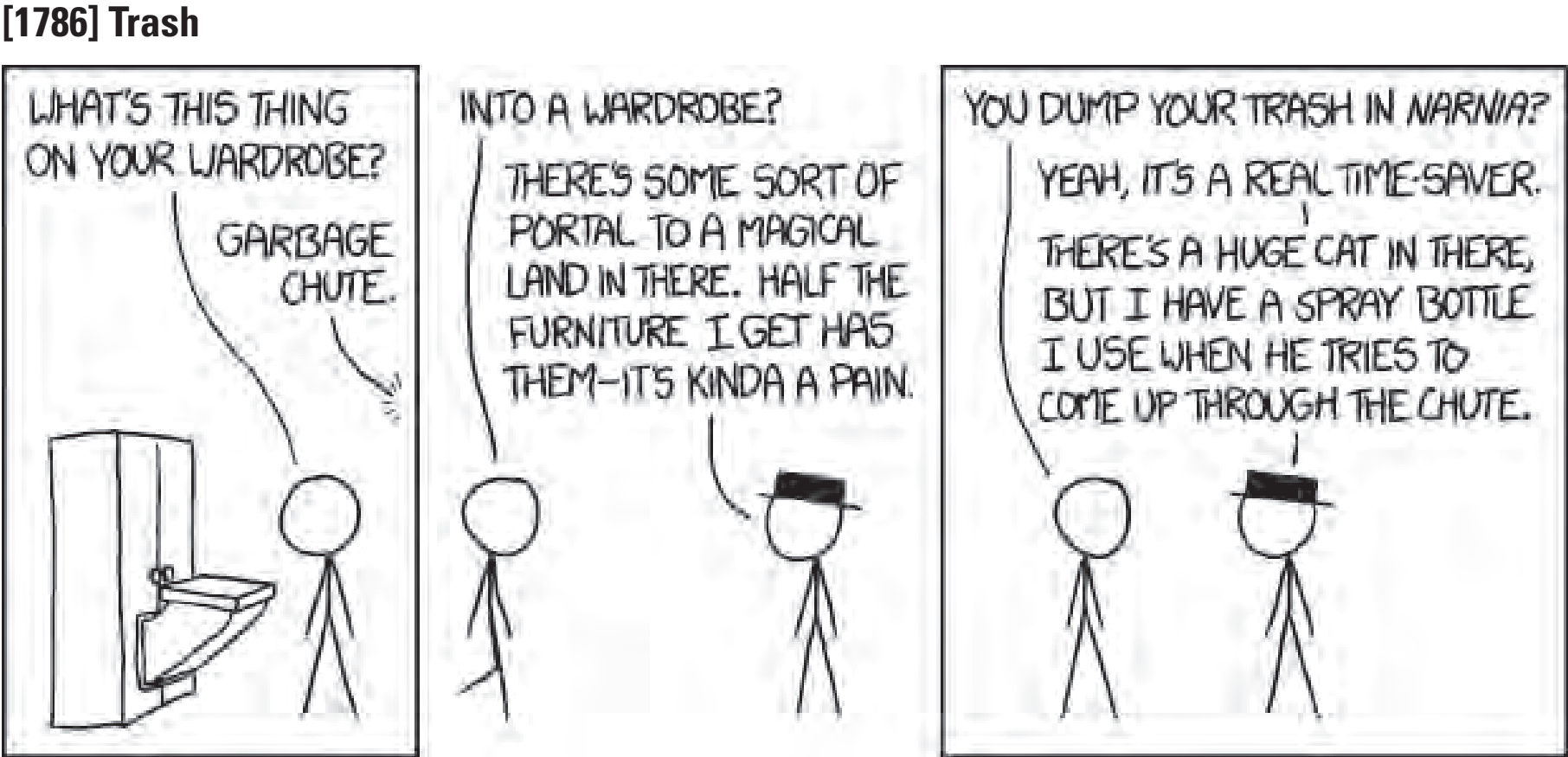
VS

**Join *The Tech!***  
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Further out to the right, it works correctly, but the reason it works still involves the word 'firmware';



Plus, time's all weird in there, so most of it probably broke down and decomposed hundreds of years ago. Which reminds me, I've been meaning to get in touch with Yucca Mountain to see if they're interested in a partnership.

# Inauguration

Solution, page 8

15x		24+		26+			192x	
3x			10+		240x			
	23+				3		11+	
4			63x	432x			75x	
24x				3		70x		
28+		2÷	18x		2			2−
			432x				8	
96x		18x	10x		4x		19+	
	9		40x			7		1

Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–9. Follow the mathematical operations for each box.

## At The U.N. by Charles Slack

Solution, page 2

ACROSS

- 1 L.A. clock setting
- 4 New Cub Scout
- 10 Tiny bit of water
- 14 Wolfed down
- 15 Reluctant
- 16 Nebraska neighbor
- 17 U.N.'s all-member body
- 20 Holds the deed to
- 21 Mailing stickers
- 22 Remove frost from
- 24 Spilled the beans
- 29 Web pop-ups
- 30 Thoroughfare
- 34 Greet the day
- 35 Universe creation theory
- 38 NBA broadcaster
- 39 U.N.'s executive body
- 41 Competent
- 43 Sodium or sulfur
- 44 Lathered up
- 46 Stitched
- 47 Get-up-and-go
- 50 Stressful spot
- 53 Part of an act

- 55 In the thick of
- 59 Poker payment
- 60 U.N.'s peacekeeping body
- 65 Some nest eggs, for short
- 66 Large scissors
- 67 Ill temper
- 68 Reduce, as expenses
- 69 Pulpit presentation
- 70 Was ahead

DOWN

- 1 Chinese temple
- 2 Simmered slowly
- 3 Court sport
- 4 Tavern
- 5 Elliptical shape
- 6 Dracula portrayer Lugosi
- 7 Lobster cousin
- 8 Selling point
- 9 Electric auto company
- 10 Poorly lit
- 11 Burglarize
- 12 Big-eyed bird
- 13 Pick up the check
- 18 PC bailout key

- 19 Are, in Argentina
- 23 Guitarist Clapton
- 25 Pick up the check
- 26 Roster
- 27 Sixth sense, for short
- 28 Cozy room
- 31 Folklore monster
- 32 Brother of Cain
- 33 Goes out with
- 35 Microwave oven sounds
- 36 Designate
- 37 Got taller
- 39 Wooden strip
- 40 Rural hotels
- 41 Volcanic output
- 42 Derisive shout
- 45 Wine vintage
- 47 Sharpener insert
- 48 All-inclusive
- 49 Removed rind from
- 51 Not quite right
- 52 Church donation
- 54 Tuna container
- 56 Textile worker
- 57 Shell game

1	2	3		4	5	6	7	8	9		10	11	12	13
14				15							16			
17			18							19				
20					21									
22				23				24			25	26	27	28
29				30	31	32	33			34				
			35					36	37		38			
		39								40				
41	42				43									
44				45			46					47	48	49
50					51	52				53	54			
				55			56	57	58		59			
60	61	62	63							64				
65					66							67		
68					69							70		

- 58 Matador adversary  
60 Drink daintily  
61 Historic time
- 62 Airport rental  
63 Put to work  
64 Admirals' org.





STARR FORUM

MICHAEL HANEKE FILM SCREENINGS

FRIDAYS AT 12PM - BARTOS THEATER E15-070

CACHÉ

JAN 20

AMOUR

JAN 27



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MISTI



SPORTS BLITZ

Men's basketball (11-3) rode a second half surge to defeat Springfield 78-59. AJ Jurko '19 led the team with 24 points.  
Women's basketball (12-3) edged Wellesley 47-44 in a nailbiter. Kara Holinski '19 led the Engineers with 18 points.  
Men's swim and dive (8-1) defeated Tufts 194-106.  
Women's swim and dive (7-3) defeated Tufts 195.5-104.5.  
Squash (11-2) defeated Haverford and Northwestern with identical margins of 7-2.


Solution to Doomsday  
from page 7

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


Solution to Inauguration  
from page 6

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

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Proof. We need to show that

$$\alpha_{\mathbb{P}',e'} \cdot \alpha_{e',e} \cdot \alpha_{\mathbb{P},e}^{-1} \cdot p_e^{\mathbb{P}} \alpha_{\mathbb{P}',e}^{-1} \in B^1(\Gamma, u_e).$$

Select the expression to search for

☐ Strictly match symbol sizes and styles

☒ Loosely match symbols

☐ Search for single glyphs and their sub/superscripts

'

.

$\alpha$

$e$

$\mathbb{P}$

,

$\mathbb{P}'$

$e'$

$,e'$

$e',e$

$\alpha_{e',e}$

$\cdot \alpha_{e',e}$

$\alpha_{e',e}^{-1}$

$\alpha_{\mathbb{P}',e'}$

Q&A in context, right inside the paper!

Drag your mouse to highlight any text or equations in the document, and you can make a note to yourself or raise a question. Your notes, and the questions of other readers, are marked by icons in the paper's margins.

This proves both that  $a_Z(\bar{\lambda} + Y)$  is a 2-cocycle, and that the right square in the above diagram commutes, provided we take  $b_S$  to be the negative of the Tate-Nakayama isomorphism.

# Mark as key point

Think about this more later

Raise question now

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approxrankone3.pdf cloud: groupring.net/viewWatch?wato... What is  $\mathbb{S}_{c,25}$ ?

(a) There exist functions  $u : X \rightarrow \mathbb{R}$  and  $v : Y \rightarrow \mathbb{R}$  with  $\|u\|_2 = \|v\|_2 = 1$  and a real number  $\lambda$  such that for every subset  $X' \subset X$  and every subset  $Y' \subset Y$  the number of edges from  $X'$  to  $Y'$  differ from  $\lambda \left( \sum_{x \in X'} u(x) \right) \left( \sum_{y \in Y'} v(y) \right)$  by at most  $c_{\text{max}}$ .