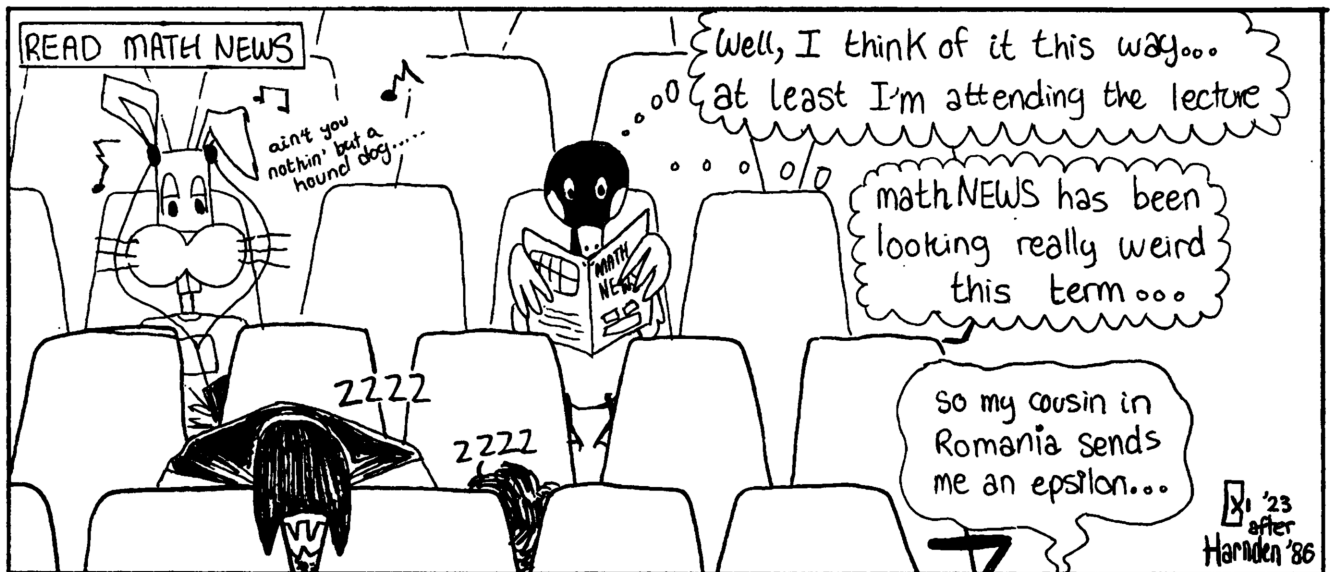
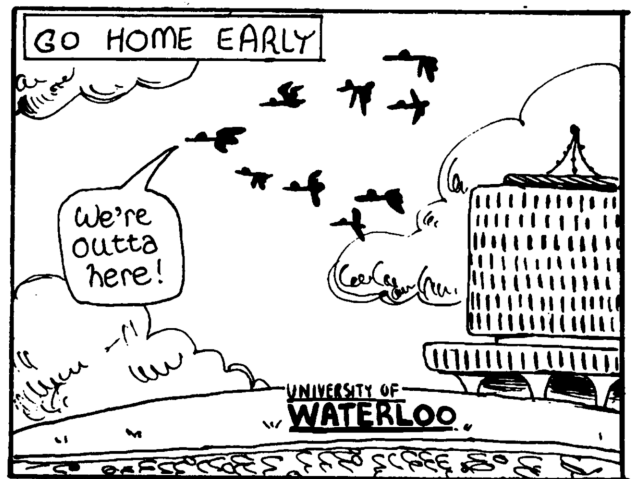


Volume 151 Number 2
Friday, February 10, 2023

mathNEWS

'83-'92

Instead of FRIDAY MORNING Lectures, YOU COULD...



MATH NEWS

THE VIABLE ALTERNATIVE TO FRIDAY MORNING LECTURES... SINCE 1973!

(for those too conscientious to take advantage of options 1 or 2)

LookAhead

A glance at upcoming events

University Deadlines
February 10 Student co-op rankings due
February 17 Cycle 2 applications due
February 17 Tuition and fee refund deadline (50%)
February 17 Final exam relief requests due
February 18–27 Reading week ☹️
March 1 Cycle 2 interview period begins
Calendar Holidays
February 13 Clean Out Your Computer Day
February 14 Valentine's Day 🍷
February 18 National Eat Batteries Day
February 20 Family Day
March 1 Peanut Butter Lovers' Day
MathSoc and Club Events
February 10 Short Attention Span Math Seminars
February 14 General election nomination period ends
February 16–28 General election campaigning period
March 1–3 General election voting period
mathNEWS Important Dates
February 27 Production Night
March 3 Next mathNEWS hits the streets

PMAMC&OC Weekend Update

The long awaited **24 Hour Short Attention Span Math Seminars** is almost upon us! In fact, if you get a freshly printed copy of this issue of **mathNEWS**, you could even take it with you to SASMS. If, somehow, you are not yet aware of the *glorious* 24-hour-long event even after all the Discord announcements and Instagram post and stories and me passionately shilling about it at every opportunity, it is a bonanza of math talks, entertainment, and fooooooood. Come for some subset of the timeframe between **3:00pm, Friday, February 10 to 3:00pm, Saturday, February 11, in DC 1302**. If you're not a member yet, you're totally missing out, but don't worry! It's not too late to remedy that. For the full schedule — which is very long, 24 hours of math talks is a lot — check on our website.

Also, if you are one of the lucky people in MATH 146, you have the coveted opportunity to experience PMC for 28 hours in one weekend. PMC is once again running review sessions for the advanced classes, with VP PMath Kai, and members Maya and Kareem being responsible for this term's MATH 146 midterm review. **Sunday, February 12, 1–5 pm, MC 2034**

Of course, there are more events in the works. Stay tuned after reading week for Prof Talks and more!

The office has gone through some changes... the floors have been waxed, there are slight changes to the layout, there's some computer fiddling going on that you should come and check out for yourself, and marvel at the great mythical strength of the load-bearing paper.

Also! **T-shirt designs!** There will be another run of T-shirt prints this term, and if you have a design you want to see, submit it to an exec by February 17, and also let us know if you have strong opinions about old designs you want to see make a reappearance.

That is about all I can think of for this issue, so see you next time! Stay cool (or warm, following some of the amazing advice that is sure to appear in mastHEAD), do some funky math, and enjoy reading week! That's an order.

Remington Zhi
VP Propaganda, PMAMC&OC

Do you have what it takes to sit on the Math Endowment Fund's Funding Council???



Yes, you.

The requirements are simple but **very** challenging:

- attend three meetings, each 2–3 hours in length, around mid-March
- carefully listen to *and vote on* funding proposals for projects worth thousands, or even tens of thousands, of dollars (over \$100,000 is up to be granted this term!), allowing you to have your say in improving the math undergrad experience
- eat food (!) provided at every meeting

If you've read all of that and still think you can handle sitting on MEF's Funding Council, then apply today: <https://uwaterloo.ca/math-endowment-fund/funding-council-0>.

Any questions?? E-mail the MEF Executive Director at mefcom@uwaterloo.ca.

Daniel Matlin
MEF Executive Director, W23

Article of the Issue

...goes to hotfemoid for *I...command...you...to.*, which was probably excruciating to write. Your reward is in MC 3030!

clarified
Editor, **mathNEWS**

mathASKS 151.2 — Part One

Featuring *W. Jim Jordan*, **mathNEWS** editor, 1982–1987

“What program were you in? Why?”

I was in computer science while it was a BMath program. When my high school offered me a chance to play with a Commodore PET, I was hooked on solving problems with computers and learning about what they could do.

*“What involvement did you have with **mathNEWS**? When? What drew you in?”*

I joined **mathNEWS** the very first term I was on campus as a contributor, photo-typesetter (the Photon is still a source of amusing dreams), and layout creator. The 1981 orientation issue was interesting, amusing, and inspiring, and in my overconfident teenage mind I thought “I can do this and everything else I want, too!”

*“Why do you think **mathNEWS** lasted?”*

mathNEWS has endured for many reasons. Math humour is hard to find, and **mathNEWS** is one source of that. Math students are literate, and **mathNEWS** provides a safe place to develop both skills in writing and confidence by putting something forward. The Gridword combines an extensive vocabulary with graphic symmetry and puzzling clues, things that are eye-catching and mind-stretching. Though lecturers are not stand-up comedians, they do need to keep things light-hearted to make learning less painful, and Prof Quotes is a kind of mixed reward and punishment for doing that well—at least in the presence of attentive mathies. And finally, **mathNEWS** endures because it’s in an environment where it can endure. If the Faculty of Mathematics ceased to exist, there would not be a community of mathies to celebrate and lament the joys and trials of being a person who delights in the mathematical disciplines.

“Were you involved in any other clubs at Waterloo?”

Too many, I think. I wrote for FASS a couple of times. I was in the Warriors Band through my undergrad. I was part of the CSC, hung out in the WatSFIC office now and again, represented Math at the Federation of Students, worked on Imprint for a year, was part of what was then the Waterloo Christian Fellowship...

“Thoughts on Feds/WUSA, MathSoc, and other forms of student government?”

Student governance is important if it builds a sense of social responsibility and community-building. It’s not helpful if it’s about building personal power and influence. There are a lot of things that matter to students, and there are few that they have any kind of control over. One thing I would want any student government to understand is where they fit in the larger power

structure. There are some things the students would like to see that the University can’t provide because of other priorities, many of which are set in response to the demands of the Province. So in that regard student governments are very small fish. Within their constituencies, they have great power to set the tone for collaboration, camaraderie, and representing their constituencies to larger bodies such as WUSA and the University Senate. Participate in them as a learning and service opportunity, and you’ll develop skills that complement the ones you’re developing through the courses and assessments.

“How did you feel about Chevron/Imprint, Iron Warrior, and other newspapers on campus around your time?”

The Chevron made one or two appearances a term to extol the virtues of Albanian communism. I recall **mathNEWS** picking up as many copies as could be found and adding them to that week’s issue as a humour supplement. Imprint was an award-winning newspaper at the time, and it really strove not just to publish content for and by students, but also make it look inviting. I learned a lot about page design there. But when the focus on quality production and writing slipped (probably due to lack of volunteers who had the time to do that), Imprint became an unfair joke target for **mathNEWS**, which was prone to the same thing. Imprint has to do more than **mathNEWS** to be good. **mathNEWS** just needs to be funny (without destructive humour) and be legible.

“Describe your average production night.”

We’d start around 6:30pm seeing what we had, typeset or printed it, taped it down, figured out where we needed filler and how much room we had for the masthead (often a tale of the evening), worked to make an even number of pages, and somewhere in there ate a few pizzas (Italian sausage and double hot peppers). There wasn’t a lot of time pressure, but there was still a desire to sleep, so things seldom went beyond 1:00am. There was a lot of collaboration and discussion on where articles should go, and the editor only had to make decisions when there was no consensus.

We tried to get as much content as possible ready beforehand. That’s not always possible, so there were nights when people were bashing out articles on Volker-Craig terminals in the MathSoc and CSC offices and third-floor terminal rooms while others were in the MathSoc office slicing printed articles up and taping them down in two or three columns, then decorating the pages with LetraLine tape.

When the Photon died, we lost our fancy typesetting, so MFCF’s 9-pin DECwriters were pressed into service until DCS got its first laser printer. MFCF finally got its own PostScript printer, and things started looking better again. I missed the transition to online layout and Web publication.

“What kind of articles did you write for mathNEWS?”

Everything from math humour (a proof that real numbers are quiche), to filk (Puff, the Fractal Dragon), to editorials, to documenting Warriors Band escapades, to Prof Quotes, to mastheads, to personal observation columns, to guides for incoming students.

“What’s the most memorable and/or scandalous article published in your time at mathNEWS? Anything you were personally proud of?”

I don’t think we were part of anything scandalous during my time. The closest we came was a cover featuring a drawing of then-president Doug Wright on the corner of Jarvis and Isabella in Toronto prostituting the university to the highest bidders. After production night but before going to press we added a superscript: “Doing it Wright on the Wrong Side of Town”. The thing I was most proud of was getting a handshake and thanks from the associate dean for a paragraph in one orientation issue. It was along the lines of “If you just want to learn how to program, don’t come to Waterloo. Go to college. If you want to learn how to solve problems, then come to Waterloo.” Being called the father of Prof Quotes is pretty cool, too

“In mathNEWS, we’ve seen a huge mix of serious and silly articles, with people writing about everything from dealing with depression to jokes about King Charles needing to leave a gaming team to bodily fluids to trauma. Does this wide breadth of content match mathNEWS when you were around? Are you surprised by what it’s like now?”

Yeah, it’s much the same. We had articles on constitutional constipation, table gaming, sports, politics. Mental health issues were common but not well understood, and if more attention had been paid to them then, mathNEWS would have been there, too.

“Tell us about a common mathNEWS meme from your time.”

Memes? We didn’t need no stinking memes.

“Do you have any interesting stories, photos, or memorabilia from your time in mathNEWS?”

No photos handy, but we did build a 10-layer tower of Coke cans while doing the 1987 orientation issue. That year there was a conflict between the MathSoc orientation directors and the mathNEWS staff on the layout of a particular page, so to defend to work of mathNEWS staff I made the decision to remove the orientation committee’s content from the mathNEWS orientation issue. That wound up being published separately. I don’t regret the decision—the team worked damned hard to make a good orientation issue, and I wanted to honour that.

“What effect did mathNEWS have on your life as an undergraduate and beyond?”

mathNEWS helped me understand how to put disparate things on a page and how to work within design constraints. It can help you learn to say “Not perfect, but good enough for the task.” It also helped me understand that people can appreciate your work but not be interested in knowing who did it. You’re a faceless builder of community, and sometimes just seeing the community respond positively is enough to keep going.

“Did mathNEWS have its own office? Where (in relation to some landmark like the CnD shop/lounge)? What was it like?”

mathNEWS had a small office on the third floor, one hallway over from the MathSoc office. The CSC was on the other side of the wall. We had a couple of desks and a filing cabinet full of old issues and layout flats.

“How do you look back on your time in mathNEWS?”

Some of the most fun times I’ve had. It was very good, and a great outlet for someone with a quirky sense of humour and a way with words.

“How has life been for you after university?”

Life’s been varied, with a few changes and opportunities. I’ve always been learning new things, to the point of completing a seminary degree and a PhD in philosophy. Now I’m learning software testing in cloud-based systems.

“In retrospect, do you think past-you would have imagined that mathNEWS would live to see its 50th anniversary? Do you think it will live to see its 100th?”

I don’t know. I’m certainly glad mathNEWS has persevered. I think it will continue as long as there’s a math faculty to be a part of—provided people are aware of its existence. There will always be a small number of people looking for the creative outlet that is mathNEWS. If mathNEWS doesn’t make it to 100, it’ll be due to external factors like the climate wars, the collapse of civil society, or the total rejection of expertise that puts an end to universities.

“Would you want to be contacted for mathNEWS’ 100th anniversary?”

Sure, but a groundhog will be the one delivering the message. I’ll likely not be alive then.

W. Jim Jordan

I’ve also written a retrospective for the 500th issue of mathNEWS. I think that’s in the archive somewhere.

N Insane Things We Found At The Skull Museum In Toronto

- Skull of a prehistoric fish called the Dunkleosteus
- Deformed calf fetus
- Dead pigeon tied to a dead rat
- Ancient Sumerian hand grenades (\$625 each)
- Signed picture of William Shatner
- WWII Gas Mask for Babies
- Letters written by a serial killer from prison (\$5 to \$25 per letter)
- Live bird
- A stool made from a (real?) elephant foot
- Sarcophagus noted for having shit craftsmanship
- Tire that is allegedly from the Space Shuttle Atlantis
- Stuffed animals with their faces removed and bloodied up and with teeth placed where the eyes should go (\$25 each)
- Mosasaur Tail Vertebrae (\$15 each)
- Skull of a guy who got clubbed to death
- Two headed calf, on display, next to the poem *Two-Headed Calf* by Laura Giplin, which is about how heartless it would be to put a two headed calf on display
- Glass Penises (multiple sizes, \$15 to \$60)
- Multiple rat hearts preserved in jars
- ‘World’s Oldest Tools’ (3 rocks)
- Voodoo totem with a cross and a skull on the top
- Woolly Rhino Fossil Skull (\$22,495)
- High pressure underwater diving suit with a real skull placed where the head should go
- Plastic skeleton of a leopard which is actively giving birth
- Foam Dinosaurs
- A Holocaust exhibit, in exceptionally poor taste
- Taxidermy Rat (dressed as a stripper)
- Taxidermy Rat (wearing a strap-on)
- “Pet Memorial Services”, offering “Skull & Bone Cleaning, Full Skeletal Mounting, and Diaphonization/Wet Specimen”

Dick Smithers

Tears of Joy

It’s 5pm. I have been stuck on this CS assignment forever and a few hours before the deadline, my tests FINALLY pass. The feeling is indescribable, I even teared up a bit. I just want to eternalise this moment by sharing my immense current happiness with you here before it fades off since I know many of you will understand exactly how I feel, and I hope that reading this will have reminded you of that one time you felt this kind of euphoria. I can now finally go lie on my bed and wait that the effect of my third latte of the day vanishes and allows me to have some rest.

Enami

A Brief Overview of Math Orientation Coordinator Positions

Orientation Coordinator 2023 Applications are now open: Go to @MathOrientation on Instagram, or linktr.ee/mathorientation to apply!

Devisors

- Work with an O-team member (that’s me) to plan an event for Orientation, and execute it.
- Large amount of freedom to run the event while still being supported by us (O-Team)
- Lead a team of Black Ties during O-week (you’re kind of a head Black Tie ngl).

Media People

- Run around taking pictures and filming things for the Historical Record.
- Somebody needs to help choreograph the 2023 Math Dance — why not you!
- Do you have CSS skills? We have a website you could develop them on!

Head Pink Ties

- Manage teams of Pink Ties to lead your first-years to O-Week Victory™.
- Mostly involves running around during O-Week—perfect if you’re busy over the summer!
- You get a radio (and you’re allowed to use it).

NEW — Head Tie Guard

- Tie Guard is a bustling place: do you have what it takes to keep it organized?
- If you know Terry, this is like what Terry did last year except More Formal.
- If you don’t know Terry, this role involves acting as the central-hub of communications during programming, and helping to direct lost leaders and students during O-Week programming.
- You get to use a radio!

Any of the above positions can also be part of Tie Guard as an additional role: this means taking shifts at Tie Guard outside of programming and making sure that ne’er-doers are kept at bay. This was the highlight of my 2022 Orientation experience and is highly recommended for everyone!

O-Team 2023



So You Think You Can Graduate

water's Unofficial Guide for Graduating Math Undergrad Students

As you watch the pandemic recede into the past, you see a light approach. Graduation.

Huh? Already?

If your email inbox looks anything like mine, you'd think the university forgot about your graduation too. I find it surprising how little the university notifies upper year students about graduation, and from talking to classmates I'm not the only one.

So, here's a little guide of important things I think you should know about graduation.

Extra Plans

The deadline to declare extra plans for those graduating June 2023 has already passed, but this deserves to be echoed for those graduating later.

There are a lot of extra plans out there, and you might have completed some of them without even knowing it.

For example, I was done all but one course required for the BCS Artificial Intelligence Specialization, so it was a no brainer for me to add it. Old timers like me might remember that you had to apply to get that specialization, but that is no longer the case! As of S22, the AI specialization is open for anyone.

If you haven't read the academic calendars in a while, now might be a good time to catch up on any golden opportunities that have appeared after the olden days of first year. When in doubt, shoot an email to your academic advisor.

The Form

This is how you let the university know you intend to graduate.

June 2023: the application to graduate is open at <https://uwaterloo.ca/forms/undergraduate-studies/application-graduate-june-2023> and must be filled out before March 1.

October 2023: the application to graduate is not yet open but will be available at <https://uwaterloo.ca/forms/undergraduate-studies/application-graduate-october-2023>

(Optional) Grad Composite & Photos

Source: <https://uwaterloo.ca/convocation/graduating-students/photography>

If you're graduating any time in 2023, and you want to be in this year's graduation composite, you need to take grad portrait photos by the end of this Winter term, even if you graduate in the Fall. For the math faculty, this means booking an appointment with the Lifetouch in the corner of the SLC basement, at <https://booknow.appointment-plus.com/1drbctsx/>. I had to select "UWaterloo Photography Session" before any dates showed up. It seems like appointments are opened a few weeks in advance, so keep checking back if there are no slots at the moment. I'm not sure if there are even enough slots for everyone graduating to get an appointment.

The 15-minute-ish appointment costs \$40 that you pay on photo day. In addition to the getting yourself on the graduation composite, Lifetouch sends you samples of the photos if you want to buy larger prints for yourself. They aren't paying me to write this, but grad photos obviously make Lifetouch a crapton of money.

Tip: For my photo, Lifetouch provided a choice of two clip-on ties since I didn't have one myself. You can visit the SLC location while they are open to learn what to expect and to see the props and accessories.

WatCard Balance

If you have leftover money in your WatCard, you can fill out a refund request form at <https://uwaterloo.ca/watcard/refund-request-form> to have the funds transferred back to you when you graduate.

Well, not all the funds. The university keeps a \$25 "administrative service charge." Because of this, it might be better to use the money up instead of getting a refund, by paying with WatCard wherever that is an option. For example, you can use the funds on a host of alumni items at the W Store: <https://wstore.uwaterloo.ca/services-resources/convocation.html>

Digital Data

Source: <https://uwaterloo.atlassian.net/wiki/spaces/ISTSERV/pages/42596073494/Microsoft+365+Frequently+Asked+Questions>

Alumni can continue using Microsoft 365 applications (including OneDrive) for about 16 months after they graduate. Email is supposedly exempt from this 16 month limit and you can continue using your account forever. However, I personally would not trust that, and I'd back up or transfer everything inside my uwaterloo.ca account.

Besides Microsoft services, there are various other digital platforms at UW which might also have stuff worth backing up. As a CS student, these come to mind for me:

- Crowdmark
- student Linux servers
- Seashell
- Marmoset

Additional Resources

- <https://uwaterloo.ca/math/academic-matters/path-graduation> is an official list of things graduating students should do, somewhat overlapping with this one
- <https://uwaterloo.ca/convocation/> is the main page for everything convocation-related at UW

- the CCA hosts an Information Session for Graduating Students where they go over various perks available to alumni
- follow the Math Grad Committee <https://www.instagram.com/uwmathgrad> for news on events like Math Grad Ball

water

a cautionary tale

To all seasonal allergy havers out there:

As someone who has slept on an RCH bathroom floor during a 10-minute break between classes, I would like to warn you to never take extra-strength Benadryl before your 8:30am lecture. I know this seems trivial... but it happens. You will struggle to keep your eyes open all lecture until your body starts falling asleep and you won't be able to stop it. You will writhe in your seat and your prof will send you a concerned email after class asking if you are doing okay. You will leave lecture delirious and having learnt nothing.

(In my defense, it was a single-person bathroom, and I slept in fetal position on top of my sweater.)

I now consider you thoroughly warned.

lily

N Poker Puns

The only All-In-clusive Poker pun list

- I love winning on flushes, you could say it really *suits* me.
- I lost on a hand that were all hearts. You could say I really *flush*-ed my chances away.
- How do you phone someone who doesn't want to raise? You *call* them.
- Someone pranked me by putting my winnings on my arm. You could say I have a *chip* on my shoulder.
- Hmmm you're not sure if you should raise? Let me *check* on the situation and get back to you.
- What does a cowboy say when they've got a hand that's 5 to 9 and is calling your bluff? "Hold 'em right there, I gotcha cause I only shoot *straight*".
- Why are CS majors so difficult to play against? Cause they know how to grow their *stack*.

toe pair

Blotto!

Welcome back to Blotto! There were seven submissions last issue, with a variety of strategies being attempted. Here are the results: the first number denotes the number of Blotts the player has, and the next ten numbers show their submitted soldier allocation.

	1	2	3	4	5	6	7	8	9	10	
1. Awedish	4	0	0	8	11	13	23	3	3	6	33
1. Jacob	4	2	6	6	6	0	0	20	25	35	0
3. Mathieu	3	0	16	0	0	17	20	23	24	0	0
3. Nat	3	0	0	0	20	20	20	20	20	0	0
3. nwoeanhinnogaehr	3	1	1	2	1	2	5	7	9	30	42
6. tendstoblottotoo	2	1	8	11	12	13	1	17	5	18	14
6. trud	2	1	1	0	0	19	19	0	30	30	0

For the original rules, please refer to the previous issue. This issue, the rules are changing slightly. As before, castles are fought from castle one through to castle ten, with the winning player getting the number of points corresponding to the castle's number. However, there is now a rule that if someone wins 4 castles in a row, they instantly win the round.

For example, suppose the following allocations go head-to-head:

1:	2:	3:	4:	5:	6:	7:	8:	9:	10:
10	10	10	10	10	10	10	10	10	10
0	0	0	0	0	20	20	20	20	20

With the old rules, Player 2 would win. However, with the new rules, only the first 4 castles would be evaluated, after which Player 1 instantly wins.

For a further example, we can use Awedish and Jacob's submissions from last issue:

1:	2:	3:	4:	5:	6:	7:	8:	9:	10:	
Awedish	0	0	8	11	13	23	3	3	6	33
Jacob	2	6	6	6	0	0	20	25	35	0

Jacob wins the first two castles, gaining 3 points. Then Awedish wins castles 3 through 6. Since Awedish won 4 castles in a row, they instantly win the round.

As before, every submission will go up against every other submission, and the winning submission will be awarded one Blott.

If you'd like to participate, please submit your soldier allocation and preferred name to sherpnews@gmail.com by February 20 at 6pm.

sherp

Have a penchant for dry wit and self-deprecating humour?
A mathNEWS Editorship is the ideal way to waste that
talent! Apply today!

Trying to Explain Mahjong

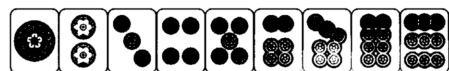
Part 2: Tiles and Gameplay

Welcome back, jongers. I promised to explain dora order, but we first need to know what the tiles look like. There are 136 tiles in a full set, and each unique tile has four identical copies. There are three suits of numbered tiles (from 1 to 9):

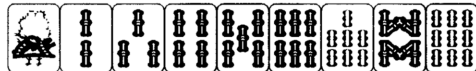
- Manzu (characters)



- Pinzu (circles)



- Souzu (bamboo)



Then there are the **jihai** 「字牌」(honour tiles), further broken down into:

- Kazehai 「風牌」(winds)



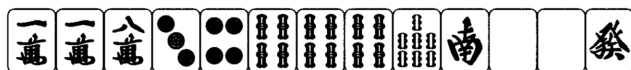
- Sangenpai 「三元牌」(dragons)



- If we do some math, that's $(9 \times 3 + 7) \times 4 = 136$ tiles, so that's all of them.

So that neither I nor our beloved editors have to deal with images ever again, I'm going to introduce **MPSZ** algebraic notation. This is just a way to succinctly describe tiles. The name derives from the tile suits: man, pin, sou, and jihai. Why is it Z and not J? No idea. Maybe because ji「じ」is *technically* zhi, being the voiced counterpart to shi「し」.

Let's see an example. This might be the last image you'll ever see from me. I hope you're ready.



The above hand would be written as **118m34p4447s2556z**. You essentially write each tile explicitly, then group by suit. The full set of tiles would be **111122223333444455556666777788889999m111122223333444455556666777788889999p111122223333444455556666777788889999s1111222233334444555566667777z**. The ordering within each suit is what really matters, and the suits are MPSZ by convention.

Back to dora order. The numbered tiles are easy: they follow ascending order. The jihai ordering is East, South, West, North, White, Green, Red. Yes, if you're reading this in print those dragon tiles were coloured white, green, and red.

Dora order is cyclical within each suit, but the winds and dragons are separate groups. So East follows North and White comes after Red. Dora indicators add value to the tile *after* them in dora order, so a dora indicator of 9m means 1m is a bit more special. In part 1 we saw 7z as an indicator, which would have raised the value of 5z.

Remember when I said there are four identical copies of each tile? I lied. For 5m, 5p, and 5s, one of the four copies is red. Sometimes more than one copy is red. Maybe none of them are red. Woohoo, variants. Either way, red tiles are essentially automatic dora. If your winning hand contains one of them, then it's worth a bit more.

I've mentioned it several times now, so what actually is a winning hand? We're done with setup now, so we can work towards answering this question. Hint: the answer is way too complicated.

Recall that everyone starts with thirteen tiles and the dealer draws a fourteenth to begin the hand. They then choose one of their tiles to discard, and the next player draws a tile and does the same. Basic mahjong gameplay is just this cycle of drawing and discarding tiles.

The goal is to progress your hand towards a state called **tenpai**. With a few exceptions (because of course there are exceptions), this means a hand that is one tile away from being complete. A complete hand is composed of four melds and one pair. There are three types of melds:

- **Shuntsu**「順子」(sequences, e.g. 234m)
- **Koutsu**「刻子」(triplets, e.g. 333z)
- **Kantsu**「槓子」(quads, e.g. 8888s)

A pair is just a pair. If we do some more math, we'll realize that a complete hand contains at least 14 tiles, but your typical hand is only 13 tiles. Tenpai is therefore usually the state of having three melds and a pair, waiting to complete the fourth meld. Or you have four melds and are waiting to complete a pair.

Okay, but this sounds miserable. I'm just supposed to draw tiles from the wall and pray I get what I want? Where's the player interaction? The drama? The equivalent of an UNO +4? Introducing: **naki**「鳴き」(calls).

There are three basic calls: **chii**, **pon**, and **kan**, that help you form melds. If you make a call immediately after someone else discards a tile, it becomes your turn and you get to yonk the discarded tile to form an **open** meld.

An open meld is revealed to all players and set aside from the rest of the hand. It also opens your hand, but we'll talk about what that means much later. The meld that you form is now fixed (other than upgrading a triplet into a quad) and must be contained in the final hand. You then discard a tile from your now smaller hand, and play resumes as normal.

Let's say I'm East and my hand is the example above:
118m34p4447s2556z.

Chii is the call to complete a sequence, and can only be done on a discard from the player to your left. So if North discards 5p, I can call chii, form a sequence of 345p, then discard a tile and play resumes as normal. Let's say I discard 7s, so my hand after the call and my turn is **345p 118m444s2556z.** Note the space before the open meld, since that part of my hand is now set aside and fixed.

Pon is the call to complete a triplet, and can be done on any opposing discard. Let's say South discards 1m right after me. I call Pon, form a triplet of 111m, then discard a tile. I'll toss out 8m. So my hand then becomes **345p111m 444s2556z.**

Kan is the call to complete a quad. This can mean upgrading an open triplet into an open quad, turning a closed triplet into an open quad, or turning a closed triplet into a closed quad. That last case is only when you're lucky enough to draw all four copies of a tile yourself. A couple extra things happen on a kan:

- You draw an extra tile from the **rinshanpai**「嶺上牌」(kan draws) of the dead wall
- The **haiteihai**「海底牌」(last tile before the dead wall) moves into the dead wall
- An extra kandora turns into a dora indicator, if applicable

This process maintains the proper size of a hand (four melds and a pair) and the dead wall (fourteen tiles). Otherwise, you call kan on any discard, just like pon. Continuing our example, if West discards 4s, then I can call kan, miraculously draw 2z from the dead wall, and end my turn by discarding 6z. My hand ends up being **345p111m4444s 2255z.**

You might be wondering what happens if two players call on the same discard. Thankfully, it's simple: pon overrides chii, and any other combination is impossible.

Would you look at that! We have three melds and two pairs. We're in tenpai after just a few turns of totally realistic gameplay. Next up: winning.

ptkyr

Episode 49: Dijkstra's Algorithm

Enjoy Episode 49 of the MathSoc Cartoons series:
CS.341. — Dijkstra's algorithm!

Want to see the next comic when it's released? Follow @mathsoccartoons on Facebook and Instagram! Want to see the next comic BEFORE it's released and provide feedback to help us out? Sign up to be a reviewer at <https://bit.ly/mathsoc-cartoons-reviewer-signup>! As always, feedback, suggestions, and fan art can be left at cartoons@mathsoc.uwaterloo.ca.

MathSoc Cartoons

Easy Lentil Soup Recipe

Yesterday I was walking down the street to a co-op interview when I saw a hungry dog on the side of the road. I stopped and pulled out my Thermos™ filled with my Mother's Red Lentil Soup recipe that had been passed down from generation to generation¹. The very same soup that was consumed during the signing of UN Charter of Human Rights and the substance that continues to keep Keanu Reeves young. I fed the dog and missed the interview. The next day I got a call to come in and do the interview. I was surprised but I went. The interviewer came in. He was the dog.

Anyways...

I like this soup recipe. It uses just a few cheap vegetables (or at least they were cheap in 2020), and is pretty adaptable to include whatever vegetables you have remaining in your fridge that you feel guilty about throwing out. Have leftover peppers, baby spinach from a salad, canned tomatoes, or anything you feel might be soup-worthy? Toss it in! It also only takes about 30–40 minutes to cook, which I think is quite fast for a soup. (Also Vegan). Enjoy!

Ingredients

- 1 tablespoon olive oil
- 1 large carrot, diced
- 2 large stalks celery, diced
- 1 small yellow onion, diced
- 1/2 teaspoon salt, plus more as needed
- 1 cup dried red lentils
- 4 cups water or 2 cups water and 1 28 Oz Can diced tomatoes
- 2 tablespoons freshly squeezed lemon juice (from 1/2 large lemon)
- 1 whole bay leaf (Optional if you don't trust Big Leaf)
- Chicken Broth Powder (Optional to remain vegan)
- Whatever other vegetables you'd like

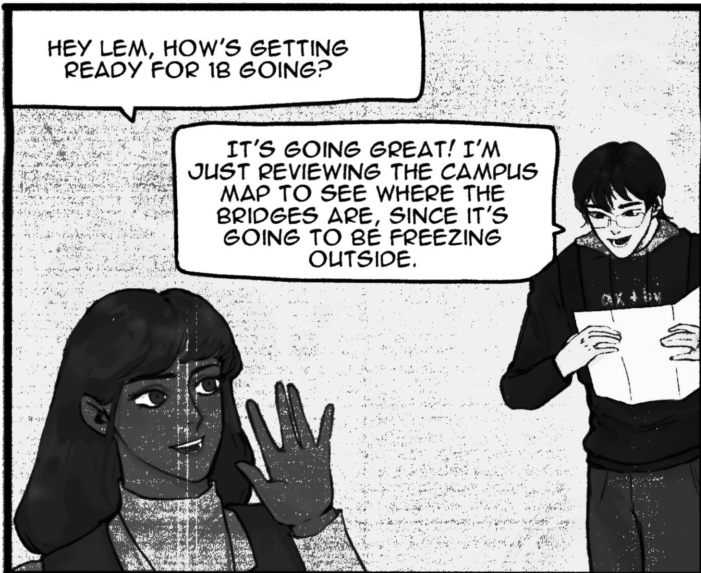
1. Heat the olive oil in a medium saucepan on medium heat until shimmering. Add the carrot, celery, onion, (and other hard vegetables) and salt and stir to combine. Cover and let the vegetables sweat, stirring occasionally, until the onions are soft and translucent, about 5 minutes.
2. Add the lentils, water and/or tomatoes, chicken powder, (any other soft and leafy vegetables) and bay leaf and bring up to a boil. Reduce the heat to low and let simmer, covered, until the lentils begin to fall apart, about 20 minutes.
3. Turn off the heat and stir in the lemon juice. Taste and season with salt as needed. Ladle into bowls and serve with toppings if desired.

Lars Nootbaar

1. Note: Adapted from my long lost family cookbook, and definitely not a random website I have no other attachment to, located at this very link — <https://www.thekitchn.com/recipe-red-lentil-soup-recipes-from-the-kitchn-212392>

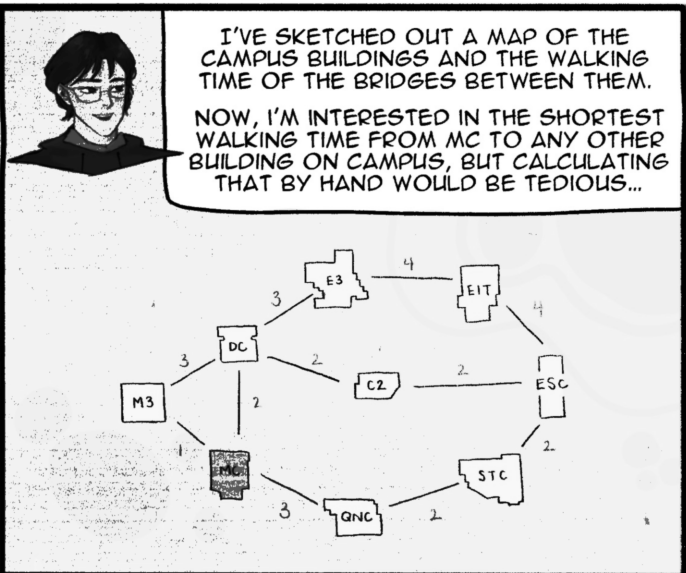
CS 341: DIJKSTRA'S ALGORITHM

STORY BY MARCUS CHAN | ART BY JENNY ZHANG

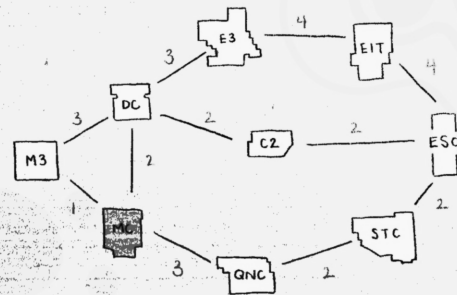


HEY LEM, HOW'S GETTING READY FOR 18 GOING?

IT'S GOING GREAT! I'M JUST REVIEWING THE CAMPUS MAP TO SEE WHERE THE BRIDGES ARE, SINCE IT'S GOING TO BE FREEZING OUTSIDE.

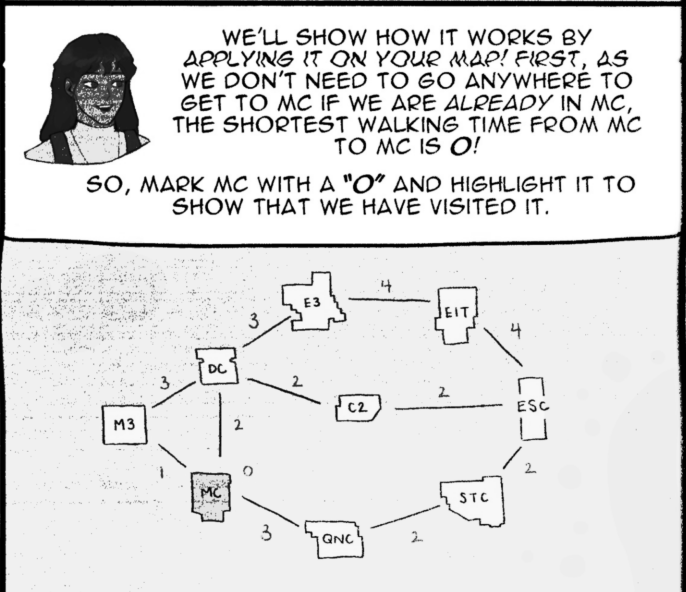


I'VE SKETCHED OUT A MAP OF THE CAMPUS BUILDINGS AND THE WALKING TIME OF THE BRIDGES BETWEEN THEM. NOW, I'M INTERESTED IN THE SHORTEST WALKING TIME FROM MC TO ANY OTHER BUILDING ON CAMPUS, BUT CALCULATING THAT BY HAND WOULD BE TEDIOUS...



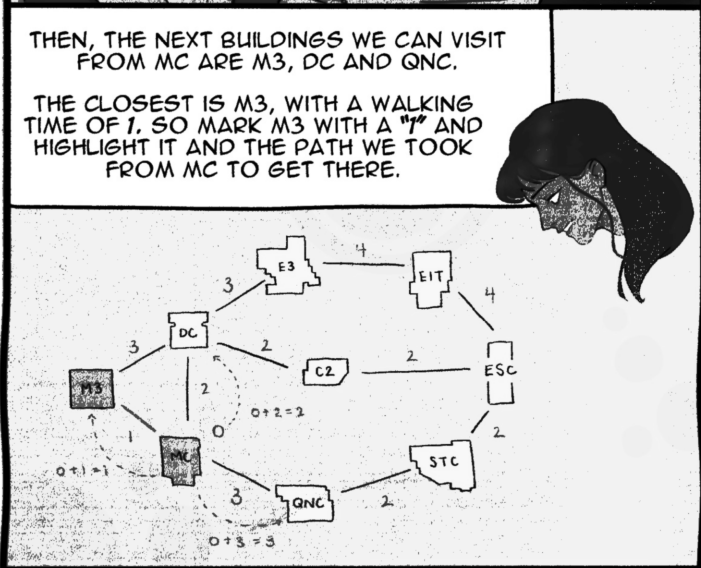
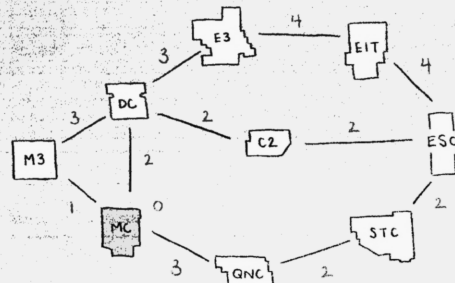
WE CAN USE DIJKSTRA'S ALGORITHM FOR THIS, DISCOVERED BY EDSGER W. DIJKSTRA IN THE 1950S.

OH, HOW DOES IT WORK?



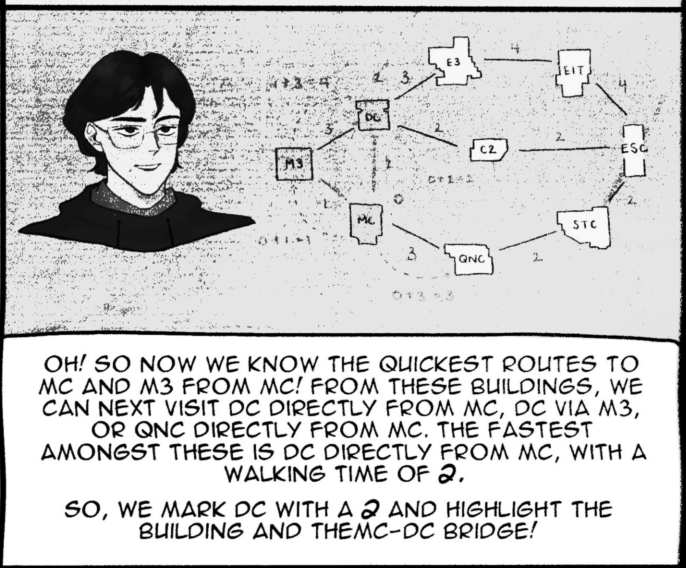
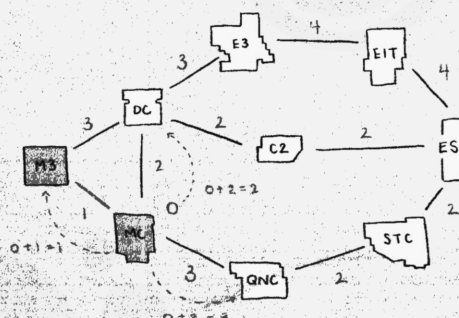
WE'LL SHOW HOW IT WORKS BY APPLYING IT ON YOUR MAP! FIRST, AS WE DON'T NEED TO GO ANYWHERE TO GET TO MC IF WE ARE ALREADY IN MC, THE SHORTEST WALKING TIME FROM MC TO MC IS 0!

SO, MARK MC WITH A "0" AND HIGHLIGHT IT TO SHOW THAT WE HAVE VISITED IT.



THEN, THE NEXT BUILDINGS WE CAN VISIT FROM MC ARE M3, DC AND GNC.

THE CLOSEST IS M3, WITH A WALKING TIME OF 1, SO MARK M3 WITH A "1" AND HIGHLIGHT IT AND THE PATH WE TOOK FROM MC TO GET THERE.



OH! SO NOW WE KNOW THE QUICKEST ROUTES TO MC AND M3 FROM MC! FROM THESE BUILDINGS, WE CAN NEXT VISIT DC DIRECTLY FROM MC, DC VIA M3, OR GNC DIRECTLY FROM MC. THE FASTEST AMONGST THESE IS DC DIRECTLY FROM MC, WITH A WALKING TIME OF 2.

SO, WE MARK DC WITH A "2" AND HIGHLIGHT THE BUILDING AND THE MC-DC BRIDGE!

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CS 341: DIJKSTRA'S ALGORITHM

STORY BY MARCUS CHAN | ART BY JENNY ZHANG

YUP, AND WE CAN REPEAT THE PROCESS! FROM MC, M3 AND DC, THE BUILDINGS WE CAN NEXT VISIT ARE QNC DIRECTLY FROM MC, C2 VIA DC AND E3 VIA DC. THE QUICKEST ROUTE AMONGST THESE IS QNC DIRECTLY FROM MC WITH A WALKING TIME OF 3!

WE CAN GET THE WALKING TIMES FROM MC TO THE NEXT BUILDING BY ADDING THE WALKING TIME OF THE BUILDING WE CAME FROM AND THE WALKING TIME OF THE BRIDGE WE ARE TAKING!

OH, OH - I'VE GOT THIS, WE'VE VISITED M3, MC, QNC AND DC, AND FROM THESE WE CAN VISIT E3 FROM DC, C2 FROM DC AND STC FROM QNC. THE SHORTEST OPTION OUT OF THESE IS C2 FROM DC WITH A WALKING TIME OF 4, SO WE MARK C2 WITH A "4" AND HIGHLIGHT THE DC-C2 BRIDGE!

YUP, AND WE CAN KEEP REPEATING THIS PROCESS UNTIL WE HAVE VISITED ALL THE BUILDINGS!

HMM...BUT HOW DOES THIS HELP ME FIND THE FASTEST PATH FROM MC TO EACH BUILDING?

WE CAN BACKTRACK USING OUR HIGHLIGHTED BRIDGES TO GET THE ROUTE! LET'S SAY WE WANT TO GET TO EIT: FROM EIT, THE EIT-E3 BRIDGE IS HIGHLIGHTED, SO ADD E3 TO OUR ROUTE. SIMILARLY, FROM E3, THE E3-DC BRIDGE IS HIGHLIGHTED, SO ADD DC TO OUR ROUTE.

FINALLY, FROM DC, THE DC-MC BRIDGE IS HIGHLIGHTED, SO ADD MC TO OUR ROUTE.

THIS GETS US A ROUTE FROM EIT TO MC!

route: EIT → E3 → DC → MC

OH, SO IF WE WANT THE ROUTE FROM MC TO EIT, WE CAN JUST TAKE THE "REVERSE" OF THE ROUTE WE RECOVERED!

route: MC → DC → E3 → EIT

YUP, AND WITH THAT, THE ALGORITHM IS COMPLETE! ENJOY YOUR FIRST DAY OF 18!

FIRST DAY?! I'LL CROSS THAT BRIDGE WHEN I GET THERE.

SUMMARY:

WE USED DIJKSTRA'S ALGORITHM TO GET THE ROUTE WITH THE SHORTEST WALKING TIME FROM MC TO EVERY OTHER BUILDING.

USING THE ALGORITHM, WE CONSIDER THE BUILDINGS WE CAN VISIT FROM THE ONES WE HAVE VISITED.

WE THEN HIGHLIGHT THE BRIDGE WITH THE SHORTEST WALKING TIME FROM MC AND MARK THE BUILDING WITH THE WALKING TIME WE CALCULATED.

TO RECOVER THE PATH FROM MC TO A BUILDING, WE CAN START AT THE BUILDING AND BACKTRACK ALONG THE HIGHLIGHTED EDGES UNTIL WE REACH MC.

IN GENERAL, DIJKSTRA'S ALGORITHM IS USED TO FIND THE PATHS OF MINIMUM WEIGHT (IE. THE WALKING TIME HERE) IN A GRAPH.

AFTER THAT LAST PUN, THEA WANTS TO BURN HER BRIDGE WITH LEM...

Sally's Last Dance

It was a brisk February morning, snow fluttered down gently, and all the students of Midtown Secondary School could think of was romance. The 14th was just around the corner, and love was in the air. The student body was buzzing with rumours, speculation, and gossip about the upcoming Valentine's Day Dance.

In the midst of all this, Sally was just about to enter her French class when she heard someone clearing his throat behind her.

"Hey Sally," said a smooth voice.

Sally turned to see Jake Tremblay. He wore a Blink-182 tour t-shirt with his baggy jeans and a chain tucked into his belt. Under his arm he carried a vintage Santa Cruz board. Jake Tremblay was cool, and dammit he knew it.



"Wanna go to the dance?"

"Oh my god!" Lucy squealed. It was lunch, and Lucy's shriek had cut through the background conversation in the cafeteria like a knife through butter. Several eyes turned towards Sally and Lucy.

Lucy regained some composure and lowered her tone. "No way Jake Tremblay asked you to the Valentine's Day Dance! He's like the hottest guy in French class!!!"

"He did seem a little nervous when he asked me to go with him," Sally said, reflecting back on it. That was a little out of character for the easy going Jake Tremblay. What made him so nervous?

Lucy interrupted her musing, "So what did you say? Did you turn him down?? Did you crush his dreams???"

"Well, I told him I'd think about it," said Sally

"So what are you going to do??" Will you go with him or go alone??" Lucy was leaning towards Sally so much she was almost falling off her seat!

"Well, it's not that simple," Sally said, and she continued her story of that morning.

The floors of Midtown Secondary were coated in the residue tracked in by the students' boots. Sally skated on salt as she made her way to math class. She was about to go in when she heard the squeak of sneakers behind her.

"Howdy Sally."

Sally turned to see Veronica Brown. She wore a jean vest with boot cut jeans. Veronica was so cool she saved 5 elderly people from the last heat wave. Literally.



"Whaddya say about going to the dance with me?"

"Holy Smokes!!!" Lucy shouted. "Veronica Brown is, like, the most beautiful girl in math class!!!! What did you say!!!!!!?"

"I told her I'd think about it," Sally said, "And besides, I still haven't finished the story yet" and she continued recounting how her morning went.

The flickering fluorescent lights of the founders' wing of Midtown Secondary fought off the little sunlight during the short winter days. Sally heard a crash behind her. She turned to see a fallen ceiling tile shattered across the linoleum floor.



"No way!!!" Lucy interrupted again, "Sammy the Seventeenth Ceiling Tile is one of the most eligible bachelors in school! That crashing-into-the-ground move is so smooth, he must be really into you!!! What did you say???"

"Well," Sally said, "the shattering across the floor was pretty suave, and I was tempted to say yes right then and there, but I wanted to wait a bit."

"So have you decided on someone else???" Lucy asked.

"I haven't yet," Sally said, "Besides, I still haven't gotten to tell you everything so far."

And she continued her spiel.

The basement of Midtown was dark and damp, layered in mould the school could not kill. Sally crept through on her way to Biology, among the sounds of dripping water, scampering rats and roaches, and the occasional eerie whine just out of her hearing range. All of a sudden, she heard the crunching of a thousand bones, the gnashing of a thousand teeth, and the squelching of a thousand scumblers scrambling up behind her.

"Hey Sally!" The voice was that of screaming. Pained screaming. It sounded like death and despair and sadness and emptiness and the volume of white and the tear filled eyes of an earthworm and the rhythm of the subconscious and a thousand other things Sally couldn't even begin to fathom, but sexy.

Sally turned around, finding herself face to face with Ghamanothoa, a horrific mass of a writhing and churning tar like substance, covered in uncountably many eyes and mouths, who existed beyond human comprehension. Hearing the echoes of his great and terrible voice, Sally felt her sanity begin to seep away. As she gazed upon his myriad of eyes blinking across the tendrils and globules of plasm and teeth that made up his form, she felt her mind bend and crack and deform forever like a slinky stretched too far.



"Would you like to go to the dance with me?"



Sally looked up in a cold sweat at the very act of remembering this encounter. She blushed.

"Oh my god!!!" Shouted Lucy, "Ghamanothoa is the most unknowable terrific entity in school! They say that what we know as him is just a projection as he dreams in the deep sunken world, one day to wake up and destroy the universe as we know it!!! What did you say???"

"Well, I was pretty shocked to say the least." Sally chuckled nervously. "So I told him I would think about it."

"Sooooo..." Lucy pried, "who'll be your date?? Oh, you absolutely must tell me!!!"

"Well, there's still one more thing I haven't said yet," replied Sally, as she continued her story.



Sally was sitting in chemistry when she heard someone trying to get her attention. She turned in her seat to see Eternity sitting in the row behind her.



Sally looked into the being that was forever.

It looked back.

The clock ticked away on the wall

Eternity opened its mouth to speak.

The sun lowered in the sky. People shuffled in and out of class. The bell rang and the school cleared out. The stars came out overhead. It was a clear winter night.

"Would"

The stars slowly faded as the sun rose. A brilliant red sunrise. People shuffled in and out of class to the rhythmic tolling of the school bells. The sun moved through the sky, eventually sinking in the west. The stars came out, as brilliant as the night before and raced overhead.

"You"

Sally watched the snow melt and the spring flowers begin to bud. She watched as spring passed, and then summer. The leaves wrinkled and browned and fell to the ground as the winter snows returned. Sally watched the years go by, her friends grow up, start jobs and have families.

"Go to"

Sally watched cities rise and fall. She saw populations evolve, cultures shift. She saw as humanity left to explore the stars, as the planet became desolate and empty.

"The Dance"

Sally watched as the continents raced across the planet. She looked on as the sun slowly heated up and expanded. The earth's oceans boiled away by the ever growing star. The inner planets consumed.

"With"

Sally watched the universe stretch faster and faster at an impossible rate, stars and planets spread further and further away. Sally watched the lights in the sky fade, she watched the stars die, one by one. Sally watched as once-great roaring black holes, the last remnant of anything that had ever existed, slowly eroded into nothing.

"Me"

Alone in an empty universe, Sally sits with nothing but her memories of eternities earlier, reliving them over and over again in the dead void of the timeless expanse of infinite nothingness.

Happy Valentine's Day!

aphf with art by Not a N*rd

editorTHOUGHTS 151.2

Featuring dan schnabel, mathNEWS editor, 1984–1987

I decided to write this as though it were a **mathNEWS** article — one written as we did when we were in a desperate need to fill up space; i.e. there might be some digressions.

So here goes... **mathNEWS** — the proper lowercase-upper-case formatting of the name never really reflected the content during my tenure in the mid 1980s. The content was better described by our slogan “Not much math and even less news”. I would be surprised if the slogan was still in use, but not surprised if it was still valid.

My UW years were the best and most formative four-and-two-thirds years of my life and that is due in no small part to my time working on and editing **mathNEWS**. Four-and-two-thirds because I was a co-op student — at least at first — as I originally started in a joint Applied Math / Computer Science and for CS, co-op was pretty much a given. I would eventually switch to Applied Math / Pure Math and drop out of co-op, which you could do back then without paying a financial penalty. Being in the co-op program would also play a part in my being involved in **mathNEWS** because, with only one four-month exception, all my co-op jobs were in the Kitchener-Waterloo area. In fact, my first two co-op placements were in UW’s Data Processing Department which at the time was located on the sixth floor of the MC building. As a result, I spent a lot of those four-and-two-thirds years, at all hours of the day and night, around the campus and in the MC building.

The MC building was so much a part of my life then that I got used to how it sounded and how it felt; the sound in the stairwells when they are empty on windy days or just the air pressure changes as one door opened and closed late at night, long after all the lecture halls had been vacated. The air pressure changes could actually cause those big black stairwell doors to open a centimetre or two or they might offer more or less resistance to being pushed open. Back then those big black doors did not have windows cut into them and apparently people could get hurt when someone going in got clobbered by someone going out. I happened to be there when a crew came to cut windows into those doors and I saved one of the cut-out slabs for posterity in the **mathNEWS** office. It looked like the monolith in 2001: A Space Odyssey, and I envisioned it being similarly revered, but maybe it has since been thrown away. *[ed. note: it’s still here.]*

More than a decade after graduating, I found myself regularly returning to the MC building for work related to math contests and, by Jupiter, the building still felt and sounded mostly the same — like a home away from home. But I was there a couple of years ago and I think all the skyways connecting it to other buildings have irreparably altered the air pressure dynamics.

Anyway, back in those days, the Engineering-Math-Science library was located on the fourth floor of the MC building and that was a great place to study or just surround myself with math books. Short breaks could then be taken in the third floor lounge. To get anywhere else, like the Student Life Centre we actually had to go outside. In those days the SLC was called the Campus Centre and it was smaller and there was a video game arcade upstairs, which was where I spent longer breaks and weekends.

So yes, I was a nerd and I hung around the MC building. The good thing about being a nerd at UW is you will have plenty of nerdy friends whose personalities vary across the wide spectrum of nerdiness. I had a friend who was involved in **mathNEWS**. Production took place on Monday nights in the MathSoc office and vicinity, so it was pretty much inevitable that I would run into him on a **mathNEWS** production night and get drawn into it all. I would go on to be the editor of **mathNEWS** for several terms.

Incidentally, I realize my writing is making me sound like Grandpa Simpson, but hey, back in those days, we didn’t have The Simpsons, and we were forced to write **mathNEWS** comedic articles about the antics of Ronald Reagan and Margaret Thatcher. We had acid rain, the Berlin Wall, and the Cold War threat of nuclear annihilation in the news but not in **mathNEWS** (we had a slogan to live up to). We let The Chevron and Imprint cover those things and we made fun of them. Back in those days Fermat’s Last Theorem was just a conjecture, all our hypothesis were false and all our proofs were by contradiction because that is just the sort of people we were.

Production nights were on Mondays and the issue would be distributed on the Friday. There was no Davis Centre so the life of a mathie centred on the MC and the third floor in particular. Distribution was just a matter of setting it on the benches in that third floor common area. We printed somewhere around one or two thousand copies and by the end of the day they had been scooped up. We had a **mathNEWS** office there too and I liked to hang out there and hear the feedback.

Also in that common area, between the **mathNEWS** office and the MathSoc office, was the Computer Science Club office. They had a couch which apparently had been the site of some heavy amorous activity. But we only had desks because we had work to do. Mostly during the week we would collect items from the **mathNEWS** submissions drop-off box and talk about articles and things for upcoming issues. We printed just about everything that was submitted. Still, it was a lot of work coming up with enough filler for the rest of the pages. We wrote on-going serial adventure stories just so we wouldn’t have to have entirely new ideas every week. I recall something called “The Raj of Rochester”, “The Caliph of Caliphornia”, and “Watman”, the latter of which was very loosely based on Batman.

One day (in 1986?) someone dropped off a few quotations from professors and thus I was there for the first publication of Prof Quotes, which I gather continues to this day. It was not long before we were printing quotes of professors expressing their chances of appearing in the Prof Quotes column.

I do not remember any of the quotes, but neither do I remember many of my professors. However, I do remember Harry F. Davis. He was not very well liked, but I was in his second year Multivariable Calculus class and I thought he was a hoot. In that class he would express astonishment that people could not understand his lectures. He used to say “I could teach this to mentally retarded squirrels”. Yes, back then you could say stuff like this and generally destroy students’ egos without repercussions. That was also when the construction of the Davis Centre

was announced so I wrote an article for **mathNEWS** speculating that it was named after this curmudgeon. Thus our Davis Centre announcement was entitled (to the best of my memory) “Waterloo Announced Davis Centre for Mentally Retarded Squirrels” Most of the class had read it by the time of his Friday lecture and I made sure he had seen it to by sliding an issue under his office door, open to the page of the article. He came to the class and expressed his response with good humour that had the room laughing. I think he appreciated the opportunity to make people laugh.

In my mind, that was the main purpose of **mathNEWS** — to give everyone a good laugh. Student life can be tough and we can all use a good laugh. But we also had “moaner” submissions, i.e. people who thought they could use **mathNEWS** as a forum for grouching about how bad the world is and how bad their lives are. I did not think these fit well into the spirit of **mathNEWS**, but according to a sort of “voice to the mathie” ideal that was part of securing funding from MathSoc, we were somewhat obliged to print anything submitted. One term we had a regular moaner whose week after week submissions kept getting longer and longer. However, an obligation to print does not mean we couldn’t edit. But how to edit a stream-of-moaning-consciousness? In the end I found I the most equitable way to do this and preserve the spirit of **mathNEWS** was by removing every second word. Looking back I realize that this was a rather nasty thing to do but hey, as a **mathNEWS** editor, sometimes you have to make the tough, unpopular, decisions. He stopped submitting after that.

Another challenge with **mathNEWS** was always coming up with the cover page. For the alternating terms when I was not on campus, there was a fellow who drew covers which were almost always cartoon pictures of an anthropomorphic rabbit math student going about a math student’s life. But when I was editor we had no such talented artist so I had to make up whatever I could. One of my favourites was a photocopied page of the “Ma” section of the phonebook altered to include a fake entry for **mathNEWS**, the pretense being a sort of taking pride in the achievement of having made it into the phonebook. I did see people checking the phonebooks that were attached to the payphones on the third floor.

How the times have changed. Phonebooks and payphones are almost extinct and now it is all cell phones and email. Do people still hand-write submission to **mathNEWS**? But at least there is still **mathNEWS**, there are still Prof Quotes, and people are probably still having sex in the Computer Science Club office. Hopefully the couch has changed. I hope **mathNEWS** has a 100th anniversary and I hope I am around to see it. I am sure the technology to produce it will be as different from today as today’s technology is from my time. Maybe instead of Prof Quotes there will be Humorous Glitches That Occurred While Downloading Knowledge Into A Brain’s Math Chip. Maybe that is what I should have called it from the beginning.

Dan Schnabel, B.Math ‘87

As I mentioned at the beginning, I wrote this with the intention that it could be used as a **mathNEWS** article, but if you find it is too long, feel free to print only every second word. And thank you [to the editors] for giving me this opportunity. Perhaps we shall see each other at the 100th anniversary gala. I’ll be the guy in the urn.

escaping the summation

Can the golden child grow up?

We are in large part the sum of our parents¹. Our character, our thoughts, our hopes they shape from time before our memory. They construct a box of well-meaning expectations, bind it with their well-worn thoughts and seal it with their comfortable patterns. Before you could voice your opposition, its walls were too high to climb; before you could run away, its trap was already sprung. The box does not have a door.

As a child we’re more likely to embrace the box, to take pride in the pride of others. But as I’ve grown larger and larger, the box has not grown at all.

Are you a golden child? Have you wrested control of your life?

Have you escaped your parents’ sum?

Must we use separation? Many a student knows well the experience of dodging family members’ video calls; of hiding their life from those who would inspect it too deeply, somehow disrupting its hallowed self. Many know the fear of having worlds collide.

Is this the means by which we reclaim our lives? Without separation, the effort would be hopeless; at each intersection of our life we would be directly influenced by the attitudes of their guardians, the silent disapproval and deep-set worry. But separation alone cannot escape the sum — who can dream of a better child than the one who behaves perfectly when unwatched? The summation has no lesser value simply because it is uncounted.

Must we use sin? Is the right to call our souls our own only earned through the disapproval of our mentors? Through pursuing the forbidden, causing worry by intent, invoking anger by action? Through the resounding decision of each mentor that these actions we take, it cannot be from them it spawned.

Even this cannot break the box. To effect one’s mentors’ disapproval and concern only reshapes and moves the box; it fails to present an exit. Trading spite for love does not change its destination. Trading affection for worry does not change its source. The summation is the same: we are built of our first influences. In this we remain children, naught but conversation topics and pet projects for those who would change our actions. We never grow. We are not our own.

Must we use subterfuge? To escape the summation without it adjusting to our changes, we must add another term in our place; we must trick the ever-watchful box of our mentors’ expectations into rest. Our mentors have no claim on a soul of whose existence they have been misled. What if we must construct a story for their eyes; an illusory throne to watch in awe as we dodge away from view. What if to live true to our souls, we must present our mentors a lie?

Are we so doomed by the sum of our influences that we can only claim our lives through deceit? Through creating so firm a barrier between our image and our soul that none may make a claim to it but ourselves? Is the key to escaping the summation of our parents in loneliness, isolation, and lies?

Separation, sin, and subterfuge.

Tell me another way.

A culinary experience

It was the only Kabob place that was open at 10pm. The small place looked quite ordinary, even boring, and so we didn't walk in with great expectation. What we got though was some delicious ass Kabob and the best food I've had in years. I just had to tell you about it.

It was late and so besides me and my girlfriend, the only person there was the chef. It was a delight to speak to him in Farsi, a language I grew up around. And so it began with speaking and hearing it that I got transported back a decade, to a time and place where most restaurants served and a tiny place like this might pass unnoticed among an ocean of others. But here my friends, this is a special place.

Delicious as it is, there is not much variation when it comes to Kabob. If you haven't had Persian style Kabob yet, it is a skewer of barbecued meat, served with rice and barbecued tomatoes. The meat is a choice of ground beef, chicken, beef tenderloins, and lamb and that's about all the choices you get. I ordered a skewer each of ground meat (koobideh), chicken (joojeh), and tenderloins (barg).

Choosing drinks is a more delicate matter, especially if you're as high as I was.. They have a dozen flavours of this incredible nonalcoholic beer brand that's popular in Iran. I was standing there for about ten minutes before finally deciding to get the pineapple one.

The chef brought us some warm bread and garlic yoghurt to snack on before the main event. This restaurant is not built for speed, it demands your attention and time. As for the main course, all I can say is it tasted exactly like the Kabobs I had in Iran. Which is to say, wonderful. But you really have to try them yourself.

Something beautiful happened at the end. The chef brought us freshly brewed tea, and seeing that it was almost closing time, urged us to stay as long as we want to drink it. In Iran we used to drink like ten cups of tea a day, and we always shared it with others. Because it takes so long to drink, it makes the perfect companion to any conversation. It is a wonderful thing. The tea comes with a bowl's worth of sugar cubes. To drink tea the Iranian way, you dip the sugar cube in the tea for a split second, put it in your mouth, and let it melt while you're sipping on your tea. Repeat as necessary. This translates to about 5 sugar cubes per cup. Yeah that's a lot of sugar per day.

Anyways, this was the best thing I've had in years, and I've been thinking about why I liked it so much. Sure, the food was delicious, but I've had plenty of good tasting food. So you need good food to have a good culinary experience, but you need some other things too. So without further ado, after lots of thinking, I bring to you my principles behind good food:

- Good food is shared with people you love: Explaining the lore and the rituals behind Persian food to my girlfriend, and getting to see what she thought about the food was one of the best things about the experience. Pleasant conversations make food taste much sweeter.
- Good food demands your attention: We usually don't think about the food we eat. If we do, we confine ourselves to things like the macronutrient composition, the price, and the like. The food itself becomes an

abstraction, not something to be cherished. Good food can be the cornerstone of your day.

- Good food is surrounded by rituals: First comes the garlic and bread. The Kebab must always be accompanied by saffron rice and tomatoes. Most importantly, tea is always served, and always with sugar cubes. The food has to be prepared in a specific way, and compromises are not accepted. These are simple things, and easy to forget when you're living in them.

These principles have little to do with the food itself, and so if you go to the same place, you might not be blown away as much as I was, but I think you will still like it.

It occurred to me today, while thinking about these principles, that these are also the reasons why I love **mathNEWS** pizza.
curdish

N Positive Things About aphf

- He's a nerd
- Tall enough that he can take the top shelves (we're roommates)
- He's a good buddy at water polo
- "That's actually pretty funny" — Director Michael Alexander 2023 to something aphf said
- He has great hair
- Deep wise eyes and a deep voice — Kermit and Molasses
- Makes really good muffins
- Has this great joke about brainsuckers (ask him about it)
- After saying this joke he laughs really loudly and slaps his knees and runs around in the most extravagant way possible
- Remembers very specific facts about synchro he was told one time
- Walks very fast, must be efficient
- Waited 3 months to watch Mob Psycho with us
- His mom is really nice and gave us free food
- Doesn't waste time looking at his phone (has a flip phone)
- Bears an uncanny resemblance to Frodo from The End of the F*cking World
- Actually cleans the dishes in the sink
- He's edgy (this one is a *drumroll* double edged sword)
- Listens exclusively to boomer music and Minecraft parodies (the best kind of music)
- Plays the accordion in Waterloo's best Minecraft parody band MC/DC
- Sings Chandelier by Sia like an angel (ask him to sing it)
- He's a good writer

Not a N*rd and peacelovemath

N Instrumental Songs I've Been Vibing to Since 151.1

not that 151.1 has had any major impact on the songs i've been listening to



You know how they say how the music you listen to determines your day-to-day mood, mental well-being, and general outlook on life? To be honest, I've got no clue whether that's true or not and I just made it up to grab your attention. Ethically questionable behaviour aside, I still believe that that statement may have some kernel of truth. And with SAD season finally on it's way out, I've gathered some songs that may or may not impart good vibes into your day. Enjoy!

peppermint parkway — leon chang

Lately I've been looping this one on my way to and from work/gym/anywhere. It's an homage to the music of mario kart, similar in fashion to famous bangers and timeless classics like Coconut Mall. This one slaps.

2010 Toyota Corolla — 2003 Toyota Corolla

"Comfortable, dependable, and just all around pleasant. The 2010 Toyota Corolla is a complete redesign from the older 2009 model, offering smoother handling, stability control, and excellent mileage."

This is probably how I would describe both 2010 Toyota Corolla the car and 2010 Toyota Corolla the song.

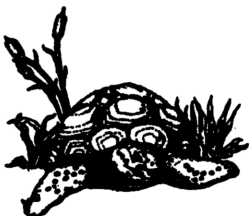
coffee shop jam — leon chang

This one's more Lo-Fi style. The best way to describe it is to imagine a place where you can just let go of yourself and relax. Maybe it's your old childhood bedroom, or a quiet nook in the sixth floor of DP, or it could even be the fabled land known as "anywhere but MC".

the cat from ipanema — j1ggs

It's a cat, yo. Need I say more?

turtle



Are you a Turtle?

Skip-It Industrial Revolution

Do any of you remember those silly toys from childhood, where there was a rope with a ring on one end and a ball on the other? And you put the ring on your ankle and swung it around to jump over it with your other foot. This is a terrible description of a great toy that I was recently reminded of called Skip-It.

I loved Skip-It as a child, and am now, suddenly — as of 5 minutes ago — really invested in bringing it back.

In my brief research so far (aka. reading the unfortunately-quite-short Wikipedia page) I have discovered that there was a so-called "Skip-It Renaissance" in the early 90's. Hence, I propose a "Skip-It Industrial Revolution".

Everyone shall own a Skip-It.

Gone are the days of steam engines. We will power the world with the Skip-It.

Gone are the days of 12-16 hour days in a factory. We will work 12-16 hour days for the Skip-It.

You must Skip-It.

We will know if you don't.

Some of the more recent Skip-It's have counters to record your number of skips. *We will know if you don't.*

We welcome you to join the Skip-It Industrial Revolution. *We will know if you don't.*

normalparameters

Top 10 crimes to do at the University of Waterloo

Our lawyer advised us not to publish this mathNEWS article. Without further ado:

- 10 — Child Labor
Internships in a nutshell.
- 9 — Shoplifting
The WStore's security is surprisingly lax.
- 8 — Tax Fraud
Tax Fraud is always morally correct.
- 7 — Perjury
WaterlooWorks is the construction of Xezbeth.
- 6 — Cryptocurrency Scam
Wait, what does CO487 stand for again?
- 5 — Arson at E7
Framing engineers is also always morally correct.
- 4 — Playing Genshin Impact
In some countries, punishable by death.
- 3 — Kidnapping a Canadian Goose
A violation of the Migratory Birds Treaty Act.
- 2 — Child Abandonment
Just make sure your GPA is above 3.9.
- 1 — Racketeering
Contrary to popular belief, "Doctor" Racket does not actually have a PhD.

/ˈaeren/˘2

Reviewing every song in 女王蜂 (1978)'s OST

I paid \$50 bucks for this.

A little bit of preface — Joobachi is one of several films by Kon Ichikawa in the Kosuke Kindaichi Series, whose modern day equivalent would be Benoit Blanc or Hercule Poirot. There are five total films, four of which have had their soundtracks uploaded to Youtube. The last one is Queen Bee — so I did what any sane guy would do and bought a foreign CD for \$50 to listen to it. I don't even have a CD player, but I am likely the first Canadian to listen to this music. Without further ado — let's review!

01 — Queen Bee's Theme

The titular track, this is the opening credits. Starting off strong, it sets the scene for an adventure filled with espionage and secrecy. The cotillion adds a sense of urgency, and establishes one of many motifs common to the soundtracks of composer Shinichi Tanabe.

02 — Yueqin Village

This is a shorter track, playing when a murder (set 20 years ago) occurs, with a sense of tragedy and suspense. Not much more can be said. After all, it's only one minute long.

03 — Queen Bee — Tomoko's Theme

One of the main characters is Tomoko Daidoji, in which this theme is centred around. It's a blend of lonely and yet carefree, establishing the second motif of the soundtrack. Words can't describe this theme — but it's something you would listen to while strolling through a Japanese Garden in midday of summer.

04 — Akanokeitonotama

Don't worry, I don't know what that means, either. There's a strange feeling listening to the song where there's something lying underneath a calm exterior, but it hasn't surfaced just yet.

05 — A Father's Grave

Again, a third motif established here, but you can hear bits of the first motif as the strings wind up, but never come through — a reminder of something never resolved.

06 — To Kyoto

Oh we are running!!! This track is frantic, and if you listen closely, you can liken it to a train, with the high pitched strings sounding like track squeals and whistles. They also double up with shades of Ginzo's theme.

07 — Ginzo's Theme — Sea of Gray

Why are there so many themes??? This is the theme of Tomoko's father — Ginzo Daidoji, which will appear prominently within a few other tracks. I promise.

08 — Hideko's Theme — Closed Thought

THERE'S TOO MANY THEMES anyways You can hear both Tetsuzo, Tomoko and Ginzo's themes in shades here, mixed together, with a mix of the original theme in here and there. It also pays tribute to some of Ichikawa's other works, reminiscent of *Gokumon-to* and *Akuma no temari-uta*. You can find both of Youtube if you make the right search for it.

09 — Unopened Room

Another short track, this time another one in which a room is investigated — one that hasn't been opened in a long time. Again — secrecy is a major theme within Kosuke Kindaichi novels and films.

10 — A Single Photograph

At first, it sounds fairly innocuous as a secret is revealed. However, in this segment of the movie, two scenes are happening at once — a confession, and a confrontation. You can probably guess one of the characters involved in the scene by which theme plays (Hideko). As well, at the end, you'll also hear the main theme, albeit less intense! It's all coming together.

11 — Bloody Tea Party

You can probably guess what happens during this scene, and let me say the play-by-play of what was happening in the movies really screamed 1970s as we see a two-by-two reaction of everyone. There's some extra added funk — just in case you weren't sure what decade this was made in.

12 — Kosuke Kindaichi's Day

Holy shit. This screams 70s. The piano, the synth 'weow' effect, the drums??? You could literally put this over any footage of the 1970s and it'd fit perfectly.

13 — Clock Tower

Suspenseful! I like it, and while it is short, it sets up the first murder as it happens within the film. The Clock Tower becomes a rather important fixture in Joobatchi.

14 — Will

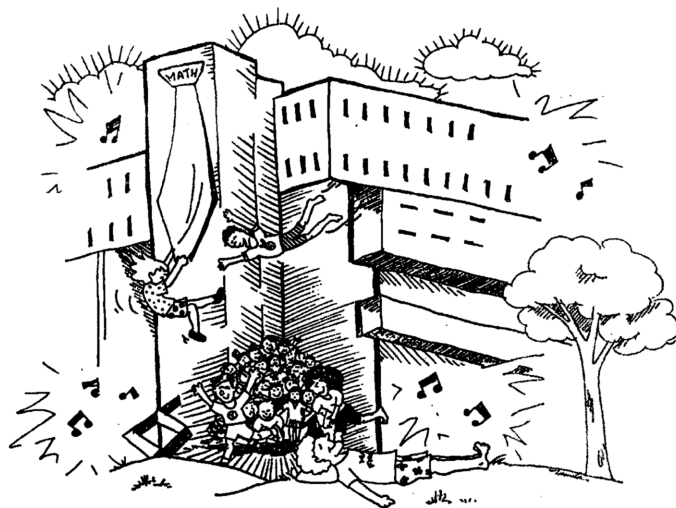
A tragic climax that incorporates the main theme, it almost feels like the credit sequence, a calm yet tragic tune with a very brief sense of urgency that has now passed — and then Shinichi **steps it the fuck up**. I kid you not, the last quarter of the song is the drop and it is BANGIN. Almost feels like you're on a horse riding into the sunset.

15 — Love and Hate

Strangely enough, this is listed as Track 8 in other listings. Anyways, it's another reprise of the main film, with a bit of 70s sass akin to the Pink Panther, and for some reason I get callbacks to an Anne of Green Gables musical. It also has a tango rhythm to it — most of the themes here do. The track fades away, almost sounding like a train whistle — which is where the movie's end takes place.

So that's really the end of it. Keep your eyes out — I might drop a video with the whole soundtrack on it! And then get copyright struck, but hey — music is for the people. This hasn't been listened to in years.

skitterlc



“The Other Side of the Story” — A Review

This story begins on a Wednesday, in the alley behind a darkened plaza pub whose name rhymes with Polly’s. There, I was finalizing a deal with an erudite figure of great repute — someone whose very name graces these bond paper pages. “Yes, Finchey,” they said. “Just give me the [REDACTED], and you can take my place and go!” And so I gave them the [REDACTED] and we went on our merry way, promising never to speak of the interaction ever again.

Well reader, what boon exactly was bestowed upon me? I know you’re dying to know. Well, here’s what it was: a free ticket to the FASS Theatre Company’s Thursday show, *The Other Side of the Story*, in exchange for a written review. For the unaware among us: FASS (short for Faculty, Alumni, Staff, and Students) is an amateur theatre company based here at UW, 61 years young. (Older than **mathNEWS**, still.) I had heard of them before when they did live shows in the Before Times, but never really went to see them perform. On Thursday, that would change.

As I plopped down into the seats of the Modern Languages Theatre (incidentally, Thursday night was pay-what-you-can night: who knew?) and the lights went dark, my ears and eyes were graced with choir of heavenly angels — this was a musical! And was that *live instrumental music*? I looked to stage left — yes, there was a pit band, in flesh and blood (the program notes I’m referencing say the band is called “Mike’s Birthday Rager”; there seems to be no one in the band named Mike).

The Other Side of the Story, an original FASS musical comedy, is composed of six parodic vignettes, each providing much-needed perspective to our favourite stories (*The Legend of Zelda*, *Jaws*, and *Little Red Riding Hood* to name a few) from a most unexpected point of view — that of the villain. Tales of love, justice, and misunderstandings abound. Perhaps my favourite

vignette was “McGrWah!”, employing the framing device of a trashy TV talk show as a means to delve into the tragic life of *Mario* series antagonist Waluigi. (My God, Waluigi and Luigi were *roommates*?)

Perilous puns, horny jokes, and plot holes like cheese abounded. Interspecies romance came up as a plot point twice. Ward 6 City Councillor Mary Lou Roe made a cameo. (If I had gone on Friday or Saturday, I would’ve seen Dan Wolczuk or Waterloo MP Bardish Chagger instead.) Link from *The Legend of Zelda* did a rap about climate change. Singing? Mwah. Dancing? Mwah. Prop design? Mwah. Costumes? MWAH MWAH MWAH. (The marine animal costumes for the *Jaws* segment really *blew me out of the water*, if you know what I’m saying.)

The highlight of the whole production for me was at the very end, during the closing number. Parts of the cast came up on stage to sing and dance to “FASS 2023” (set to “Rather Be” by Clean Bandit), a whole-ass number about FASS itself. As the night finished off with the ukulelist/drummer of Mike’s Birthday Rager doing a sick drum solo, I reflected on everything I had just witnessed in the past hour and fifteen minutes. Is this production ready to be put on Broadway? No. But no one needs it to be. FASS is pretty chill about what it does — as they say right here in the program notes, their whole *raison-d’ctre* is “amateur, amateur theatre.” “Everyone gets a part.” This was FASS’s first live show since February 2020; I could tell the cast and crew members were having fun (and I could imagine the writers had fun drafting the script, even if I weren’t there to actually see it) — and I was having fun too. That’s all I could have asked for. To think they pulled it all off in... *three weeks*??? Am I reading these program notes right???

Such is the magic of amateur community theatre for you...
Finchey

How I ruined all my friends’ lives...

It started three weeks ago, on one drunken night. I replied to a question with “Joe”. It was unexpected, and it made everyone laugh. So obviously, I did it again. It was funny again. So I kept doing it again and again, and again and again, up to to the point where there was at least one “Joe” in every five sentences. Was it funny still? No. Did that stop me from saying it more? No.

The next Monday when I showed up to Snew’s lecture, I heard the word, but in someone else’s voice. I was shocked, I was surprised and I was proud. Soon everyone was saying Joe jokes. Apparently, they were saying it on the weekend too, I just didn’t notice it because I was saying a lot. (like a LOT).

It’s been been 3 weeks. The Joe jokes — or as we call them Joeks — are still going. And they are all horrible now. We have reached a point where it doesn’t even have to make sense. “Which building number?” — “100 and Joe”, “Where?” — “Joe”, “Joe?” — “Joe”. They don’t even time it properly. A week ago, I got a message from a friend how she’s angry because I “broke her boyfriend”. Apparently he made a Joek, and I would have been proud of him, if it wasn’t 2am. I still wonder where he made the Joek.....

The worst part about all this is that it’s spreading. Anyone who spends more than 15 minutes with out group gets infected and makes at least 1 Joek. We have infected an a non-trivial amount of people and it’s still going on. The final nail in the coffin, that lead me to this article, was when I got a text this morning from an upper year friend, and all it said was “Joe”.

They are all far gone. And it’s all my fault. But it’s too late to change anything. I started this plague and I infected my friends. I cannot save them anymore but in their honour I have to do this:

Joe Mama



profQUOTES 151.2

- “Humans and cats don’t couple like that.”
Michele Mosca, CO 481/CS 467/PHYS 467
- “This is a course about cryptology, not cryptocurrencies.”
Alfred Menezes, CO 487
- “The rest is what I call ‘Crypto gossip and history’”
Alfred Menezes, CO 487
- “Hitler, here, was Alice.”
Alfred Menezes, CO 487
- “The death isn’t related to this course though”
Alfred Menezes, CO 487
- “...so I asked ChatGPT”
Alfred Menezes, CO 487
- “Here, you can wave your hands all you want”
Alfred Menezes, CO 487
- “What is the difference between HMAC and a Big Mac?
HMAC is easier to digest.”
Alfred Menezes, CO 487
- “It’s classified by the NSA, so they can’t tell me. And if they
did tell me, I couldn’t tell you. And if I did tell you, I’d have to
kill you.”
Alfred Menezes, CO 487
- It’s clever code, and I don’t like clever.
Alexis Hunt, CS 240
- If you think you are suffering unnecessarily, thank AI.
Olga Veksler, CS 240
- In life, it helps to be pessimistic.
Olga Veksler, CS 240
- Induction hypothesis induction hypothesis.
Olga Veksler, CS 240
- “I would fail Grade 1.”
Olga Veksler, CS 240
- “5 divided by 2 is 2.”
Olga Veksler, CS 240
- “Red plus green makes brown. I’m proud of my colour
choices.”
Olga Veksler, CS 240
- “Such is life: sometimes we get double bad news.”
Olga Veksler, CS 240
- “I have taught this course since 1994.”
Olga Veksler, CS 240
- “How many of you have seen the paper ‘Quantum
Supremacy?’ *[waits]* Good, I’m glad none of you have seen it.”
Armin Jamshidpey, CS 240E
- “Zero is the nice guy: he agrees with everybody. If you add
him to anyone he’s like ‘ok, whatever you say.’”
Armin Jamshidpey, CS 240E
- “Do y’all already hate me for stating pure math results?”
Armin Jamshidpey, CS 240E
- “Somebody named... uhhh... Hoare.”
Armin Jamshidpey, CS 240E
- “Who here thinks you’ll have to sort something physical at
some point? *[a couple students raise their hands]* Okay, a few
people. Everyone else thinks it’s impossible.”
Armin Jamshidpey, CS 240E
- “Policy 71 will be enforced in this course.” [Repeat N times,
each time getting more distorted]
Alfred Menezes, CO 331
- “1 is the obvious one”
Alan Talmage, PMATH 340
- “Mathematicians have a little secret, which is they hate
multiplying”
Alan Talmage, PMATH 340
- “It looks like a phi and quacks like a phi” [here, the phi is
the one that looks like an empty set symbol]
Alan Talmage, PMATH 340
- “All we need to do is exit capitalism and enter a bartering
economy by making our own salmon clothes.”
Jordana Cox, SPCOM 228
- “I used to have a picture of just a random baby sleeping on
my slides, and then I was like I’m gonna use my own baby, so
this is my baby.”
Megan McCarthy, PSYCH 101
- “My hope is to eliminate that little bit of mmmm...”
Tom Iagovet, CS 240E
- “Only psychopaths don’t include 0 as a natural number.”
Gregor Richards, CS 241
- “Even if you think ChatGPT is intelligent, it is not.”
Gregor Richards, CS 241
- “We’re happy if it’s tuh or guhh.”
Gregor Richards, CS 241

"I will not get a curse word in here, but I will get sued by Disney."

Gregor Richards, CS 241

"Never ever read the specification for C++ if you want to continue being sane."

Gregor Richards, CS 241

"Everything holds true! We live in a wonderful world!"
Zille Huma Kamal, CS 251

"I have just gained the ability to remember!"
Zille Huma Kamal, CS 251

"The people that write this news, I wonder what kind of substances they are on."

Predrag Rajsic, ECON 371

"I don't want to think too critically these days."
Predrag Rajsic, ECON 371

"There is no premium for love, no premium for emotions, only cold hard transactions between you and Uncle Henry."

Predrag Rajsic, ECON 371

"I think the most important thing is living."
Kumiko Kunizane, JAPAN 301

"And now i'm going to give in to completeness temptation- isn't that a terrible ad campaign? 'Give in to completeness temptation...'"

Nico Spronk, MATH 247

"...invites the cold to fornicate with him in a direct manner."
Nico Spronk, MATH 247

[student asks him to draw a picture] "I guess I could, but it'll get jaggy."

Nico Spronk, MATH 247

"dambda"

Nico Spronk, MATH 247

"If I stop taking the stairs, it stops being a choice."
Nico Spronk, MATH 247

"Path connectedness is the daughter of connectedness (you can't get away from it)."

Nico Spronk, MATH 247

"Our (which is my conceited way of saying 'my')"
Nico Spronk, MATH 247

"I'm that pedantic! I can't do it! I can't do it man!"
Nico Spronk, MATH 247

"I didn't even want to talk about the limit before I had that."

Nico Spronk, MATH 247

"Not all sequences have a limit, but if it does, boy howdy it has just one, not two!"

Nico Spronk, MATH 247

"The boundedness is now my buddy, right? Boundedness is fun. Boundedness is awesome."

Nico Spronk, MATH 247

"We started playing with just balls, but now we can play with open sets!"

Nico Spronk, MATH 247

"Sometimes in life, you are given a set and are asked to prove this set is closed."

Nico Spronk, MATH 247

"Weird Newton-looking doodads."
Nico Spronk, MATH 247

"I apologize, I am kind of in the middle of an angered guilt spiral."

Nico Spronk, MATH 247

"Again, there's little to say, so I'll try to say little."
Nico Spronk, MATH 247

"Back in the 90s, extreme used to mean 'very cool,' like [does a fist pump] 'YEAHHH! LET'S GET EXTREME!!'"

Nico Spronk, MATH 247

"I'm dating myself now."
Nico Spronk, MATH 247

"Which American president is the least guilty (which these days is a very political question but I promise this joke isn't political)? It's Lincoln, because he's in a cent."

Sophie Spirkl, MATH 249

"This is not a formal power series. This is crime."
Sophie Spirkl, MATH 249

"This number is the golden ratio. Weird accident, probably means nothing."

Sophie Spirkl, MATH 249

"Eventually we'll start graph theory, and things will get better. But for now, we move through a land of crime."

Sophie Spirkl, MATH 249

"This is tremendous fun for me because I keep pulling rabbits out of hats, and sometimes the rabbit is a unicorn and it's like 'wait, how did that come out of there?'"

Sophie Spirkl, MATH 249

"There is a collective murmur, which usually means something terrible has happened."

Sophie Spirkl, MATH 249

“Let’s plug in four: four is a reasonably general number.”
Sophie Spirkel, MATH 249

“Historically, people used to perform music.”
Cam McKittrick, MUSIC 271

“I might let the geese decay a little more.”
Cam McKittrick, MUSIC 271

“The unit ball looks like a square.”
Laurent Marcoux, PMATH 351

“Since we were old enough to fall in love with metrics... legally.”
Laurent Marcoux, PMATH 351

“To show it’s a topology: we could throw our hands up and panic, we could try to beat the information out of a younger sibling, or we could start from the definition.”
Laurent Marcoux, PMATH 351

“I’m not advocating violence here so let’s go back to the definition.”
Laurent Marcoux, PMATH 351

“Ok, so this proof just has a lot of greek letters.”
Michael Rubinstein, PMATH 351

/someone takes a picture/“That’s a good idea.”
Jason Bell, PMATH 446

“When you do real things, you have to think about more than just the math.”

“We usually write ‘method of moments’ as MOM. It’s too bad we don’t write ‘maximum likelihood estimation’ as DAD.”

“If you’re excited everyday, that’s too much. You want to be excited most days.”
Mu Zhu, STAT 241

“Why would you want to be the friend of a politician? We’re talking about friends with benefits, right?”
Jingjing Huo, PSCI 244

“If you allow politicians to fleece the public at least once in a while, it makes the public sector more attractive.”
Jingjing Huo, PSCI 244

“This is the millennial president who has made wearing your hat backwards cool again... but it’s not just his hat that’s backwards, but also his policies.”
Jingjing Huo, PSCI 244

N things I did after losing a game of Coup to MathSoc President Nicholas Priebe, the most terrifying social deduction game player I know

- went home (12:39am)
- drank a cold glass of water
- took a bubble bath
- listened to an elliot smith record
- drank a glass of red wine
- dusted my houseplants
- had a long and heartfelt phone call with my mother
- smoked a long pipe in my bathrobe
- engaged in reflective journalling by the fireplace
- practiced mindful diaphragm breathing for half an hour
- shed a single tear while smiling mysteriously
- painted a field of dutch tulips in my boxers
- watched an adam sandler movie with the sound off
- drank another glass of red wine
- leaned back on my reclining couch while absentmindedly petting my cats
- read the wikipedia page on zen buddhism
- fell to my knees in existential dread while taking a cold shower
- licked the stamp on a handwritten letter to my grandmother
- smoked a cuban cigar while idly reading yesterday’s news
- drank another glass of red wine
- listened to a chet baker record on vinyl
- sat in deep reflection with my hand on my chin
- silently uttered a positive affirmation
- drank another glass of red wine
- pondered the purpose of suffering in a healthy human existence
- watched the rain pitter pitter patter pitter pitter against my window
- howled in cosmic fear as i shaved my legs
- let my phone fall from my trembling hands as i texted my friends that i love them
- drank another glass of red wine
- drank another glass of red wine
- painted a hedgehog swimming in a pond
- watched the sun rise on a beautiful new day, sleepless but filled with a foolish resolve to continue living. yesterday’s troubles seem so far away now (7:42am)



My Laptop Keyboard Sucks

It has sucked since at least July of last year. I was playing modded Celeste maps with my friend back then. I guess I must have pressed the buttons too hard or something. My w, d, 2, and escape keys are “unresponsive”. I don’t really know how to classify it because they actually still work, it’s just that you have to press another button before they actually register. It’s really weird and I have no idea why it works like that, all I know is that it does.

I’ve had to deal with this for a while, so I had to find ways to type messages with my keys being the way that they are. Often when I’m sending messages quickly, I find that all the words are missing the letters w and d. I’d then have to go back through my message and deliberately add back all the letters. Most of the keys would give in if I pressed them hard enough, but not the 2 key. That one demanded that another key be pressed. Which is really annoying when I had to write 2022 or anything else involving 2s.

I couldn’t play celeste anymore because with my inputs being messed up there was no way I could beat the maps we were playing. I stopped playing with my friend because of this, and I think I haven’t talked to them in quite a while. When I do play games however, I’d also find trouble in trying to pause. Since my escape key doesn’t work properly, I eventually started always pressing both escape and space, to guarantee that the input goes through. This is not without drawbacks though, as oftentimes the spacebar also doubles as a select button, and it instantly selects resume as soon as the pause menu appears.

Recently, when my brother was trying to get me to do intake for therapy (which is very cool you should get therapy), he noticed that my keyboard sucks actually. He was evidently

a lot more bothered about this than I was, and bought me an external keyboard so I can type normally.

The keyboard arrived a few days later, and I started using it. It was amazing. All the keys are responsive now. I can write messages with significantly less typos. I can write 2s now. 22222222!!

But, something’s not right. I still press d with a lot more force than any other key. I still press escape and space when I want to pause. Why am I still doing this, when my keyboard works perfectly fine? Have I spent so long typing on my laptop that I forgot how to type on a normal keyboard? Am I so incompetent that I struggle with such a simple thing? The methods I’ve developed to deal with my shitty keyboard is now coming back and making it harder for me to function properly with a normal keyboard.

It may be hard for me now, but I know I can. Before my laptop had a broken keyboard, if that’s even possible to imagine, I had a normal keyboard to type on. And I would like to think that I used it pretty well. A lot better than I am now at least. I know that there was a time when I didn’t have these problems, so I know I can reach a point where I unlearn them.

So I’ll keep trying. My friends might have to call me out when they see me make typos. I’ll catch myself wanting to press keys a little too hard, and I’ll have to stop myself. Sometimes I might even have to go back to using my laptop keyboard, when I can’t reasonably bring my external keyboard, so it’ll be extra hard to unlearn. But with a lot of time and effort, I’ll be able to type on my good keyboard as if I never had to use my laptop keyboard at all.

creature_f

how vulnerable is too vulnerable?

to be clear, I don't really know what I'm talking about.

People sometimes fall into two camps — those who say being vulnerable is a bad thing, and those who say it is good.

Would you rather experience something good that may hurt you, or not experience it at all in hopes of preventing the inevitable pain?

I’m going to make arguments for both sides, because I don’t have a definitive answer. What I will say though, is that I think there is a middle ground somewhere between those two extremes, and the problem is that very few people manage to stay on it (myself included).

It seems as though being vulnerable to others means that you will get hurt. A friend disappearing from your life, a parent breaking your heart, a partner’s betrayal. How do you know if anyone would do this to you, and how do you prepare? My answer is — you don’t. At least, most of the time, you don’t. I definitely didn’t. It’s always the people closest to you that manage to hurt you the most.

And yet, there is so much beauty in vulnerability — in opening yourself up to someone and allowing them to see all of your faults, all of your strengths; all of you. Finding someone who

is vulnerable to you in the same way as you are to them is one of the most beautiful feelings imaginable. To me, when you can truly believe that someone *knows you*, *sees you*, and chooses to care, it is one of the greatest joys of life. The strongest relationships are built upon this unspoken agreement of vulnerability, of trust, of acceptance.

I would like to think I’m standing on the middle ground, but I’m still shaky. In order to even get there, I think I needed to realize that being vulnerable to others is one thing, but I was missing being vulnerable to myself.

What I mean by this is allowing myself to feel — allowing myself to cry about pain, and laugh about joy. Feeling happy in the moment and not thinking about whether I will be this happy again. Feeling sad in the moment and not thinking about how I don’t want to be sad anymore. Being vulnerable to my own emotions doesn’t feel like fighting anymore. It feels calm, at peace with my own humanity.

I know the Buddhists figured this out first...but here I am. Just a *little* late to the game.

rose

mathASKS 151.2 — Part Two

Featuring Mark L. Kahnt, mathNEWS editor, 1983–1985

“What program were you in? Why?”

Initially enrolled in Computer Science, switched to Teaching Option after having been drafted by my high school in my last semester there to teach the teachers how to use the newly introduced classroom of Apple II+ computers.

“What involvement did you have with mathNEWS? What drew you in?”

First term, I wrote a Frosh oriented column, second was Editor, after was News and Entertainment Editor. Before starting university, a woman in the village I lived in was trying to start a local monthly info newsletter and I got involved writing and other tasks with it. The Journalism bug bit.

“Thoughts on Feds/WUSA, MathSoc, and other forms of student government?”

Feds were overly self-important in my day — I knew the President one year as he went to the same high school I did. Because he wasn't in the power clique, there were some looking to push him out.

I was there for the development of Federation Hall, nicknamed at the time Club 750 for the \$7.50 fee per term to be paid by students to deal with the loan the Feds took out to build it.

Essentially, Fed Hall proved particularly profitable and well beyond what had been budgeted for by the Feds, even with a beer strike during its first year of operations, and not being allowed at the time to build up unassigned reserve funds as the Feds were then structured, they plowed the profits into paying off the loan for building Fed Hall early.

I was more around MathSoc at the time, and you could avoid the Feds quite easily in those days compared to the faculty specific societies, which were more supportive of day to day activities — you could get food from MathSoc via the CnD, while Fed venues had food supplied by Food Services (I gave them the motto “Here you will be well fed — up!”). Living in Village 1 most terms (aka V1) I told people “if anything starts crawling off your plate, let it.”

Mind you, in those days, students could eat at the Laurel Room, complete with a chef carving fresh roasted meat and linen tablecloths and napkins in South Campus Hall, overlooking the main entrance from University Avenue. It was meant for the university hoity-toity, but it was worth seeing if you could eat there once or twice if you were trying to impress someone you had as a guest.

The MathSoc office had a student accessible photocopier which got lots of work duplicating resumes when applying for interviews and was cheaper and better tuned than the ones in the libraries. The Feds were nowhere on that at the time. Imprint being independent of the Feds, it really limited their visible activities to their pubs, Fed Flicks, and the periodic musical groups performing on campus. The pubs operated on their own,

which disconnected most people's thoughts of them from the Feds.

“How did you feel about other newspapers on campus around your time (e.g. Imprint, Iron Warrior, whatever else)?”

Imprint was, in its early days, was still trying to recover from the disruption and politics of The Chevron, taken over by a group of Marxist Leninists, only in its 84/85 year to have an editor with a strong left wing stance and a group around him. Concern got expressed in the various papers, including mathNEWS, about the matter. We also raised an issue about a design decision by the folks at The Gazette, the university's own weekly, which got into printing shaded drop boxes around some featured notes, resulting in ink rubbing off on hands. They replied to an article we ran on that with an observation of our article and a quote of the main concern and answered it with “Tough.” all within a shaded drop box.

In those days, EngSoc ran two papers, the respectable Iron Warrior and the totally disreputable EngiNews. The latter was periodically banned for going over the top, including nudity and sexism. It was a different era when most stores had porn magazines on the top shelf of their magazine racks, Playboy, Penthouse, Hustler and many others, and EngiNews was playing between Penthouse and Hustler with some of its content. Mind you, FASS '83 included a scene set on the bridge of the TOS Enterprise (the only one in those days) where, due to a scrambling of literature, various stories got mixed up with characters moved about. Little Bo Peep's sheep had ended up on the Enterprise bridge a la Tribbles. Spock contacts Scotty and says “Mr. Scott, you're an Engineer. The bridge has been overrun with sheep — would you care to address it?” Scotty replied “Aye, be my pleasure!”

“Could you elaborate on that sheep thing?”

Ah, the world, over time, actually does change.

In my day, engineering was a field that was still predominantly male. Actually, it was ultra-dominantly male in those days, some 96% of UW engineering students were male. Far from just UW, engineering students everywhere took pride in those days in being jocular and obnoxious in sexism collectively, although individually they were given to trying to say that they weren't personally that bad.

This led to engineering males not getting the best chances to charm women and sweep them off their feet. Heck, the gay engineering students, which in those days were rare to be identified, had difficulties charming men for that matter. EngiNews gave full voice to that jocular and sexism. It also parroted the assertion by people not in engineering that in the absence of female paramours for these self-professed “hyper-virile” “men”, that they “expressed their sexual prowess” with the lost flock of Little Bo Peep, after having struck out with her. Even

EngiNews would make references to this, and it wasn't just the fictional sheep supposedly at risk.

But then, the women that were in engineering could slap back with "Why do women have trouble with being engineers? We keep getting told that this is 12 inches (spreading their thumb and pointing finger to at best, 4 inches/10 cm)".

"Describe your average production night."

Starting around 7 pm, an editor would send the articles into RUNOFF (a precursor of what on Linux is now known as `groff`) after ensuring that all of the formatting commands were in place. Somewhere in the next hour, as the production team filtered in, someone would go see if they had been printed and put out to pick up. In the first stretch, these were on a line printer connected to the Honeywell system "Watbun" (Honeywell → Honeybun → "the Bun" → Watbun) and if not, there was a monitor of the printing queue (the BunBox) and we could see if it was still pending. Later, we got access to a Unix (BSD 4.2) based VAX-11/780 run by the Department of Computing Services called WatDCSU that was supposed to be primarily for printing and documentation — I was the one to make the argument that who could explore and help leverage such a system like **mathNEWS**?

WatDCSU had the university's second laser printer, an Imagen system. The first one had been a Xerox 2700 that was on WatDCS, the IBM System/370 mainframe which the university found ways to burn out through immediate overuse (the printer, not the mainframe). WatDCSU and the Imagen were supported by the typesetting software on BSD 4.2 and we were quickly creating macros to give the articles a professional consistency. Most importantly, we had the ability to generate different sized characters, so we no longer had to rely on Letraset to put in headlines and hope that we had enough characters left to spell everything out.

This wasn't the original typesetting printer we had used — the Mathematics Faculty Computing Facility (MFCF) had previously had an optical printer that used a typewheel and lenses to create each character to be put on a page, but before long it became buggy and crashed repeatedly during outputting pages, to the point that it was ten minutes to reboot it and ten minutes before it crashed again. Interesting concept, but not winning technology.

Still, in those days, it was layout sheets, Letraline put down by hand, Xacto knives and someone regularly going to see if articles had been printed, only to have to fix the formatting information and resubmit to `troff`.

"What kind of articles did you write for mathNEWS?"

I started with the Frosh column, but wasn't deeply into the humour writing that others did. Later, I got writing an Entertainment column with some heads ups on movies at the theatre, Fed Flicks, and Cinema Gratis (Fed Flicks were recent theatre movies shown in one of the auditoriums of the Arts and Lecture Hall, early and late showings each Friday and Saturday for \$2 admission, Cinema Gratis was Wednesday night in the Great Hall of the Campus Centre. For free — that was where

I first got to see Citizen Kane) Because seeing the films was out of my own pocket, I went for things I liked and expected university students would go for. I also slipped in two reviews, a couple years apart, of Casablanca and another of Fantasia over the years.

A quick aside story — when Star Trek II: The Wrath of Khan was shown as a Fed Flick, I was pretty well seated dead in the middle of the auditorium — my usual spot for movie reviews. Of course, I knew the story line already, so no huge surprises. When, after removing his helmet and unwrapping the layers of scarf wrapped around his head to reveal Khan, I understood that the story of this movie was basically a Saturday Matinee good guy/bad guy Western, so as the bad guy revealed, I hissed at him. Got a good laugh from the audience. Next time he appeared, a number of us hissed. By the time of his soliloquy condemning Kirk and the Enterprise to the impact of the Genesis device explosion, it was nearly drowned out by all of the audience hissing at him. It wasn't a **mathNEWS** item, but it happened while I was there on behalf of **mathNEWS** and probably made the experience much better and more memorable for the several hundred in attendance.

Eventually I did write a parody of the by then Marxist-Leninist former campus student paper The Chevron, called the ChevMath, including them protesting that they were not allowed to hold their production meeting in one of the third floor women's washrooms. I also had an essay arguing in favour of nuclear disarmament by way of nuclear annihilation. I also was the one that received "The Story of Mel", which was the story of the greatest computer hacker of all time (and from things I have read, it is actually essentially true). Google that title if you haven't heard it. After that, Google "500 mile email" for another interesting story.

Summer of 1984, I was on campus as a federal election was called. My mind got thinking about the fact that for most readers of **mathNEWS**, this would be the first election they had experienced, so I went to the Dana Porter Arts Library (which had only sunk one floor at that time) and found information on how to vote and where students should vote if they are on work terms, as well as how to ensure that they get put on the right voters list. As I was returning to the office for a production night, I thought that **mathNEWS** might be justified in endorsing the political party most similar to it. The paper did have active Progressive Conservatives and Liberals, so those were contentious options. I stepped into the production meeting and proffered the idea of us endorsing a political party. The one former editor most involved with the Liberals immediately said "No!" but I followed up with my idea:

The Rhinoceros Party.

Suddenly everybody was agreeing — for us it fit and it let me frame articles about voting information in the context of Rhinoceros Party "promises" (the 1984 campaign slogan was "Sex, Drugs, and Rock & Roll" which might connect with a few) and framed the election in terms of being between them and the only other endorsed party on campus, the Communist Party. Yeah, there were some other parties running but they were not important to the discussion. I'd hear people talking about things I wrote about voting as I passed them in hallways, so I think my idea worked constructively. Interestingly, the Rhinos describe their philosophy as Marxist-Lennonist — Groucho Marx and

John Lennon, but I didn't have that quote then to contrast them with the Communists.

“What did you do for mathNEWS as an editor?”

My editorial term was during a work term just off campus, so it was easy to stop into the Math and Computer building on the way to or from work, grab the paper from printing on Friday morning and distribute it around the second and third floors before first classes and the like. We had virtually no staff, but it was the tenth anniversary, so we cannibalised old issues for good jokes. Back in those days, being Editor wasn't the pinnacle of the paper, but rather a training position to become a Former Editor — those were the people that made the decisions much of the time and told the Editor what to do, from experience they had gained.

“What's the most memorable and/or scandalous article published in your time at mathNEWS? Anything you were personally proud of?”

I thought that the Rhinoceros Party/How to Vote article was my best one as it gave people a push to become civically involved. Publishing alternate weeks, every three weeks in the summer, **mathNEWS** was never going to be hugely influential, but that gave it a push in a constructive direction.

In terms of articles that were published while I was there, the proof by WJJ on whether or not real numbers eat quiche. Not familiar with that? In the early 80s, a book was published titled Real Men Don't Eat Quiche. Following from that, some people submitted ideas about real programmers not eating quiche, but rather programming in machine code with toggle switches on the system console, from memory. One of my colleagues wrote on the topic for real numbers with a mathematical proof:

What is quiche, but an egg pie? Expressed in mathematical terms:

quiche = egg pie

Grouping like terms,

$$Q(g) = e^2 g^2 \pi$$

Both e and π are well known mathematical constants. The resulting quiche generating function is a continuous function on all complex numbers g that would generate all real numbers, meaning that real numbers are quiche!

“In mathNEWS, we've seen a huge mix of serious and silly articles, with people writing about everything from dealing with depression to jokes about King Charles needing to leave a gaming team to bodily fluids to trauma. Does this wide breadth of content match mathNEWS when you were around? Are you surprised by what it's like now?”

I think that preparing students for voting considerations was about as focused on real world as we got in my days, but if you have honestly good information that will make a serious article, such as dealing with campus and study stresses and at least airing them for the discussion to happen, go for it!

“Tell us about a mathNEWS meme/joke from your time.”

Grop!

Former Editor W. Jim Jordan used the **mathNEWS** account on WatDCSU to lay out his resume for the interviews for his next work term, but he needed to adjust the margins to fit things correctly. `troff`, which was the UNIX version of `RUNOFF/groff`, would not change the margins until the subsequent page, and it also would not print a blank page, so to get a page with the wrong margins out of the way, he put on it “Grop!” in 18 pt. Times Roman followed by the command for a new page.

I had written an item that was well respected amongst the team about the leftward turn of Imprint, as I mentioned earlier. In it, I raised the prior experience with The Chevron, and concern about student funds going to yet another round of the paper drifting away from being impartial. Printed off the Imagen, it had been formatted for our normal column width, title in place, but the last line slipped to a second page. The article got put in place on the layout page, and then we realised that the last line was missing. Searching around the MathSoc office, which was where we did production meetings at the time, I found one of Jim Jordan's pages with Grop! on it and jokingly stuck it as the article finish to big laughs all around. A couple moments later, I found the last line, and we published the correct article, but on another page we had a blank spot and no quick filler — that is where Grop! found its first home. For the rest of the term, Grop! was somewhere in each issue, often with a modifier, such as “tacky Grop!”.

“Do you have any interesting stories, photos, or memorabilia from your time in mathNEWS?”

I had an old 1950's Underwood office typewriter — I actually still have it somewhere here. Electric, when you turn it on the motor made a whirring sound. When I lived off campus after my first year, rather than move it with me, I put it in the **mathNEWS** office on one of the desks, and we used it for typing up the masthead each issue until I left university at the end of summer '85. My last involvement with the university when I left was leaving my office key in an envelope to be forwarded back to Security or issued to someone else editing the paper, picking up my all too heavy typewriter, and pulling the office door shut behind me as I left the MC building.

Between my last issue as a student and the subsequent term, there was a sod-turning event for the new computing building next to MC. I and the Editor of the time covered it, even with photography, through the evening. We actually behaved like proper Press, I had made a point earlier on for when doing news things to have a Press badge which we could use.

One other thing was that my mother had subscribed me to the weekly paper from the town where I went to high school — they lived in a village about half an hour's drive away, next to Millhaven Penitentiary. The Napanee Beaver was not a well done paper for being a commercial business, and we would tear it apart while waiting for printouts of articles to learn what not to do in writing and layout.

*“What effect did **mathNEWS** have on your life as an undergraduate and beyond?”*

I worked two consecutive jobs doing desktop publishing using the PageMaker program (a QuarkXpress alternative, higher end than anything a word processor could do) the second of which was at the head office of a life insurance company, where I used my math background to take actuarial courses — something I hadn’t touched at Waterloo as I never thought I would work in insurance. I also tried for a job as a financial writer for a newspaper in Europe, and worked for a bit with the local newspaper.

*“Did **mathNEWS** have its own office? Where? What was it like?”*

MC 3035, which was two desks, two filing cabinets, and otherwise a “broom closet” directly across from the CnD in the middle hallway of the third floor of Math and Computing. Across the hall was a terminal room primarily for those using MF3F systems, while next to us in MC3036 was the Waterloo Science Fiction Club (WatSFic). We hoped to someday get our own terminal and connector box to reach the systems but that wasn’t to be when I was there. In the winter term, I would toss my coat in there, change from boots to shoes I left there, and head off to classes, using building connections to avoid going back outside. When I went to the original campus pub, the Bombshelter in the Campus Centre, I would also change in the office and thus not need to keep track of my coat or dance in winter boots.

In my latter days at UW, the MathSoc president, who was a former **mathNEWS** Editor, wanted to take some CnD profits that needed to be “applied” somewhere to get a first generation Macintosh and asked me to look into its abilities. It may have been better than troff by allowing us to see what things looked like, but it would be a few years and some money to get it to what we would need, and it would need to be thoroughly secure in that office.

“Your main pseudonyms were ‘Scooter!’ and ‘Marcel Kahnt’. Why?”

Scooter! was a nickname I had been given in high school because of where my last class, my locker, and the school buses were located.

The school campus, Napanee District Secondary School, had at one point been the largest enrollment school in the province. Avril Lavigne later attended it — I remember her mother, who was a couple years younger than me. The original building, with the offices and original gym, stage and library, was on the street, and it was the only part of the school with more than one floor (two in total, still made it one of the town’s taller public buildings). Three annexes had been built onto it over the years stretching out across land the Board of Education owned on what had originally been the town’s outskirts. The original section was A Block, with B Block for a cafeteria and four classrooms extending back across the property, C Block was at the end of B Block, which met it at the middle of C Block with a T. It had 25 classrooms, shop classes, home economics and the two music classrooms (the school bands were regularly national award

winners). D Block was the newest section, about a decade old when I started, with business classes, a large show and gathering room for art presentations, a round library, and a much larger double gym — it crossed B Block on the east side of the cafeteria, running parallel to C Block. Sorry, tried to find a map of the school, but apparently there isn’t one publicly posted, hence the attempt to create the verbal picture.

Anyhow, the school had students from a rather broad surrounding rural area, including a nearby First Nation reserve — Tyendinaga Mowhawks of the Bay of Quinte. My locker was as far from the main entrance as you could get, on nearly the full south end of C Block, while the buses heading out to the thirty or so routes were lined up on the north side of the property, and they weren’t in consistent spots, but rather the order of when the various drivers showed up. At 3:05pm, the last class would end and invariably for me, it was in A Block, meaning I would have to get to my locker, grab my coat, books for homework, leave things from the last class I didn’t need to take home, lunch bag, and then head to and find the bus, which would be pulling out at 3:15 pm. And I am doing this with over 1,800 other students in the various halls also trying to get sorted to head home.

After the first couple times, and not wanting to run afoul of the “No running in the halls!” rule, I developed a practice of keeping an eye on the flow of people in the halls, watching gaps I could dart into, making wide turns to avoid slowing down at corners, weaving around people whose arms came flying out as they put on their coats, and a very fast walk, but still officially a walk. It got me noticed as I scooted through the crowd, and as this was back when The Muppet Show originally aired, Kermit’s “Gofer” (go for this, go for that) was named Scooter — that was applied to me and quickly became common. I added the exclamation point and while nobody calls me that post university, it has at times found its way into being a base for a password along with additional characters until I started developing something else more appropriate to an employer or service. It was really rare for anyone to use their actual name in **mathNEWS** in those days, but it was quite some time later for the verbED names to come along. Mind you, I did Entertainment under a variation of my name, as I was trying to switch to Marcel as a single syllable family name should not have only a single syllable first name. I signed something “Mark L. Kahnt” and the person looked at it and said “Marcel?” and I decided to give that a try.

But then, at UWaterloo, you’re a number.
82097142.

*“Have you kept track of **mathNEWS** at all since graduating?”*

I subscribed for a few years, but even with it offering that each term, I was probably one of the very few to do so and probably killed off the subscription offer for a while. I later found it online and read it regularly, as well as printing off Prof Quotes for a colleague that I worked with that also had a B.Math.

“Is what you’re doing today what you expected when you graduated?”

Being now retired, I expected that somewhere in my life. Jobs along the way, heavens no. Waterloo and **mathNEWS** got my foot in the door for desktop publishing as I mentioned earlier, and after spending years volunteering on a distress phone line, I ended up in a call centre for years supporting business cellphone services, with a special focus earlier on with BlackBerrys as the behaviour showed that they had been coded by UW graduates. Leading up to the BlackBerry 10 operating system, the Chief Technology Officer managing the project was a former **mathNEWS** Editor that had still been an undergrad when I was Editor.

*“How do you look back on your time in **mathNEWS**?”*

Being with **mathNEWS** was a good aspect of my time at Waterloo. I’m one of many that went from being the brilliant math and computing mind of my high school to one of the middle of the pack at Waterloo, and without the social breaks and involvements it provided, I probably would have struggled with my time somewhat. It helped me be a much more rounded person with reasonable confidence in life.

“How has life been for you after university?”

I can’t complain, because it wouldn’t change anything. I joke about being at Waterloo at the same time as the guys that founded BlackBerry, but did they give me a job? Nooooooo. I did work at Watcom, porting the university’s computer languages to microcomputers and the early PCs, and so I have been given to dive into things like Linux or tweak parts of operating systems in ways the designers hadn’t thought was possible. Tech support, where I have worked generally, found that I knew systems I used far better than they did, so if they were hearing from me, it was something that typically had to go back to system developers.

I was hit by lightning when I was ten, have only been hit personally one more time since then, which is preferable to it having been more often. Don’t recommend it. Also had a computer take a lightning hit — I/O card took the brunt of it and saved the CPU, disks, monitor and power supply. My Waterloo knowledge of computers let me calmly work out just what was and wasn’t working.

*“In retrospect, do you think past-you would have imagined that **mathNEWS** would live to see its 50th anniversary? Why do you think **mathNEWS** lasted? Do you think it will live to see its 100th?”*

Whether it will continue being written as a newsletter format or switch to strictly a website dynamic is likely the biggest consideration. As long as there are undergrad Math students, some will have the quirky humour and wit to share it through a medium like **mathNEWS**, and honestly, the mindset to study math at a university level is quirky in itself, that makes for inside jokes and a sense of whimsy (in my day, computer programmers often had a bit of a greenish tint to their skin, not because of

illness, but from the green phosphor character monitors of the day resulting in Video Display Tans — VDT). **mathNEWS** will continue as long as people want to share humour and information that lets people cross real life with the theories of math and the rickety unreliability of software.

Remember when programming, the language most used by computer programmers...

...is profanity...

...and unlike languages like COBOL or FORTRAN, it is never at risk of becoming obsolete.

*“Would you want to be contacted for **mathNEWS**’ 100th anniversary?”*

I plan to be quite comfortably deceased or at least thoroughly senile by then.

Mark L. Kahnt

[Editor’s note: Mark also wrote a retrospective for mathNEWS’ 500th issue. check it out in the archives!]

I command you to:

Absolve any anger at algorithmically-assembled agitations brought by billionaire-backed comen, committed controllers, corporations. Collecting data, downing details, drowning deep delirious. Deepening enragement; entailing engagement, ever-exciting, enticing for feds, fanatics, financiers.

Go get groceries; garlic, garnishes, greens
hold hope, heaven holds habitat
inside ingredients, intentions. In
just
kneading,
laminating,
making
noodles, nesting nutmeg,
on
parsley, peppers, parmesan,
quintessentially
ricotta.

Smells something sensual, setting sideways senses of surveillance, take time to talk to the tinfoil-topped tray, thank the time taken. Unwrap, unleash, undress ur vegetable victory.

Worldly works won’t wither will, winter-withstanding xylem.

You yourself, yearly-thing, younger yet yellowing:
Calm down and make a lasagna.

hotfemoid

My Weird Obsession with Plane Crashes

And What I've Learned From That

Ever since I was a kid, I've watched a TV show called *Mayday*. In most countries, it's called *Air Crash Investigation*. The international title is more descriptive of the show. Each episode focuses on a plane crash (or incident, not all faults of a plane result in a crash), and the investigation surrounding it to try and find the underlying cause, and making sure the problems are rectified.

If you've read my previous articles, you'll know that the first thing I did in New Zealand was to go to a crew memorial of one of the most infamous crashes in New Zealand history, and later went to another memorial where the unidentified remains were buried.

All of this might make you, the reader, think: "Why???" Let me explain.

Firstly, I think I had no choice. The Tenerife runway collision, the deadliest plane crash in history, happened in the Canary Islands (where some of my ancestors came from), and it happened on my birthday (though in 1977). Those two coincidences make me think that the universe just wanted me really interested in these incidents.

But really, I think I imprinted onto plane crashes when Air France 358 overran the Toronto Pearson airport runway in 2005. Not only was I an impressionable kid, but my family happened to live with my aunt, whose apartment could actually see the smoke from the crash hours after it happened. I even have a memory of being in a car during the storm that created the environment for the crash to happen. The fact that everyone survived was even more impressive.

Just a while later, I happened to catch an episode of *Mayday*, which was Aloha Airlines 243, an incident where so much of the roof of the plane ripped off the plane, yet the pilots somehow managed to land the plane. The investigation that they did to see that metal fatigue and overuse of a plane made me in awe of how people can figure this out without needing all of the wreckage (they never found the roof that came off). I think these two things in somewhat quick succession caused my to have an interest that will stay forever.

The most interesting thing is that is weirdly made me have a fuller understanding of the planes that fly me to destinations (as a kid, it was usually Cuba). The fact that I went on two flights a year during my childhood when I did get exposed to *Mayday* gave me a weird comfort. My mind knows that air travel is so much safer than car travel. My mind knows what will happen in a plane crash scenario, how planes get into a scenario where they could crash, and how investigators push regulators and airlines to make sure the aviation environment cannot create the scenarios that can make crashes happen in the first place.

It's gotten to the point where I ritually watch an episode of *Mayday* the night before a flight. This started by accident *badum tss*, as I think I got called out by my mom for watching an episode that happened to be on TV the night before we were to get onto a plane. I think I carried it on as a meme to myself.

Currently, I still watch *Mayday*. They are still making new episodes, and have been for 20 years. I listen to a podcast that's more people-focused on plane crashes, and that does bring a

good emotional element to the picture. I watch a few YouTube channels, such as Mentour Pilot, Disaster Breakdown, and Green Dot Aviation, that cover plane accidents and incidents in detail, which is an improvement over *Mayday*, as they don't need to be held to a 42-45 minute time limit that has to account for people dropping in mid-show.

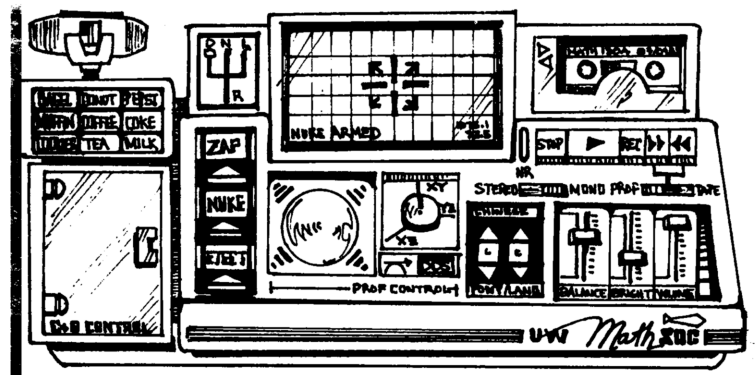
And of course, there's the articles written by Admiral Cloudberg on Medium. Admiral Cloudberg's articles are some of the most detailed on aviation accidents and incidents. They go over the accident, they go through as much of the reports and evidence as possible, and they provide their own thoughtful opinions that either augment the final reports, or may go in a different direction if the report is old or from a country with a less than ideal aviation investigation agencies *coughs* Egypt *coughs* Ethiopia *coughs*. I've seen them look for obscure sources that may be missed due to either a language barrier, or is just that inaccessible. Highly recommend.

Honestly, the most important lesson I've gotten out of this obsession is how to properly think of other people. The NTSB of the US and the TSB of Canada (and most investigative branches all over the world) have a very good way of investigating and phrasing things to make sure the causes and recommendations are clear cut, so that no one thing is the pure cause that we can point the finger at. If all it took to bring down the plane was one thing, then the fact that nothing could stop that one thing is itself a problem that needs fixing.

That lesson has made me a better person. I now think of others in that type of system. Before, I used to think "Why is that person doing that?" Now, I try to think "What happened to that person that got them to act like that?" It keeps the action as a result of things that have happened, and keeps the person in their own context.

Of course, there are situations where the action is so objectively bad that that line of thinking doesn't fully apply, but for the actions that are merely something that anyone could do if put into a similar context, it makes it so that the action doesn't define a person. I think that's the best lesson. Like how pilots or engineers in accidents sometimes make mistakes as a result of the environment they're in, people in all situations also make mistakes as a result of the environment they're in. Just give people a break.

wewlad



N They Might Be Giants Songs That Make Me Feel Very Specific Emotions

Author's Disclaimer: I'm going to reference some very specific events for these very specific emotions. All of these happened, but not all of these happened to me. For privacy/dramatic effect, I will not specify which is which. Also, this is blatantly ripped off from N.Songs.For.The.New.Generation.Of.Songs.To.Listen.To.For.That.One.Specific.Feeling by Skit in 150.6. I'm out of original ideas, sorry.

Ana Ng

This one is about being in love with the idea of being in love, an ode to your imaginary perfect person. It's got a really catchy opening beat and surreal lyrics that disguise a lot of sadness and longing. It reminds me of people who spend their whole lives feeling "incomplete" without a second half they've yet to find. I notice this especially with certain straight men, who (thanks to various gender expectations) often feel emotionally disconnected with their close friends and family, because their gender role doesn't allow them to share their deep anxieties or vulnerabilities with anyone. They believe the only chance to make this kind of real connection they desperately need is with a romantic partner, someone who can care for them in the way they won't allow anyone else to. (If you've ever wondered why certain men tend to get really weird about relationships, I think this is part of the reason why.) They begin to become fixated on finding their One, romanticizing the idea of romance, longing to be in her 'majestic presence'. They look for this person everywhere—first passively, as they wonder if they just missed their love on the bench at the DuPont pavilion, then spiraling like an endless whirlpool, vowing to give up everything, uproot their lives, and travel as far as they have to, until they find the place where everything will finally, finally stick. They'll never find this catharsis, of course—Ana Ng isn't real. They've built her up so much that they're chasing a 'perfect woman' who no one in real life could ever be. But they keep going.

They'll Need A Crane

On the surface, this is an upbeat rock anthem about the slow disintegration of a codependent relationship. It draws memories of Catastrophe Relationships—they burn bright for a short amount of time, but end abruptly, explosively, and to anyone who was paying attention, inevitably. You were in high school, you know exactly what I'm talking about. A relationship collapse like this leaves broken ruins in its wake, breaking hearts and ripping friend groups in half. To pick up all the pieces and see a world beyond that pain, you'll need a crane. But I think this song gets a little deeper. It's mostly sung from the third person— not from the perspective of the couple. *They'll* need a crane. It's not about the couple realizing their relationship is collapsing, it's about *someone else* realizing it first. I've heard covers of this song that slows the melody and makes it more obviously sad, which I feel ruins the joke. It's not just about a relationship collapsing, it's about someone watching on the sidelines, like they're seeing a train crash, unable to look away. Nobody wants to hear this song again, but the wedding band's here, and they're going to play.

Moonbeam Rays

This song is about the feeling of finally ripping the band-aid off and ending a relationship with someone you still have complicated feelings towards. Maybe it's about a partner who you know, deep down, is hurting you— but you can't let go of the romanticized vision you have of them in your head, dancing with you by a bonfire, backlit by moonbeam rays. You have to rip yourself away from them at the break of dawn, lest you face a confrontation and risk not going through with it. Alternatively, it's about finally breaking free from your controlling or abusive parents, and attempting to adapt to your new, poorer, more self-reliant life while dealing with your lingering damage. You cut your own hair, you borrow cash from yourself, you watch your own shoulder, you reminisce about the good times by the campfire in the moonlight. Either way, you know you can't go back, but that doesn't mean you have to like it.

When The Lights Come On

A song about hope slowly draining in the midst of a cataclysm. A trick that I always love when a song pulls is when you can subtly track the mental decline of a song's subject through the contextual subtext of what they start the song singing about, contrasted with what they end the song singing about. At the beginning, the subject believes that they'll be back in the kitchen, that they'll recover, that they'll see the lights come back on. But then self doubt creeps in. All they can hope for is that they won't be too old, emancipated, desiccated when the lights come back on. By the end, they've seemingly not just given up hope the lights are ever going to come back on— they've forgotten about the lights entirely. The focus isn't on a lofty future, but the needs of the moment: bandages for the wounds, opiates for the pain. It's pretty easy to look at the world today and see a series of lights in the process of going out. I know people who match all 3 of the subject's emotional states. I sometimes wonder if it's inevitable that the first group will transition to the second and third, given enough time in the dark.

The End Of The Tour

This song is either about a tour bus crash, or about mourning a moment in your life that abruptly and unexpectedly ended before you could get closure... via the metaphor of a tour bus crash. In my opinion, it's about a person who just won't *quite* let go, even if they need to. You can't properly mourn something if you still insist that the tour is still going, despite the fact that the road disappeared a long, long time ago. For instance, consider how you would feel if (hypothetically) the entire final act of your childhood was abruptly taken away from you thanks to some kind of global catastrophe, and then suddenly, you're a university student almost in your 20s. What if there was a part of you who didn't want to let go, that was clinging onto the fantasies of those experiences they never had and never will? All hypothetical, of course.

She's An Angel

This song is about how awful it is to fall in love. Relationships can be beautiful and fulfilling, but they can also be confusing and stressful- and often, they're all of these at once. They have a way of sneaking up on you and suddenly, without permission, reordering your priorities in ways you may or may not like, but you definitely can't avoid. The subject of the song also seems rather perplexed that love and this woman has chosen *them* specifically. They declare that this situation doesn't happen at all, and wonders aloud if they should simply throw themselves off a building. I think of the person I'm sure we all know who has taken lower levels of love and care than they deserve because they didn't think they deserved it. I think of all the opportunities they had to change that, and all the opportunities they missed because they never loved themselves enough to see that other people could.

Dick Smithers

Our beautiful MC*Where Fear Meets Wonder*

Amidst the sprawling, glass-covered towers of engineering, there stands a bastion of mathematical inquiry — a formidable, grey structure, hewn from stone and concrete. Its walls, cragged and weather-worn, rise like cliffs from the earth, casting an ominous shadow across the M3 and SLC greens. This edifice, so at odds with the bright and modern buildings that surround it, is the old, brutalist, gothic mathematics hall of the University of Waterloo, MC.

Within its walls, the air is heavy with the weight of centuries of intellectual pursuits. Its classrooms, lost in shadows with no windows, are often inhibited by dark, twisted creatures that seem to writhe with an inner malevolence. Ancient equations, long forgotten, adorn the blackboards in these chambers, in a macabre dance of numbers and symbols.

Whispers of ancient beings echo in the basement, only silenced by the distant whirring of machines that hums endlessly. Entering the second floor, one is greeted by an endless barrage of red doors that have not been open for aeons. The third floor is ~~is a hodgepodge~~ ~~of~~ ~~SAVE ME~~. Strange creatures roam the fourth floor and its endless, windowless classrooms, seeking their next prey. Not many who ascend to the fifth and sixth stories return, lost in the endless non-euclidean maze of corridors they contain.

Yet, for all its intimidating appearance, MC is a place of great wonder. For here, in its hushed and reverent rooms, the mysteries of the universe are unlocked, and the secrets of the cosmos are revealed. It is a place where scholars come to probe the depths of the mathematical unknown, unlock the mysteries of the universe and delve into the realm of the abstract.

And even now, as I write this in MC, I can sense the presence of something otherworldly — a power that lies dormant within the very walls of this temple to mathematics.

To many, it instills only feelings of dread.

Yet to many, it is home.

aaqsr

An exhaustive list of Greek letters and the mathematical circumstances in which to use them*(but only the lowercase ones)*

- α — A scalar in linear algebra
- β — A scalar in linear algebra but you've already used α
- γ — A scalar in linear algebra but you've already used α and β
- δ — Pain
- ϵ — Pain²
- ζ — Derailing Blake Madill's lecture so that the quiz this week won't cover as much material
- η — When you're writing a program that does collision detection but for some reason the hitboxes are off by like 7 pixels so you name a variable ϵ to correct for it but then you realize that that only worked in the x direction and it's still off by like 18 pixels in the y direction so you name another variable η because it also starts with e. That or particle physics.
- θ — Something involving differential equations, it just seems right there
- ι — Just don't
- κ — "Kappa" sounds funny to say
- λ — Functional programming
- μ — Physics
- ν — The worst kind of physics (aka physics)
- ξ — When you're in a Kreek letter writing competition
- \omicron — You thought it was the symbol used for small-o notation, but that's actually false — Paul Bachmann intended it to actually be an "o" for the German word "ordnung". Nonetheless, you should say it's an o because that sounds more pretentious and the point of math is to be pretentious.
- π — A prime number, or economic profit, or a computer program whose state mutates over time. Really anything that starts with a p. Bonus points if people mistake it for the circle constant.
- ρ — There is no joke, but I thought this was sigma for the longest time
- σ — Permutations
- τ — When you're solving an integral by substitution but you've already used the variables u, v, w, t, a, b, every other Latin letter, α , β , every other Greek letter, κ , \aleph , every other Hebrew Letter, あ, ま, every other Japanese Hiragana character, and a smiley face (easiest MATH 148 exercise)
- υ — Use it instead of u' to confuse the reader
- φ — A homomorphism
- χ — Something about probability
- ψ — A homomorphism but you've already used φ
- Ω — A real number but pretentious

yalevoylian



Operating System Review: Windows 1.0

Good morning, operating system enthusiasts! In honor of **mathNEWS**' 50th anniversary, The Editors are styling each issue of **mathNEWS** roughly in line with one decade that **mathNEWS** has been in existence. This article is intended to be published in the second issue, corresponding to the years [1983, 1993). In honor of that, we are taking a look at Windows 1.0, the start of something all of us know and some of us love. Windows 1.0 was released in 1985 by the Microsoft Corporation, primarily as a graphical shell for the operating system underneath, MS-DOS 3.30.

System Requirements

- Intel 8088 CPU or greater
- 256KB of RAM (later 320KB)
- Two double-sided floppy drives, or a hard drive
- MS-DOS 2.0 or higher
- Some sort of a video card (CGA, EGA, and VGA were popular at the time)

Historical Context

You may recall MS-DOS from the last Historical Context section. The developers of MS-DOS, Microsoft, had been interested in a GUI-based operating system since 1981. Xerox PARC and VisiCorp had already shown what was possible with a GUI, and rumours indicated that Microsoft's biggest competitor of the time, Apple, was looking into this as well. So Microsoft set to work developing a graphical interface for MS-DOS, the operating system that they already sold.

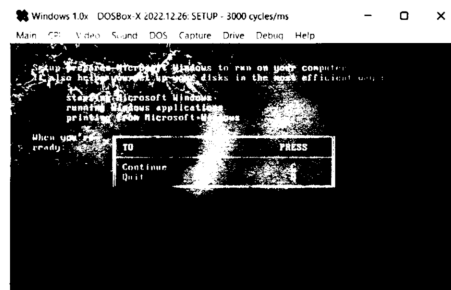
The advantage of starting with the MS-DOS base was that unlike the competition, Microsoft already had its giant software collection to start off with, all of which could run with little pain on Windows. Some well-behaved ones could even multitask! This was going to be Microsoft's key differentiator, and was the reason it was so much easier to justify buying Microsoft Windows than VisiCorp Visi On. And buy Windows people did, and future Windows versions would develop their own identity distinct from "the MS-DOS graphical shell".

The Experience

I ran Windows 1.0 by means of a DOS emulator called DOSBox-X. They have a really handy guide on their wiki on how to set up Windows 1.0 with their software, for a relatively pain-free setup process. I acquired the copy of Windows itself from the WinWorld Museum, a website that preserves old operating system images for posterity.

Windows 1.0 really is just a shell on top of MS-DOS, both in the technical and metaphorical senses of the word. You boot into DOS and then start it like any other program.

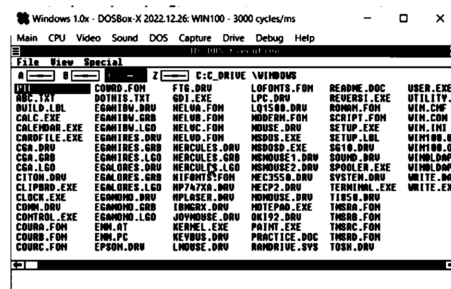
Of course, to do that, you must first install it. Installation was by means of five floppy disks — you insert the first one into your computer, then type `setup` to start the installation process.



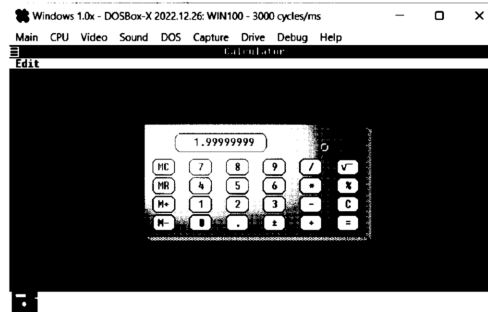
The setup process is quite straightforward, but does require you to know exactly which mouse, video card, and printer you have, among other things. This is before the days of Plug-n-Play, where Windows would automatically detect any hardware you plugged in. After setup finishes, you can boot into Windows.



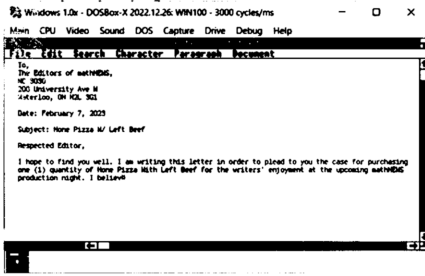
...which is really just a place where you can arrange multiple programs as tiles or "windows", and the one program that opens to start, the "MS-DOS Executive". The Executive is a primitive version of what we would come to know as the Windows Explorer — effectively a file manager that lets you see what programs and other files you have on your disk.



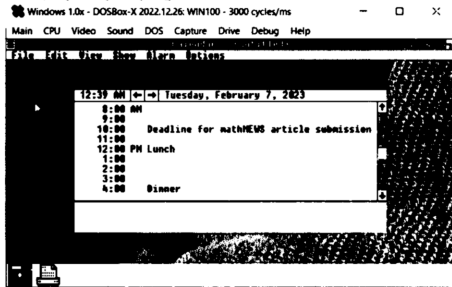
One of the programs provided is Calculator, which helpfully fails Matt Parker's $\sqrt{2} * \sqrt{2}$ calculator precision test¹:



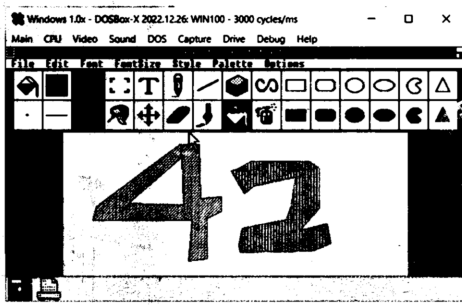
We also have Microsoft Write, a word-processing tool that would someday grow into Microsoft Word. Here I am writing an innocuous letter to the editors:



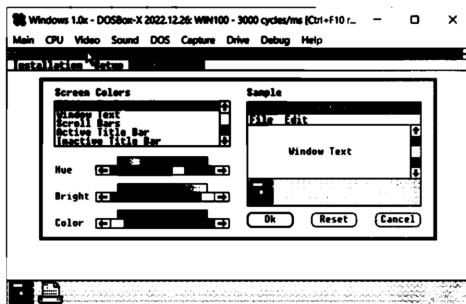
You have a calendar as well, for you to write down and store your plans for the days and weeks ahead:



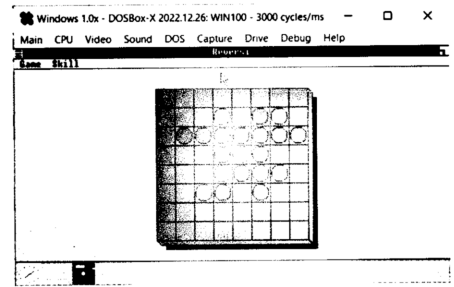
And our most beloved, Microsoft Paint, though it seems to be in black-and-white form. I poked around in the menus but couldn't find a colour option... that said, it lets you "fill" with monochrome patterns, which I think actually is way cooler:



Speaking of old favourites, here's the Control Panel. It lets you change various system settings and also... the colour of every button and text in the user interface? We used to have this capability up to Windows XP but lost it after that... I will always miss the creativity this functionality brought. And it all started here:



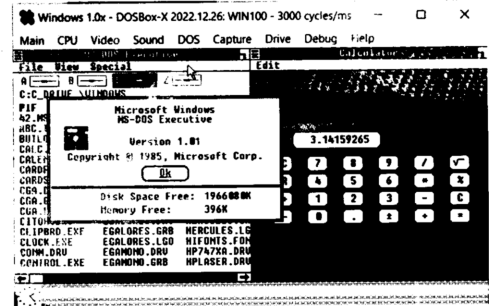
For our gaming fans in the chat, Reversi is pre-installed as well. The good news is it only lets you make valid moves, so even if you don't know how to play the game (like me), you can click around and still have a fun time changing the colours on the screen:



There are a lot more such programs, like a clock, a cardfile, a notepad, and more — and not to mention the giant MS-DOS software catalogue I talked about earlier. This was an operating system you could get serious work done in!

Concluding Thoughts

Honestly, I can see why that Steve Ballmer commercial of Windows 1.0² (which I highly recommend watching if you haven't already) just lists off the programs Windows 1.0 ships with... because really, that's all there is here. Programs and the ability to use them together. Which, I will admit, for 1985 is pretty fucking awesome. Imagine your neighbour being all high-and-mighty about their DOS PC and then you roll up with *this*:



It's really primitive — the windows flicker all over and snap into place in ways you don't anticipate, menus require you to hold down your mouse, and this still runs on the house of cards that's MS-DOS — but it's *something*. If CP/M was a step forward in terms of usability, this is a giant leap — unlike with that or DOS, you never need to memorize a command again! The buttons are right there for you to click. And you aren't restricted to doing just one thing at a time — you can seamlessly multitask, something that never quite became possible in MS-DOS the same way. Windows 1.0 was the start of something special, something that would, over the next 37 years and a bit, become the definition of a computer for most of us... whether we wanted it or not.

Thank you for reading! I will see you next issue with an operating system from the 1990s — until then, I've been hearing great things about this series of books called the Hitchhiker's Guide To The Galaxy...

tendstofortytwo

1: <https://www.youtube.com/watch?v=eaJtjJNrWf0>. Fittingly enough, the timestamp is 2:00.

2: <https://www.youtube.com/watch?v=DgJS2tQPGKQ>

Reviewing every movie sampled in the Avalanches' 2016 album Wildflower (part 2)

IV. *Smithereens* (1982)

“The Leaves Were Falling”, *Wildflower*'s first track, is making an awful lot of appearances here for a song that's only 15 seconds long. Its sample from *Smithereens* is solely instrumental — in an introductory scene, Wren, the protagonist, sneaks into a club where a band is playing the guitar riff that opens *Wildflower*. Nothing but the guitar is sampled, but the song being played doesn't exist outside of the movie, so it was definitely sampled from *Smithereens*. After failing to get the attention of a band member, Wren storms out of the club, stating that she'd heard better music in an elevator. The Avalanches did not include that bit in this track.

Wren is trying to break into the punk rock scene, having recently moved to New York, and wants to hitch a ride with a band to LA because that's where all the cool punk rockers are at this point in the 80s I guess. She uses all of her relationships to try to get what she wants and ends up losing all her friends and becoming homeless. That's probably technically a spoiler, but you can definitely see it coming. The movie can be slow at times but I enjoyed it. It's not particularly uplifting though.

I wish I had more to talk about with “The Leaves Were Falling” because even though I've already covered two movie samples, and again, the song is short enough to fit in an Instagram story, there are almost certainly more movie samples that nobody's managed to identify yet. As the sample from *Smithereens* begins, someone says “Hi”, someone giggles, someone coughs, and several more people chatter in the background, evoking the atmosphere of a crowded bar. It's hard to make out what most of the people are saying, but Patrice's line from *Streetwise* is audible as part of the background chatter near the end, when the guitar starts to fade out in preparation for *Wildflower*'s “real” first track, “Because I'm Me”.

Honestly this intro could have taken as long to produce as any other song on this album. No wonder *Wildflower* took 15 years to make.

V. *Pirates of the Caribbean: Dead Man's Chest* (2006)

You know, I've never actually watched a *Pirates of the Caribbean* movie. All I know about them is they have obscenely high budgets and there are probably pirates involved. Also, I have no idea if this is the right *Pirates of the Caribbean* movie to start with. If I were a professional movie reviewer, I would figure that out first, and find out the context behind what I'm about to watch. Fortunately, I'm not, so I can do what I want. This should be fun.

Okay so there *are* pirates involved, as well as sea monsters, people with funny hats, racist caricatures of indigenous Caribbean people, and sailors with horrifying skin conditions (maybe their makeup was what they spent all that money on). The pirates are sailing around in a boat trying to find a chest, but more importantly a key to the chest which is hanging around the neck of an anthropomorphic squid named Davey Jones. The pirates

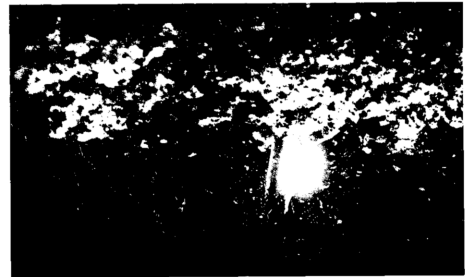
initially try to find the key by, I kid you not, showing people a piece of cloth with a drawing of a key Sharpied onto it:



Okay so like

If *that's* enough to identify the key to people2 then why couldn't they have just made a new key using that drawing as a reference? That would have saved them the whole fight with Davey and half of the movie's length (which is already way too long at 2.5 hours).

Here's a shot of the actual key, for the record:



That looks pretty much the same as the drawing, and it definitely looks pretty easy to copy. Modern keys are much more complex and people can still clone them by looking at a photo. Also I'm not a lock expert or anything but I just did a bit of googling and this looks like a warded lock, which is known for being especially easy to pick because you can just shove an L-shaped stick in there and jiggle it around and it'll probably work. It's also easy to replicate the key if you already have the lock, apparently! You can take a vaguely key-shaped piece of metal, cover it in wax or paint or something, stick it in the lock, and the paint will scratch right around where you need to cut to make the key work.

Anyway, I'm getting off topic. On a more important note, around 2 hours into the movie the captain of the boat says “Hey!”. This is the only part of the movie the Avalanches used: they stuck it in as a sort of ad-lib sounding thing during MF DOOM's verse on “Frankie Sinatra”. It's pretty quiet, and not super easy to notice even if you're listening for it (it's even right after another, louder “Hey”).

Why did they use this specific “Hey”? I'll admit, it is a good “Hey”, but was it really worth risking the wrath of the Walt Disney Corporation? Maybe it was. Maybe it's well established that they can't do anything about it. I'm not a copyright law expert.

Did I really have to watch this entire movie because of this one “Hey”? Yes.

VI. *Grease 2* (1982)

I wish I could say I hadn't seen *Grease 1* before. Unfortunately, for reasons I still don't quite understand, my parents insisted that they show it to me, citing its supposed status as a "classic" even though they seemed to agree with me that it wasn't very good. It's yet another high school drama set far before I was born, and like most musicals, the songs aren't good enough to justify their existence. With all that said, I can't wait to watch *Grease 2*!

Turns out *Grease 2* has a totally different vibe to the original. It's still not good, but it's a little more comprehensible. It's about a kid (Michael) who immigrates from England and begins attending the high school from *Grease*. He becomes interested in a girl named Stephanie, but Stephanie tells him she only goes out with guys who ride motorbikes, so he learns to out-motorbike everyone else within a 50-kilometre radius and scares off all the other bikers with a couple dangerous-looking stunts while wearing a pair of goggles to conceal his identity. Stephanie falls for the masked biker, and he's clearly on her mind when she tells Michael (un-goggled) the line that the Avalanches sampled:

It's just, like, I got other stuff on my mind these days.

It's worth talking about "Sunshine", the song this was sampled in, because it's really good. The main vocals are taken from a song called "Leave It All Behind Me" by the Fuzz, but are somehow extended: the word "sunshine" at one point lasts as long as 23 seconds. No idea how they do it. If someone showed me how to do something like that, I'd be more impressed than Stephanie was at Michael's motorcycle tricks. The Avalanches sort of reverse the flow of "Leave It All Behind Me", using the blissful, joyous-sounding extended word "sunshine" as something like a repeating chorus, allowing it to speak for itself, and leaving the verse to hit you hard at almost the 2-minute mark: "Then you went away, turning my blue skies grey, and taking my sunshiiiiiiiiii....."

Do I need to tell you what happens next in the movie? Michael reveals himself and they live happily ever after probably. Predictable as hell.

__init__

1 See part 1 of this series, published in mathNEWS 151.1.

2 which it clearly is, because everyone seems to know exactly which key this is when the pirates show the drawing to them.

QUALITY AS EXPRESSED THROUGH THE MEDIUM OF A \$5.95 BREAKFAST WRAP

The ache of my empty stomach drew me desperate to the familiar threshold of the *Math C&D* that morning. Long past the familiar warmth of Monday's mac 'n' cheese, the options truly were limited. After vacantly staring past my sullied reflection into the cling-wrapped simulacra of meals that laid before me. I innocently grabbed at the *Breakfast Wrap (\$5.95)* and trotted to the cash to pay my due. There was something reserved in that cashier's eyes that day; like a soothsayer handing me my tarot, they smiled and sent me my way.

I walked through the busyness of the main café and settled on a seat on one of the many bean-shaped couch of third floor MC and wasted no time unwrapping my newfound breakfast.

The first fateful bite, was pure, homogenized, tortilla. My mouth scorned at the flat lack of flavour (was it stale too?) in the bite in my mouth. I felt a little silly; I should have taken a bigger bite. This was no fault of the wrap, I had not enjoyed it correctly. But should the wrap's creator not have placed more filling at the top of the wrap? It was no small bite that I took. As the starchy mouthful was finally reduced in my mouth, I took my second bite of the wrap.

The second bite, cold hard potato. The potatoes took chew after chew without breaking their composure, the whole time taunting me with its frigid state. I was offended at utter disregard to flavour I was experiencing, coping in live time with the fact that I was stuck there chewing on stale tortilla and hard potato cubes, possibly for the rest of my days. In time, the second tasteless lump fell the same as the last did, and I defensively took my next bite. I knew I had ingredients left to taste, and was terrified by the precedent set by previous flavour offenders.

I encountered the other cold ingredients in short, the only glimpse of warmth being found in the sauce and the egg. Most egregious of all were the onions, hardly cooked at all, bluntly hammering my senses. This was the breaking point of my relationship with this wrap. The potatoes, despite their continued frigidity, provided a starchy comfort against the raw onion taste. My hearty breakfast dreams had been squandered and I knew that my tongue was stranded on the highway to flavour town, last bus stop long gone. I looked at the dregs of my wrap and bowed down for my final bites.

The final bite... at this point, I realized how invested I had become. Despite the complications along the way, the parts of the wrap that once were were then behind me. I entered untethered into the last bites of the wrap, and was met by what must have been all of the egg. I hadn't noticed before, but all of the egg had been resting on the bottom of the wrap, because of the sauce and loose wrapping. The bite that resulted may have been the most decadent piece of breakfast wrapery that has been wrapped across eons of human wrap history. Hell, at that moment I felt all of history align to produce this moment of bite; the universe had harnessed its full potential into this single moment and after I'd opened my eyes I would be watching the end...

I took one last bite, once again into stale tortilla, this time from the bottom of the wrap.

a decaying skeleton

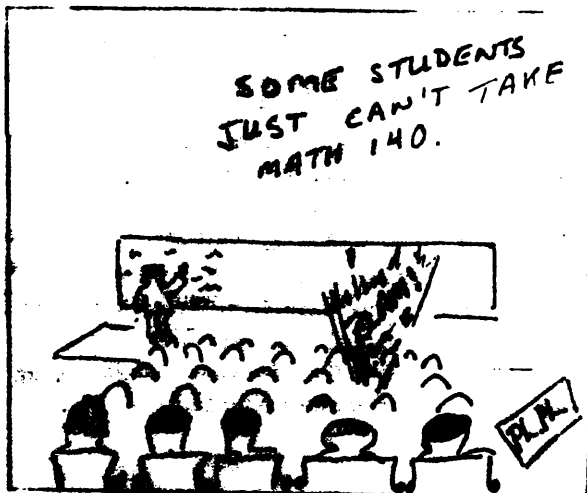


N positive things about aging

In light of my 21st birthday coming up, I have some wisdom for all of my fellow students that are also riddled with existential crises. Here are some great things about getting older:

- Independence! I don't know about my dear **mathNEWS** readers/peacelovemath fans, but I vastly prefer adulthood to childhood. I absolutely love being able to do whatever I want, whenever I want. Obviously, there are drawbacks and consequences to this, but to me it's so worth it. There are only more freedoms that come with aging — e.g. being able to rent cars for reasonable prices
- Feeling more sure of yourself. In my personal experience, as I get older and gain perspective, I feel more confident in my decision making and myself in general. One side of it is realizing that no one truly knows exactly what they're doing, not even your supervisor at your co-op that you're scared of, or your professor for your scary math course, so you're less hard on yourself when you make mistakes because you know everyone's doing the same. You're also less concerned with people's opinions of you. As a child and teen, I was so worried constantly about how people would perceive my every action. Despite being a national-level synchronized swimmer, I would tell people I was a "swimmer" when asked because I was consumed with the sometimes embarrassing reputation synchronized swimming gets in the media. Fuck that, be proud of yourself and what you're passionate about. Literally no one cares as much as you think they do. And if they do, I'm a negative way, then that's really not someone you want hanging around anyways. For contrast, now, I do intramural inner tube water polo, an objectively sillier water sport, and will tell any living soul that will listen.
- You get to make fun of people younger than you (I might just be a hater). As a cynical person, I love a reason to complain.

peacelovemath



Clay over Cracked Crystal

I was born a boy of brilliant and *impossibly fragile* crystal. With even the slightest light, I became a radiant beacon, and at the slightest tap, I shattered. First, I tried to change the people around me, I tried to ask them to be a little more careful, and that left cracks that still ache. Then, I went somewhere else, and became someone new.

I put on a layer of clay. Something to be sculpted, crafted, shaped into the perfect kid. Lying isn't the right word for what I did. I picked a story, and I told it; I've always been an excellent storyteller. I told the truth, the truth just wasn't mine. The story I told was of a happy, confident boy. A boy who was never sad, a boy who brought joy and life and light. A smart boy, a sweet boy, a boy who was a little arrogant. It was a good story — and people believed it. I mean, everyone loves a good story, right? I no longer glowed — but it was harder to break.

I thought everyone would have a layer of clay — and maybe everyone does, but around the people we care about, we pull it back. Clay is malleable and soft, it's a good story, it's pretty, but it can't compare to sunlit diamond.

I, however, forgot about what lay under. I spent so long with the clay always present, it was impossible for there to be anything else. If someone pushed on the clay hard enough, I still crumbled underneath it all, but I could hold myself together with yet more clay. I was the ship of Theseus, reforged so many times that no part of me was still my original self. I became so good at sculpting myself, so good at the lies, that I began to turn this outwards. Instead of asking people not to press, I blunted their fingers so they wouldn't hurt, I made them more fragile so they wouldn't press too hard, lest they break themselves. I sculpted them as effortlessly as I sculpted myself. It was foolproof, until, it wasn't. Until I started breaking glass.

I learned my lesson, of course, but the shards left scars. Now, when someone shows me what lies beneath, I treasure it, I understand that it's precious and fragile. And, slowly, I learned to start doing the same. I learned that, if I took away the clay, I could shine again.

Over and over again, I have chosen to open myself up, and then I crack, and those cracks heal; and, every time, it's worth it, because I am a bastion of sunshine, I don't just reflect light, I radiate it. This draws others, and it makes them feel safe enough to show me themselves, and now, I am surrounded by beautiful, perfectly flawed, crystal.

The thing is, when you're surrounded by glass, something is bound to break. I walk slowly and carefully, I've learned to treat this with all of the care in my heart. Despite that, I know that if I stumble, someone will shatter. Sometimes, I wish the world were made of clay; it would be easier. It would also be dull.

After all, what's the point of being a ray of sunshine if there's nothing to illuminate?

Golden

Bored

Anime/manga recommendations plz ty. bit.ly/3C32Y09

warrior1rules

Houses in Motion:

International smuggling group caught shipping real-size houses into canadian west coast.

On January 31, the Candian Coast Guard captured a full-size ocean shipper with 13 single-family houses on board.

The ship was going through the routine custom clearing, when one of the crew members was clearly so stoned that he started talking about an “alternative solution to the housing crisis of Canada”. As untrustworthy as it sounds, the officers quickly reacted, and found 13 well-decorated full-size single-family town houses on board. The properties are currently seized at a local dump yard, while the crew members arrived in Ottawa yesterday and are meeting the prime minister himself in a few days.

Our correspondent in Ottawa had a short interview with the crew members shortly after their landing at Ottawa Intenational Airport. The following conversations are directly compiled from the interview.

Correspondent: “We have seen a lot of smugglers these days, transporting items from food to luxuries into Candian borders, but this is the first time we’ve seen people moving full-size houses.”

Crew A: “That’s about right. Our captain used to work in the Canadian real-estate industry for 20 years. But you know, there’s the inflation and stuff, and nobody had money to build more houses anymore, same time we seeing those buyers keep coming, making houses turning to real gold. Our plan is simple: we out-source the building side to those third-world countries with cheap labor and materials and stuff, and move the finished product into our own country. Same as every other international trade these days!”

Correspondent: “But building houses are not cheap either, besides the transportation cost. How are you going to make a profit out of your plan?”

Crew A: “You don’t worry about us my friend. We had all these planned out already: we only sell our houses to the highest bidder in the market. Those buyers will pay at any price for a place at their local school’s dump ground! Our production costs are like nothing compared to this. Also we grow joints on our ship to cover up the transportation.”

Correspondent: “How do you think it will solve our current national crisis on housing? What advice do you have for the prime minister?”

Crew A: “Well we definitely know one thing, the more houses we supply to the market the cheaper they will be. My wife and I were looking for a house couple years ago, but all we found were properties built by those foreign developers. You know how they control our country’s housing prices do you? So after I started on this ship, I got myself a nicely built traditional Vietnamese-style bungalow, at a price that would shock my neighbors to the ground!”

Crew B: “As for the prime minister, of course we know he’s rich, so he probably won’t be interested in doing business with us anyway. But we know he like pretending he cares about the poor, and that’s why we are going to make those law makers legalize our business and tell the prime minister to advertise about us in his next campaign.”

In our previous reports, we covered about the prime minister visiting places that he instantly regretted going to, and made some promising notes about he and his cabinets are working at full effort pretending they give a fuss about everyday Canadian’s living standards. We will keep updating after the crew meet the prime minister next week.

4,000 new mortgage transactions happened national-wise last week, a quarter of which were newly built houses entering the market first time. No evidence suggests a bursting housing bubble at this time.

MCorrespondent

Filtered

I’ve been made to realize that I filter my personality when talking with others. This is, of course, not a new realization (it’s a universal phenomenon, with no exceptions), but it’s been made more apparent how strong the filtering is. When I think about it, almost no one I know receives anything close to the most whole and unrestricted version of me.

Why do I do this? I think there are two reasons:

1. I worry of making others uncomfortable: fear of rejection.
2. There are parts of me that I don’t want to acknowledge the existence of, even to myself: shame.

One point of pride for me is that I do a minimal amount of embellishment; less, I think, than the large majority of others. But what I tend to (or try to?) ignore is that in place of embellishment is selective exclusion. When is the last time I was unfiltered with my friends? High school? Earlier? ... Never?

It’s frustrating. I’ve gone from having no close friends here to many. But if I’m never fully at ease, even with them, then somehow I’ve failed.

This only applies more strongly to my family. Unsurprising, as it’s because of them that I’m like this.

So when I see others showing me what I can only estimate to be more complete than what I present to others, I feel envy, and I feel fear that I will live a more and more filtered life as time passes. I hope I have the courage to reverse that trend.

yet another waterloo goose



Mackerel Guide

How to pick a good mackerel (or any fresh fish)

- Flesh should be firm to touch (don't actually touch it with your hands, just prod it a bit with your tongs and if it leaves an indent that doesn't spring up immediately, that's when you leave)
- Skin should be a beautiful shiny silver colour
- Eyeballs should be bright and ideally bulging (but that's not a must). Don't buy fish with cloudy or bloody eyes
- Gills should be bright light red if it's fresh, darker brown if it's been a while. You can gently use your tongs to check
- Should not smell very fishy (seems kind of odd, but fresh saltwater fish like mackerel should only smell like briny salt water and the slightest hint of fish)

Roasted Mackerel Recipe

- 1 whole Spanish Mackerel (about 1.5 lbs)
- olive oil (or any oil really)
- sea salt
- pepper

1. Preheat oven to 450 degrees F.
2. If you paid extra to have the fish cleaned, you can safely ignore this step. Use scissors to cut off the sharp fins on the sides, top and bottom. Then with one hand holding the fish flat on it's side, gut the fish, with a sharp pointed knife cutting along it's belly from below it's chin all the way to it's anus. You do not need to cut very deeply, only enough to expose it's innards. Remove it's guts and rinse the fish, inside and out, in the sink (wash the sink well later for obvious fish reasons).
3. Line a cookie sheet or large roasting pan with aluminum foil.
4. Place fish on the foil and drizzle with oil, using your hands or a brush to make sure both sides of the fish are well-oiled.
5. Season generously with salt and pepper. Some people like to slice a lemon and stuff it with those, or lay the lemon slices on top of the fish, but I've never tried it.
6. Put the fish in the oven for around 30 mins. It is cooked once the eyes are white and the flesh just below the gills feels like it's firmed up.
7. Let it sit for around 5-10 minutes and enjoy! Tastes amazing served with rice

Mackerel Stats

Affordability: 7/10

Mackerel is a very tasty fish, and it is relatively cheap. My mom and I got it for \$3.28/lb on sale at our local Chinese supermarket, but I saw it at the Waterloo T&T for \$6.99/lb, regular price. Honestly still very reasonable for fresh fish compared to, say, salmon.

Nutrition: 9/10

Mackerel is also an oily fish, and it's super high in Omega-3 fatty acids. It also contains vitamins B2, B3, B6, and B12, and vitamin D as well as minerals like copper, selenium, and iodine.

77% of the fat in mackerel is unsaturated, which is good if you're watching your cholesterol.

However, you probably don't want to eat King or Spanish mackerel more than, about once a week to avoid mercury poisoning (as is the case for a lot of big fish). North Atlantic salmon has less mercury and would be more suitable for regular consumption. I don't have the funds to eat it regularly enough that this would be a problem, so it only lowers my rating to a 9.

Fishing status: 8/10

Spanish mackerel has been deemed not overfished as of 2021, though Atlantic mackerel is currently being overfished.

Taste: 8/10

Some people find the taste quite fishy, but I quite like it! So my personal rating is an 8, but take it with a grain of salt. Some acid like lemon juice would help cut through the oily, fishy taste.

Longevity: 2/10

One of the cons is that you basically have to cook mackerel the day you buy it, since it deteriorates really quickly, even if you put it in the fridge right away when you come home.

But after you cook it, it tastes good for about 2 days in the fridge, which isn't terrible. This bumps my rating up to 2 stars. Cowabunga.

Personal Significance

My family and I are Chinese immigrants, so eating whole fish is very traditional for us, especially on holidays such as Lunar New Year, because a whole fish represents abundance and prosperity.

Usually we eat fish steamed, with ginger and scallions, and freshly made rice. But I am a big fan of using the oven too because I don't have to watch out for the water boiling off.

I hardly get the chance to eat whole fish now in Waterloo because I live away from my family. Cleaning, cooking and eating an entire fish by myself doesn't appeal to me. Plus I know people here don't really enjoy fish with bones in it and the whole head still attached so I don't think I could ask my friends and boyfriend to join me.

I associate whole fish with my family, and childhood memories of going to the market with my mom to pick a good fish and watching her prepare it before I got old enough to do it myself.

I used to cry when we bought live fish from the tanks for a special treat, and the fishmonger would kill it with a hard blow to the head. I later learned that most fish caught actually get thrown on ice to slowly suffocate, and that those fish were quite lucky to get a quick death. My mom always made sure that I knew where meat, fish and poultry came from— animals that were once alive, and died so that we could eat.

Hmm. I'm not quite sure where I'm going with this section. But if you made it this far, congrats! You've read over 900 words about fish.

Container? I hardly know ‘er!

Mistakes by the C++ Standards Committee

Remember when you first learned what a template was? You probably got introduced to it with some standard library template class... Hey; remember `vector`? How about `map` or `queue`? Yeah, me too, pal. Easier times, for sure.

Well, innocence is a thing of the past now. Let’s scrutinise!

Hmm... How can I kick this off? Okay; well, something in common between `vector`, `map`, and `queue` are that they satisfy the *Container* named requirement. See, the standard specifies things called *named requirements*, which describe uniform interfaces so that these classes can all be interacted with in the same way. For example, a *Container* template class `C<T>` must:

- Define member types `value_type`, `reference`, `const_reference`, `iterator`, `const_iterator`, `difference_type`, and `size_type`; the first three are expected to be aliases for `T`, `T&`, `const T&`, and the last two should be aliases for some signed and unsigned integer types.
- Define certain methods and operators; this includes the standard “big five” constructors/assignment operators, a default constructor, iterator methods, comparison operators, and a few other things that aren’t worth mentioning.

If you remember implementing an iterator class (say, in CS 246), then you’ve *pretty much* implemented a class satisfying the *Iterator* requirement (well, mostly, but you get the idea).

These named requirements are obviously a pretty big deal; they give us some nice guarantees on how we can work with classes satisfying the same requirements. Once I know how to work with `vector` and what it affords me, I pretty much know what I can do with classes like `map` and `queue`.

Now, with that in mind, it would be a pretty nasty joke to play if something like `vector<T>` were to satisfy the *Container* requirement for *all but one choice of T*, right?

A sick and disturbed joke it would be.

☹

Say, don’t you think `vector<bool>` could be made more space-efficient? I mean, let’s look at the facts. The standard leaves `sizeof(bool)` up to implementation (i.e., compiler’s choice) and so, in most cases, the compiler will define it to be 1, i.e., a byte. Now, while you only *really* need one bit to represent a boolean value, it needs to occupy at least one byte in memory, since memory is byte-addressable, not bit-addressable.

Holy smokes! That’s a lot of wasted memory! A whole 7/8 of the memory allocated to each `bool` is useless! Doomed to store zeros and nothing more. How alarming!

Now, hear me out: suppose I want to store eight booleans contiguously. I *could* store them in the standard way, and just allocate a byte for each boolean so that each has a distinct memory address. Or... I could store them all in **one byte**. A byte is eight bits, so I could just smash these boolean values together, like this: 01110110. How compact! How efficient. Now, just think if we were to do this for `vector<bool>`! We could make it work so that, instead of returning a `bool&`, `v[i]` actually returns some kind of special class value that “acts” like a reference — we’d

also overload the assignment operators for it so that we could assign booleans on the right with instances of these “references” on the left and...

Space-efficient it would be. It’s a shame that this work would violate a majority of the *Container* requirement specifications. Our iterator won’t satisfy the *Iterator* requirement, and our “reference” type, well, *isn’t a reference*. We can’t do `&v[i]` anymore. It’d be ill-formed because `v[i]` is suddenly a prvalue; an anonymous instance of some class type that can just be cast to a `bool`. It’s all *pretend*. And, in fact, one *could* argue that this space optimisation comes at the cost of performance, i.e. run time. It’s going to be properly slow to twiddle these bits around each time we want to do a simple assignment. Given all these consequences, it would indeed seem silly to codify such a design permanently into the C++ standard as a specialisation for `vector<bool>`. Maybe as a separate “`bit_vector`” class or something, but not `vector<bool>`... right?

☹

THEY DID WHAT?! Yes. Those things I described above and then described why they were bad? They’re in the standard. **They’ve been in the standard since 1998.** Yes, go throw some code using this and compile it; you’ll be dragged down into the inner reaches of hell. How are we relying on these people to design C++, our golden language?

Well — they weren’t *totally* insane. They fucked up, to be clear, but, like, I can prescribe *some* level of merit to the decision.

If you read up on some of the old discussions surrounding the change from the time, you’ll see that the intentions were not totally awful. The main idea was to provide an example of how you could design a container that had a more “abstract” interface and didn’t necessarily expose its elements directly. That’s a nice idea and all, but it still suffers from the same problem of... well... *not being a container*. And the things it stores aren’t even actual `bools`! It’s like they had this neat idea for a kind of proxied collection, and then just forgot to account for it anywhere else in the standard. Herb Sutter, someone who has been very close to the standards committee for a long time, had a lot to say about this back then, and complained pretty loudly. But alas, here we are.

Today, this decision is broadly considered a mistake. People have been trying to weed it out of the standard for decades **now**, but it’s still in there because *they really don’t like fucking up backwards compatibility*. Since the C++ people really want to reduce friction for developers adopting newer versions of the standard, there’s a really, *really* inordinate amount of resistance to making changes that would break any code written in accordance with a prior version of the standard. But that means you end up with *this*. A vestigial dream, half-realised then forced to live in the standard for decades.

☹

If you really want an honest-to-god vector of booleans, you should just use `vector<char>` and cast to `bool` as necessary. That’s pretty much the official recommendation at this point.

There’s no lesson here. Just a sorry state of affairs.

mathASKS 151.2 — Part Three

Featuring Tom Ivey, **mathNEWS** editor, 1984–1985

“What program were you in? Why?”

I was in the Applied Math/CS Joint Honours program, and co-op. I learned a bit of programming in high school and felt I could do well at it — and get work term jobs; I didn't really know what applied mathematics was, but knew it had connections to physics, so that seemed like an attractive choice.

*“What involvement did you have with **mathNEWS**? What drew you in?”*

I began contributing to **mathNEWS** some time in my second year, began helping with production, and eventually served as editor for a couple of terms later on. It was fun to read, and I think I knew a couple of people who were already involved (it was Cary Timar — a fellow Renison resident — who got me involved with the paper in the summer of 1983), so that's what drew me to join in the fun.

*“How did you feel about other newspapers on campus around your time (e.g. *Chevron*, *Imprint*, *Iron Warrior*)?”*

I read *Imprint* but didn't find it very interesting; it seemed a bit more oriented towards students in other parts of the university. I rarely saw the *Chevron* — was that the socialist one? I think **mathNEWS** occasionally poked fun at it.

“Describe your average production night.”

I think it would start around 8pm, people would roll in and out and work on articles and/or paste-up. We used the mainframe terminal in the MathSoc office to type in articles in some sort of markup language called troff, send them to the Imagen laser printer on the ground floor of MC, run down and get them, then literally cut and paste them onto 8.5x11 sheets of paper. Lots of things had to be re-done multiple times, and sometimes there was a line-up for the terminal, so production rarely finished before midnight. I want to say that production night was the Wednesday before the Friday when the issue came out, to give Graphic Services time to print it.

*“What kind of articles did you write for **mathNEWS**?”*

Arty-type things — bad prose and worse poetry. For a while I made up the GridWord, the clues for which were often painfully obscure. I also remember writing a series of meditations on romantic failure(s), called Dr. Heartbreak's Book of Love. I shudder to remember it!

*“What did you do for **mathNEWS** as editor? Why did you become an editor?”*

I think mostly figuring out who was writing what, and making on-the-fly decisions about layout on production nights. I became editor for a couple of terms because I was working at a co-op job at Watcom Systems, so in theory had more time than folks who were taking classes.

*“What's the most memorable and/or scandalous article published in your time at **mathNEWS**? Anything you were personally proud of?”*

I remember one issue when I was editor when I was determined to squeeze all the articles into 6 pages — through artful use of scissors, glue, and 8-point font sizes (maybe smaller?). Dan Schnabel described my efforts at the time as “sexual frustration”... On the other hand, I was personally proud of writing an obituary for Dr. Kenneth Fryer, a much-loved member of the math faculty who died of cancer in 1984.

*“In **mathNEWS**, we've seen a huge mix of serious and silly articles, with people writing about everything from dealing with depression to jokes about King Charles needing to leave a gaming team to bodily fluids to trauma. Does this wide breadth of content match **mathNEWS** when you were around? Are you surprised by what it's like now?”*

I don't know what it's like now — I've only visited UW a few times in the last decade — but while we ran a lot of silly articles, I don't think people felt comfortable writing about as wide a range of issues. It was the mid-1980s, we were mostly conservative Ontario kids fresh out of high school — some, like me, from small towns — and nobody ever wrote about being gay, queer, trans, etc., or about personal trauma, or mental or physical illness; Canadian politicians were always fair game, though.

*“Tell us about a **mathNEWS** meme/inside joke from your time.”*

ProfQuotes was a good running feature in the paper. Pretty Polly Nomial was revised and re-run about once a year, but probably seems more problematic than funny now.

*“What effect did **mathNEWS** have on your life as an undergraduate and beyond, if any?”*

I think it gave a few math students an opportunity to be creative — something that didn't happen otherwise in our courses or our jobs.

*“Did mathNEWS have its own office? Where?
What was it like?”*

I seem to remember we had a small closet of an office across from the C&D. It was the first or second door on the right in the corridor next to the one that had the MathSoc office. There was a desk, a filing cabinet full of old issues, and a blackboard where I made up the GridWord.

*“Is what you’re doing today what you expected
when you finished university?”*

I knew I wanted to study math in more depth, and fortunately I’m still doing that.

*“How do you look back on your time in
mathNEWS?”*

It was fun. It was like a kind of club for droll and nerdy people who like to write, and while people sometimes complained about what we wrote, they still read it.

“How has life been for you after university?”

I’ve been teaching mathematics — mostly at the undergraduate level — and doing research for more than 30 years. I’ve also worked as a grants officer for a federal agency in the US, so feel that I’ve played a part in the national mathematics scene.

*“In retrospect, do you think past-you would’ve
imagined that mathNEWS would live to see
its 50th anniversary? Why? Do you think it will
live to see its 100th, and would you want to be
contacted for it?”*

Past-me could hardly visualize being in my 50s, as I am now, so no. I don’t know why mathNEWS has lasted, but maybe it’s because the math student body at UW is so large that it can support its own newspaper. (Where else in the world are there more than 5000 math majors in one place?) I know I likely won’t be alive for the 100th anniversary, but you’re welcome to try to contact me!

Thomas A. Ivey

N things to do in Cookie Clicker

- Click the cookie
- Click golden cookies
- Sell one of your grandmas
- Start and then crush the grandmapocalypse
- Raise a dragon
- Manage a stock market portfolio
- Witchcraft

meow meow meow meow

Breaking New Ground

The ancient chinese proverb goes “don’t knock it ‘till you try it.” As much as I try to pay homage to my ancestors, I must say that I’m not sold.

There’s a famous conundrum about a math student researching the colour red. She’s locked in DC with her whole world cast in black and white. The math student has complete unrestricted access to the internet. This accomplishes two things. Firstly, it turns her into a fucked up young adult. Secondly, it permits access to all scientific and metaphysical knowledge of the colour red rendered in beautiful black and white. The question of interest is whether she gains anything by leaving the room and seeing the colour red for the first time.

I think that she would, but I don’t think that I would.

To drive my point home, here are some things that I’m going to knock without trying. Toe-sucking, crack cocaine, meth, DMT (Density Matrix Theory), falling from a great height, getting shot to death by a skeleton, and buying a fourth pair of pants, using a homemade x-ray machine for photography.

On an unrelated note, I decided to bring back my pseudonym from 2020! Whoohoo! Also please help me convince my roommate not to build an x-ray machine.

Bass Case

Governor General’s Academic Award goes to Waterloo student who “finally got his shit together”

Woman who had it together the entire time snubbed.

The office of the Governor General announced on Friday that math student Bill “the Dude” Winserman will be awarded the prestigious “Governor General’s Academic Award”. He will receive not only the customary silver medal, but also a cash prize of an undisclosed amount, for him to use “for books and stuff, or whatever”.

Mr. Winserman, who was on the verge of expulsion for poor performance and “not giving two f*s”, rebounded from almost certain academic suicide by scoring an average of B+ in his latest term.

When contacted, Mr. Winserman stated that he “was as shocked as anyone” by his sudden improvement in grades, but thought that “keeping notes in lectures”, “studying” and “handing in assignments” may be connected with this achievement.

A spokesperson for the selection committee said that “Mr. Winserman’s demonstration of academic excellence and community spirit cannot go unrewarded. We are pleased to be able to recognize this calibre of personal and public achievement.”

MLE (Emily), B.Math ‘87, M.Math ‘89

No really, ethics is all optimisation

A response to Patricia Marino

Last term I went to one of the philosophy department's Colloquium Speaker Event, which was a great talk by Patricia Marino about the problems of augmenting the current economics cost-benefit analysis to include some sense of justice, equity, ect. It was very interesting and informative, but one remark stood out to me. "I don't like the optimisation model of ethics, I think the tradeoff model is better. Some of my students try to tell me that it's ALL optimisation, but I don't get it." or something like that. Well I'm here to help!

First, some ground rules and assumptions. Since this is from the perspective of someone trying to have the best outcome by distributing health system resources, I will be ignoring any motive issues and the complications that come with that. For the purposes of this analysis, motive will be constant and so it will not matter. I will also be making what may seem like an odd assumption, there is nothing infinite in the world. The reason for this is that the universe we know is finite. Even if the whole universe is infinite, the observable universe is not. Also, assuming infinite good or infinite bad would imply that there is a state of the universe in which nothing other than an infinite action would change how much good is in the world. So since I believe that there is always a way to make the world better, there is no infinite good, bad, and no infinite physical stuff. Next, budget is a number and so there isn't anything like "you can spend anything less than \$9000 but not \$9000" (this will become important later). Finally, there are arbitrarily small changes in the world (this will also become important later).

Now onto the math! We will define a function, this will be the goodness function, that will take in changes to the state of the world and tell you how much good it did. How do we know we can do this? Well, we want there to always be an answer to whatever problem we want (if there's no answer then what was the point). This means that for every possible outcome, we can compare which one we think is better. Some things might be the same, no preference either way, but we can always compare things. From this we can generate a non-strict ordering for all the options (this is technically called a total pre-ordering, but nobody learns that in class). More generally, I am pretty sure this means that we can map this onto the real numbers (no proof, just assumption). However, it would be really weird if it could not be, because that would require the set of all possible goodnesses to be larger than c , which I think is unreasonable.

So now we have a function, but how do we know that there is a maximum, and how is this optimisation? This is where we bring in the calculus. First, since this is all about resource distribution I am going to make another assumption, small changes to resource distribution create small changes in total worldstate good. If I give \$1 to charity or \$2 to charity, it's still a very very small amount and the difference there is almost negligible. This means that if we have a sequence of possible budgets such that each budgeting term converges, then the total good that it produces will have to narrow into (converge to) a single answer. This means that the goodness function is continuous, and now that we have continuity we can use a lot of powerful theorems. First of all, there is a topological theorem (math 247) that states

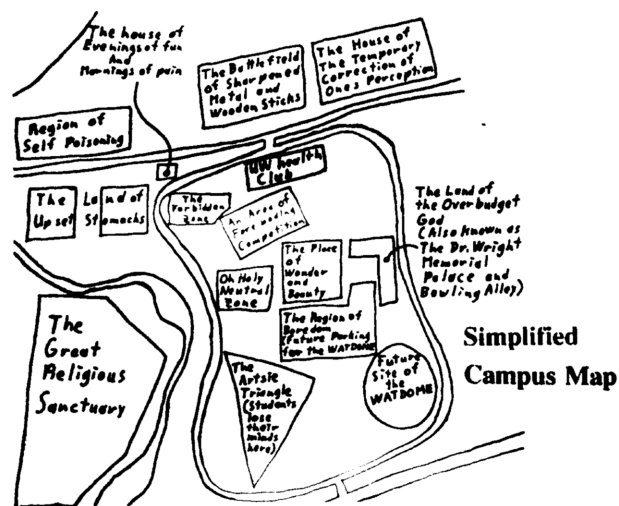
that all continuous functions have a maximum over a closed set. However, I need to explain what this is and why this applies. A closed set, for our purposes, will be one that contains all its limit points. If we have a sequence that limits to a budget that is more than that which we have to spend, then there is a point in the sequence past which it is above that budget, so it is not a valid sequence. This then applies similar to resource redistribution. Therefore all sequences that are in the valid region have limits in the valid region, so the region is closed. This then means that if we have any convergent sequence in the region, the limit will be in the region, and the limit of the function value will be the function value at the limit by continuity. This means that any limiting point in the function value must be a value of the function, but the function is real valued and bounded (by non-infiniteness). This gives the function a supremum, which must then be a function value because there is a sequence limiting to it.

And therefore, we have that all ethics is optimisation . sort of. The first thing to note is that this only exists in theory. There is no way to actually measure how good the world is or will be, this assumes you can know the future with perfect accuracy, and assuming you could do both you cannot compare infinitely many things anyways, so this is completely useless. Next, I would personally be inclined to say that the goodness function is differentiable (small changes yeild differences proportional to their size), I cannot argue it convincingly due to differentiability being a bit of a thorny concept in high dimensional spaces (and there are many many dimensions here). This means that even if a maximum exists, and we have the function, without differentiability it is almost impossible to get an algorithm for finding the maximum with any efficiency. In other words! The optimisation is useless. And that's assuming that how good the world is is an objective truth rather than being something that people will argue about. This makes anything other than a pragmatic approach untenable in practice.

So, I hope this helped explain why ethics really is just optimisation, but also why that doesn't matter.

Thanks for reading!

別



How To Skip Your 1B Term

Including Retroactively

If one takes a look at my transcript, it will show that there is a 1A term, and a 2A term, but no 1B term can be found. Why is that?

Short answer: AP exam credits.

Now, for those that already know what this will be about, or have never heard of or done AP exams, you can probably just skip this article entirely. For everyone else, it's best if we start with a quick explainer on AP exams.

AP courses are something you do in high school, and are offered in varying degrees by the high school itself. Some high schools offer many, some don't. Mine had a lot, such as Calculus, Statistics, Physics, Chemistry, French, Psychology, etc., etc.. You take the corresponding AP exam in May and get a score from 1 to 5. Depending on the score, you can then transfer them in university for credits. For me, my AP Chemistry score ended up becoming CHEM 120, CHEM120L, CHEM123, and CHEM123L, for a total of 1.5 units/credits. I could only choose one of my AP scores to be transferred over. Each university (and probably faculty as well) has different rules on how many AP scores you can transfer, and what each transfers into.

So if AP exam scores can translate into university course credits, how would it skip a 1B term? For that we need to look into what "1B" even means exactly. It turns out that academic levels (1A, 1B, 2A, etc.) don't actually count the number of terms you've done so far. They instead count the number of units (where a typical course is 0.5 units) according to the university.¹ There are unit thresholds for each level, and if you are at or above a level's unit threshold, then you are in that academic level or above. This means you can have terms which repeat levels if you do not go above the next threshold in one term, or skip levels if you do enough units in one term.

For math students, the relevant thresholds for each level are:

1A — 0.0
1B — 2.0
2A — 4.0

Now is when everything starts combining. Suppose that you successfully take 5 courses in your first term like I did, which is your 1A term, since up to that point, you should have done 0 units. After the first term, you have 2.5 units finished, so $2.5 \geq 2.0$ units threshold for 1B meaning that in your second term, it is your 1B term. However, if you transfer AP scores for 1.5 units like I did, at any point, the corresponding courses count before all other courses taken at university. Meaning that on your transcript it calculates your level as if you started your first term with 1.5 units. This means that after 5 courses in your first term, you end up with $1.5 + 2.5 = 4.0$ units, which is exactly the threshold to be in the 2A academic level, skipping over 1B entirely. This means your second term ends up being 2A instead of 1B.

☺

Now, the next important thing is on redeeming your AP exam scores. I've often heard that this is something done in your first year. For those that know a bit about me, it is perhaps understandable that I did not end up getting those credits redeemed in my first year. I was able to instead do it late into

my then-3A, now-3B term. So it does turn out that the first year is not a hard deadline. It seems you could theoretically do it whenever before you graduate.² This also means that before my then-3A, now-3B term, my transcript showed my second term as being 1B, but now it shows it as being 2A.

Still, there is a rationale behind the faculty's encouragement for you to do it early. For example, if you take a course that an AP transfer credit would have given you, you can no longer use that AP score anymore or you've essentially wasted a course. There is also that you can get some pre-requisites already done so you can take higher level courses a little earlier. There are also certain courses which have an academic level requirement (such as courses that need you to be at least 3A) that you can potentially take one term earlier than you otherwise could have taken. If you're crazy, you could even try to graduate a term early.

Regardless of everything else, there is guaranteed to always be one advantage, which is that you save a lot of money by having these AP credits transferred. The cost of an AP exam to the cost of a course at university doesn't even compare. What better is there than saving money?

boldblazer

1. This site shows unit thresholds for each level: <https://ugradcalendar.uwaterloo.ca/page/Acad-Regs-Level-and-Term-of-Study>
2. I recommend that you don't push it all the way to your final term. Since it takes some time for this entire process to finish, I would say that you should do it at least a term or two before you graduate. Other than that, you shouldn't feel too rushed.

N Reasons Dark Chocolate is Better Than Milk Chocolate

- Has a richer, more interesting flavour in contrast to your boring life
- Resists melting even in the poorly ventilated PMC office
- Forces you to enjoy each piece for longer since it's too strong to eat all at once
- Milk chocolate is purely sweet, and sweet things are for little kids, and we're all adults, right?
- Tastes good while you go birdwatching (according to one (1) friend)
- Dark chocolate coated cookies come later than milk chocolate cookies in the Cookie Clicker flavoured cookies series of upgrades and are therefore superior
- Reflects the bitterness in your heart when you get zero interviews from your co-op applications
- Somewhat dubious health benefits
- Being contrarian makes you a more interesting person
- The haters will eat everything else until dark chocolate is all that's left so you better learn to enjoy it

hyperlynx

The Jugo Files — Vol. 1

Over the last 12 months, I have made one of the greatest sacrifices in history. Today, my sacrifice is finished; today, is the day I start a great journey — the journey to pass down this great wisdom I have gained to the esteemed readers of **mathNEWS**.

The great sacrifice that I completed, was trying every single flavour at JugoJuice. Furthermore, I took detailed notes regarding my critiques of every one, and in the JugoFiles, I will share these thoughts.

In this volume, I will share my reviews of Lavender Love, and the Gold Digger.

The Lavender Love



The Lavender Love started off quite strong. Its intense purple color, added a lot of character to the drink, and its taste was quite interesting. Overall, it was a drink I would try again.

The final final score is **7/10**

The Gold Digger



On the other hand, the Gold Digger severely disappoints. Its water content is way too much, leading to its taste being quite bland. At this point, it felt like drinking juice, not drinking *Jugo Juice*. Thus, I recommend staying far away from gold diggers from this day forward.

Its final score is **4/10**

Preservation

It's really interesting to wonder which remnants of yourself will still exist, years from now. **mathNEWS** just hit its fiftieth anniversary, which means that it's very likely that at least a writer or two of the paper are dead now, their words still extant in the **mathNEWS** archive, sealed away. Part of this long history. It's like that guy Ea-nasir, who's still remembered almost 4000 years later because of how bad his copper was? What is kept and remembered aren't always the big momentous occasions, it's sometimes the complaints or **mindless ramblings** of the everyday folk. Stuff like this, I suppose.

It's weird to think that someday, when nobody at Waterloo remembers my presence, somebody **might** pick a random issue off the shelf and read whatever happened to be on my mind on any given Prod Night. It's been fifty years, which means we've gone through at least ten cohorts of writers, assuming each lasts five years. It's kind of incredible that we've managed that continuity and that we're still going so strong today, with issues being so huge that we have to limit word counts and articles.

Or, who knows, maybe in another fifty years UW will go out of business, the issues will be burned, and the servers will go down. But on the other hand, maybe not. In any case, I'm proud to have been a writer for this fine institution, and if this is my only lasting presence at the university, one of the hundreds of writers over the history of this paper... well, it wouldn't be bad.

Predap

Reflexivity

I am my own boyfriend.

~

John Travolta

%

She's so adorable when she scrunches her nose when she laughs and she's got pinkish roseish hair

+

Pizza on pineapple came from that American that Italy was named after...

#

It's not well-written, but it's got some good ideas.

&

He's got a feeding kink and he needs to shave????

;

THE AUDIENCE

—

Process manager? I don't know how I did it. I wasn't sure if I switched tabs. He's trying to roll up the charging cable but too bad his thumbs are so damn long. But the laptop is warm. And his hands are cold.

@

50 minutes of a concert

π

This whore got ice cream all over her face and dunked her face in blood and she's late to the party that nobody started

✓

O gremlin of the caves, how may I make LaTeX stop ignoring my new lines?

Slip your queries beneath the mathNEWS door, that may they find their way into my hands

```
\documentclass{article}
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Your preamble goes here
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
\let\tmppar\par
\def\par{\tmppar\ifvmode\leavevmode\fi}
{\catcode`^^M=13\global\let^^M=\par}
\AtBeginDocument{\catcode`^^M=13}
\AtEndDocument{\let\par\tmppar}
%
\begin{document}
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
% Your content goes here
%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%
\end{document}
```

\text{hvlig}



a poem i wrote in class instead of paying attention

i think my mind is made of ants
at least a million and three
they scurry in an aimless dance
a lawless chaos colony
no rhyme nor reason to be found
and common sense is rather rare
for ants aren't looking to be bound
by rules or other such affairs
i long to one day have control
of all the things inside my head
but ants don't like it when they're told
to go do something else instead
so they keep running to and fro
no place to be no place to go

relatively sane

Math Studies Club Update

HAHAHAHAHAHAHAHAHAHAHA /wheeze, WHEEZE/
HAAHAHAHAHAHAHAaaaHAHAHH /whe- whe- WHEEEEZE/
AAHAHAHAHAHAHAaaa 🤔🤔🤔🤔🤔🤔🤔🤔🤔🤔🤔🤔🤔🤔🤔🤔🤔🤔🤔🤔

Local Clubs Correspondent

N Reasons the Winter is the Best Season

- The nights are colder and hence your room does not overheat.
- The colder nights also make things seem quieter and hence makes sleeping easier and more fulfilling.
- Under just the right conditions small snowflakes will float around a streelight and will give the air surrounding it a light shimmer.
- After spending time outdoors going indoors feels much more rewarding and will bring a unique feeling of relief.
- Snowball fights and igloo making.
- A softer cold is good for the skin and can make you appear more refreshed.
- The days are shorter and the nights are longer.
- The more time allotted to nighttime increases the opportunity for taking night walks.

20049084

print(2 + 2)

The fans are clamouring for more Python content — unfortunately, all of my primary submissions this term are occupied by articles about movie samples, so I don't have room for the commentary this time. I'll just leave you with this little program I wrote that computes the answer to a simple math problem. Enjoy:

```
import ctypes
class PyObject(ctypes.Structure):
    _fields_ = [
        ('ob_refcnt', ctypes.c_ssize_t),
        ('ob_type', ctypes.c_void_p),
    ]
class _PyLongValue(ctypes.Structure):
    _fields_ = [
        ('ob_size', ctypes.c_ssize_t),
        ('digit', ctypes.c_uint16 * 1),
    ]
class PyLongObject(ctypes.Structure):
    # this is just a redefinition of `struct_
    ↵PyLongObject` in CPython's longintrepr.h
    _fields_ = [
        ('ob_base', PyObject),
        ('long_value', _PyLongValue),
    ]
wrong_answer = PyLongObject.from_address(id(4))
correct_answer = PyLongObject.from_address(id(5))
↵
wrong_answer.long_value = _
↵correct_answer.long_value
print(2 + 2)
```

__init__

Milked Toast Poem

Tree.....
stump
Free, chump!
Laundry, embezzle. Sell for a nettle
Blood!!!
clump
Infodump
The FitnessGram Pacer Test is a multistage aerobic capacity
test. Gas pedal.

Collect
Correct
Connect. Suspect.
There is a debt. Do not neglect.
Nettle clump infodump blood clump checked.
Eject. "I despise your attempt at payment"

Reject.

Alkali
You decry
you found the larks stopped singing. Why?

Fly
Fly
Fly Fly
A pomegranate appears. Lye. Carnify.

Clump appear
Tire here.
Eat one thousand locusts and flea hear. Fuck, typo. flea hear.
Fuck. typo. flea hear
They descend upon your position.
Smear **shear spear**
"Fresh and delectable. O joyous feast!"
...Years

Tree stump free chump. They span
blood clump infodump. The land
You return to where it all began.
why are they strewn about everywhere? you do not
understand.
In graph theory, a cycle in a graph is a non-empty trail in
which only the first and last vertices are equal. (Citation:
Wikipedia)
tan.

Face again
the eternal stain
nothing to lose and all to gain

You have been wronged, reader! You were promised a way to
pay back what you have owed, and instead met rejection! But
you survived, you ran away, and when push came to shove, you
fought tooth and nail for your life! However, what you had done
had inadvertently led to endless bloodshed! You alone have the
power to end the conflict for good! You can do it! I believe in
you! You are imbued with a special kind of power!

Hey everyone!
Let's have some fun!
Here's a little jig and here's a little bun
No, hon
Fun's done

"One, two! One, two! And through and through
The vorpal blade went snicker-snack!
He left it dead, and with its head
He went galumphing back."

Tree.....
stump
Free, chump!
Laundry, embezzle. Sell for a nettle
Blood!!!
clump
Infodump
The FitnessGram Pacer Test is a multistage aerobic capacity
test. Gas pedal.

Xx_420SonicFan69_xX

The problem with math course offerings

I don't get why some courses are required for a degree, but
it's offered like once every year. This is especially frustrating
when you're in a co op term — planning for a degree, wanted
to take fun courses, you're in spring term, most of the courses
are not offered, so you cram elective instead. But then when
you only have 1 fall term left, and it's in 3A: goodbye all fall
only courses (STAT 433, CO 442, CO 431, PMATH 440, etc.)
because most courses you can't take it in time because of
prerequisites — perhaps why some people do overrides. Then you
have something like PMATH 365 which is WINTER-only. Why
Math Faculty, why? I assume if something is a requirement, you
would offer at least twice every semester which allows for more
flexibility in course-scheduling: not to mention class clashes on
courses (looking at you CS240E and MATH249).

toxicsbridge

I'm Sorry

I'm sorry for everything I said about you. All those times I
called you worthless, when I said you made my life worse. Every
time I called you ugly, those times I said I'd be better off without
you. All those times I tried to replace you. I didn't know what I
had until I lost you.

I'm sorry, WaterlooWorks. Full-time job search is so much
worse.

UW Unprint

UW Math Department Introduces New Course: “Calculus for Chickens”

Featuring LW Marcoux

The University of Waterloo Math Department has just announced a new course for the upcoming semester: “Calculus for Chickens.” This innovative course will teach chickens the basics of calculus and how it can be applied to their everyday lives.

“We believe that chickens can greatly benefit from learning calculus,” said Professor Marcoux, the prospective instructor for the course. “They will be able to calculate the optimal pecking order, determine the most efficient way to cross the road, and even solve complex problems related to egg production.”

The course will be taught entirely in chicken-speak and will include hands-on activities, such as egg-rolling competitions and calculus-based scavenger hunts. Professor LW Marcoux has been chosen for his close relationship with the chickens of his past and has been an active force in bringing this course to light.

“This course is not just for chickens,” added Professor Marcoux. “Anyone who is interested in learning about calculus and how it relates to chickens can enroll.”

The course is set to start in the spring and is expected to attract a diverse range of students from the Math and Poultry Science departments. With a glimpse towards the future, when asked about future developments, Marcoux commented “we are considering introducing future Analysis courses aimed at the growing avian population at the University of Waterloo.”

So, if you’re a chicken who wants to improve your calculus skills or a student who wants to learn about calculus from a poultry perspective, this is the course for you!

ffc1

hard facts from a range of temperature

$0^{\circ}K$

- $-273.15^{\circ}C$ is cold
- CPU temperature exceeding $8125^{\circ}C$ is hot
- $0 = 0$, except when $0 \neq 0$
- C17H21NO4 is not good for you.
- $550/2 \neq 225$
- every 60 seconds in Africa, a minute passes
- sleeping late is bad for you
- you can’t solve it \neq unsolvable
- Girardin is a global constant
- it is February 2023
- $1 < 3$
- it is always gaming time
- 1 is not prime
- Dubnium is element 105
- there are wise words on page 18

AHpache

Impostors and Inspirations

There is an impostor among you tonight. Hi! The impostor is me. The impostor is looking forward to the famed mathNEWS pizza (although the infamous Oops! All Olives just got rejected. This makes me sad. Even though I hate olives). And the impostor definitely did not need to Google Map this building because they got lost halfway here. Definitely not. Any claims to the contrary are unjust slander.

As any good impostor does, I have been studying you all for a very long time. Which is to say, I’ve been reading mathNEWS from dark and spooky corners for almost a year now. And I’ve fallen in love.

I love seeing the community this newspaper has created among you all. How it brings together students of such different backgrounds and interests and even majors under the love of pizza and selective anonymity and lists of n things. I love the articles you write: the memes, the recipes, the poems, the reflections, the comics, the quotes, and the bathroom reviews. I’ve loved meeting different writers, and how they all write for different reasons and in different ways and just...differently. You even have lore! Yes, I’ve heard about you, mysterious Finchey.

Instead of the proper reaction to your... unique publication (which is running away screaming in terror, in case you are wondering), I’ve instead found myself incredibly inspired. I wish my university had something like mathNEWS. Especially in the wake of online school for the past few years. I see how this has brought you all together and I wish I had something similar to bring my community together.

And so I thought, why not create my own? Why *can’t* we have our own silly, weird, nerdy student newspaper that’s actually fun to read and anyone can write for? I’ve talked with friends. They like the idea. There’s interest. The next step is the hard part. Actually coming up with a concrete plan and pitching it and like, *going for it*. We’ll see how it goes. Most likely, nothing’s ever going to come of this. It won’t work out and this is the last you’ll hear about an off-brand mathNEWS at another university.

But that’s not important. What I want you to remember, next time you’re writing an article that is just “REEEEEE!” for 15 lines or providing n reasons why the goose should be your official mascot (it should be, by the way, if you want an outsider’s opinion), is that your chaos is wonderful, it is ridiculous, and it is impactful.

And that somewhere in a dark and spooky corner an impostor is lurking. They are reading what you wrote. And they are inspired.

Squeak

Funny Joke

I have a miraculous joke format other than the Fermat margin one, but it is too good to fit in the margin of every PMath student’s brain

nazz

MY Curly Hair...

is fucking epic. It's super easy to wash, even if it gets kinda long. I just grab a fuck ton of shampoo and go to town. I also condition, which is one of the many reasons why I look so spectacular. I have literally never used a brush or comb in my entire life. Then I just dry it with the same towel I use to dry my balls, and if it gets a little itchy I just dry it more, rubbing the top of my head vigorously with the balls towel until the friction melts all the water. Before drying it, though, I shake my head off like a dog so that my towel doesn't get absolutely soaked. Then I have this other stuff that my mom says makes my hair look better, but I basically never use it because I look fabulous no matter what.

It also stands out. My curly hair makes me easier to remember and recognize, but only as an extra help, since my most recognizable traits are my extremely high charisma, intelligence, and the fact that I am very awesome and cool and sexy. However, despite all my other good qualities, my hair is amazing as well. One time I got a compliment from a random Uber eats driver who said, "nice fro". It was literally the best moment of my entire life. My girlfriend also likes to play with my curly hair because it is very fun to play with. It's so fun to play with that it's like I have boobs on my head but instead of lumps of fat it's hair and the homies are allowed to touch it.

I have obviously never wished that it was naturally straight. Why would I? Straight hair people are boring as fuck. Their hair always covers their face and shit. Sometimes my friends tell me I should see what it looks like straight, but there are two reasons why I wouldn't do that. Reason 1: fuck that. Reason 2: I don't wanna. Reason 3: L + ratio + I am handsomer than you. My curly hair is one of the many, many amazing parts of me that I would not change because I am a perfect, immaculate being. The curls are ideal and easy to have and I would not change them.

I do not wonder what others feel the same way about for themselves because I do not care.

someBODY

impasta syndrome

the spaghetti integrate perfectly
 build onto each other -
 flowing, meaningful substance.
 made to be togethers
 intermingling with such zest.
 and still apart?
 longevity of experiences
 almost angel hair, consummate -
 almost real
 a funny macaroni elbow
 built around a hole
 lingers still
 on the bowl's edge

poster

NO LITTLE GERMAN BOY DONT GO IN mathNEWS PROD NIGHT

In which Rem references outdated tumblr memes

Oh Mein Gott zees lekture hall ist filled mit mathen studenten und weirden pizza flävouren! Zer ist ein all müshen-roomen option! Double cheesen! Triple cheesen! Es gibt ein Buy Editoren Sechzehn Kilogrammen of C4en day on ze projektoren!
 RapidEyeMovement

Collective Nouns for Birds

- Gaggle of geese
- Murder of crows
- Parliament of owls
- Conspiracy of ravens
- Exaltation of larks
- Huddle of penguins
- Bouquet of pheasants
- Lamentation of swans
- Muster of storks
- Flamboyance of flamingos
- Posse of turkeys
- Kettle of vultures
- Squabble of seagulls

mathgeek

Song of the week

Jeff Rosenstock did a Neil Young cover show two days ago. I was in the bus for three hours to see it, and at the end I could only see the first song before I had to bus back. Great song though. Hell of an opening.

*I got to bet that your old man
 Became fascinated with his own plans
 Turned you loose, your mama too
 There wasn't a thing that you could do
 I got faith in you, it's the kind of love
 That cuts clean through
 I got faith in you, it's a razor love
 And it's true
 And you really made my day
 With the little things you say
 Right now I'm looking through the window at a silhouette
 Trying to find something I can find yet
 Imagination is my best friend
 Got to watch out for the greedy hand, greedy hand
 Make a living like a rolling stone
 On the road there's no place like home
 Silhouettes on the window*

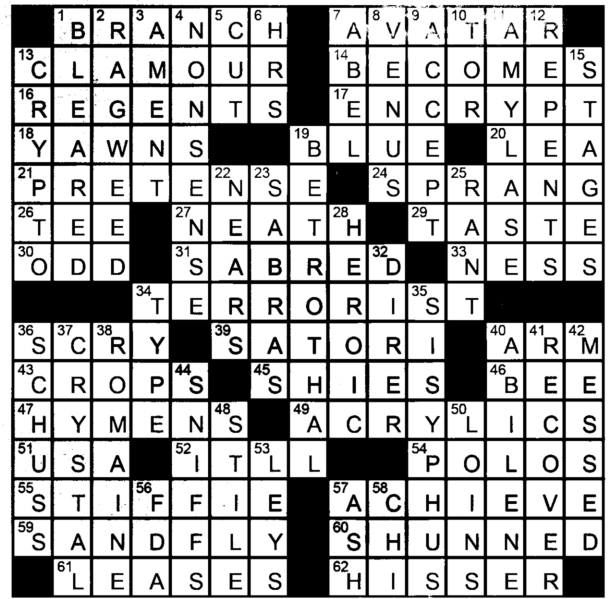
curdish

How to get free food twice in a day

1. Get a Faculty of Mathematics scholarship
2. Get invited to the Undergraduate Student Awards Celebration
3. Go to the Undergraduate Student Awards Celebration
4. Eat food at the Undergraduate Student Awards Celebration
5. Have the Undergraduate Student Awards Celebration fall on a **mathNEWS** production night
6. Go to the **mathNEWS** production night
7. Write a **mathNEWS** article
8. Eat pizza at the **mathNEWS** production night
9. Profit

Terms & Conditions

Last Issue's gridSOLUTION



THE mastHEAD

Well, here we are again. The mastHEAD. "Another day, another dollar", as they say. See, if I were actually making any money off this rag then that probably would've been funny. Well, wishful thinking..... Anyway, hope you enjoyed this issue of the anniversary volume! We put our blood, sweat and tears into this one. No really, it's in the ink. Give it a taste!!! ... This issue, we asked our dear writers, "How are you staying warm in this miserable weather?" and here were their smart and cute and clever answers... 0.423 ("Rock hype"), boldblazer ("My trusty ~~at~~ electric heating blanket"), Bass Case ("Heat from approximately \$150 worth of vacuum tubes"), meow meow meow meow ("Creating friction on my mouse playing cookie clicker"), aagrr ("Recently I discovered you can use people as portable heaters in bed. Who knew?"), Xx_420SonicFon69_xX ("By touching gra— wait"), normalparameters ("I gently borrowed my coworker's scarf"), nazz ("the flame burning in my soul against those who dare to uhhh talk"), a decaying skeleton ("hot takes"), creature_t ("you're mom"), Dick Smithers ("I replaced my lungs with small coal furnaces and that's been keeping me toasty"), water ("unhealthy amounts of soup noodles"), newlad ("Stay inside. outside is bad"), pthyr ("constantly donning my 10 pair of warm pants"), Not a Nerd ("Arson"), tends to fortytwo ("[REDACTED]" L of coffee every day"), apht ("I keep plenty warm staying inside your mother"), someBODY ("Burning souls"), Wink wank ("covering my body in fresh hardboiled eggs"), ATPache ("by recognizing I'm Canadian"), Yalxoyglan ("It's not that bad. Grow up."), Finchey ("By making sweet, sweet love"), warrior1rules ("A thin coating of gasoline"), jett ("Issues of mathNEWS (they are insulating)"), sgt(cause) ("By The warm glow of helping 80's alum add to the issue"), yet another waterloo goose ("Weather? I hardly know her!"), BJJ ("The weather is great, how dare you"), distractED ("bundle bundle"), claritiED ("My trusty thirted cardigans"), evaluatED ("Sitting in the molten core of AC"), unknighTEd + godSpeED!

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GRIDWORD

Helloooooo!!! Apologies for missing last week's **gridCOMMENT**, thank you to the sassy evaluator for filling in :0 (xoxo love u)

Last issue, you were asked: "What are you looking forward to in 50 years?", and those who answered (there were a lot of you :0000) gave some great responses:

- MathSoc Office: "Turning 69 B)" (love u cheesyb+crew)
- Biosaur: "Answers"
- cuofee: "The advancement of transportation"
- spaghetthinhalers: "being in retirement"
- ranch enjoyer: "mathNEWS 100 year anniversary ;3c"
- Anon042: "FASS111"
- Jason Cannon: "genetically modified mutant super geese"
- wegenger: "everyone worshipping the environment faculty"

I guess as far as best answer **gridWORDer** goes, cuofee gave a nice spiel about how they want plane and shiz to be better in the future, so please come by MC3030 to collect a prize when you can :) Also wegenger, good job on completing it despite not being a math student >:0

I'm really happy everyone liked the **gridWORD**, and you all did very great in completing it!! I hope you enjoy this one as well! I ask you all, "what is the best CnD item?" Please (please) send your answer, with solution and pseudonym to mathnews@gmail.com by February 20th at 6pm!

I will see you next time ;0

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Wink wonk

Across

1. Angler's hope
5. Flower stalk
9. One who quotes
14. Retentive, in a way
15. What a cat does when they're happy
16. Convex molding
17. Unweaned children or animals
19. Close, as a jacket
20. Anger
21. Bounds
22. Sewing in space?*
23. A building made of cyanide?!?!*
25. Sonata section
26. There's a lot of it in nut butter
28. On, as a lamp
31. Rum-soaked cakes
34. Like some coffee
35. Fan setting
36. Teen _____
37. Mean, median and _____
39. Alliance acronym
40. Office machine
41. Cry over spilled milk
42. Legal assistants
43. To and _____
44. Not made to smooth wrinkles*
47. Disastrous

Down

49. Fumes with anger
53. This building is not full of people that are blue*
55. Egyptian Christian
56. Opposite of WSW
57. He who has the world's biggest belt in the stars
58. You won't be able to watch Puss in Boots in this amphitheatre*
60. Mother-of-pearl
61. Frees (of)
62. 60's hairdo
63. Curl one's lip
64. Hammock holder
65. Blinkers?

18. Clark's exploring partner
22. Comes before ides
24. Elliptical
25. Wild _____
27. Center
29. Itty-bitty bit
30. Couples
31. A sharp blow with a fist
32. Sixth Jewish month
33. Ticket booth
37. A solution concentration of 1 mol per kilogram
38. Fire _____ (gem)
39. Grandmas, for some
41. With greater frequency
42. Poe and Yeats, e.g.
45. King Mark's bride
46. Rest
48. Prior to, old-style
50. Like atolls
51. Accustom: Var.
52. Audition tapes
53. A long, long time
54. Persia, now
55. Coconut fiber
58. Computer monitor, for short
59. Freelancer's enc.