

## “WHAT'S ONE THING YOU WANT TO TRY THIS TERM?”

Welcome back, to me screaming into the void.

You're probably wondering—hey, who the hell is this guy? He didn't show up in the orientation issue! He has to be an editor, right? Well, the answer to that is yes and no. I am (likely) the first editor in **mathNEWS** who is a part of the Environment Faculty. Why is someone in Environment in **mathNEWS**? Let's answer that question with another question: the **mastHEAD**.

What was one thing I wanted to try this term, I asked myself, in the Winter Term of 2022. I wanted to contribute to **mathNEWS**, because it was funny to read, even if I didn't know jack about half the content. So one thing led to another, and that's how I'm here! Perfect timing, too, for I'm deadset on converting as many people in the Math Faculty as possible to join the Environment side. Muahaha! No one will realize my secret nefarious plan until it's too late!

I think I should probably address, at the very least, why I'm supporting a print newspaper. Isn't all of this a waste of paper? But, dear reader, have no fear! We here at **mathNEWS** are aware of the amount of paper we consume. We track the amount of issues in each rack and look at the demand, then adjust printing numbers accordingly so we don't create an excess like what happened with the infamous “Squirrel Issue” that took up half our racks.

Well, it's a good idea in theory, but when your writers write a ton of articles, saving paper kind of becomes a moot point. You could save 100 out of 200 pages by printing five 20 page issues—but when it's five 40 page issues, that's when things get problematic. Yes, this issue is a whopping 40 pages long! Also, we used paper for the **mastHEAD**. Huh. I guess **mathNEWS** wasn't as eco-friendly as I thought...

I kid you not, we have two pages devoted to the death of the Queen, two pages that are letters to each other, two pages devoted to Japanese loanwords, reviewing Columbia Street, and a RPG maker. All separately. That's already 10 pages. But then again, even if it's wasteful? To quote myself from 149.5, print media will never go out of style or black out. Unless you spill ink on it. Or burn it. Or throw it into some water. Or eat it—

uknightED  
Editor, **mathNEWS**

uknightED  
Editor, **mathNEWS**

|   |  |   |
|---|--|---|
| <b>AAQSR</b>  |  | Not writing in <b>mathNEWS</b> - ah fuck  |
| <b>NOT A N*RD</b>   |  | Writing for ENGnews ← bad   |
| <b>ALYSSNYA</b>   |  | methamphetamines  |
| <b>SOMEBODY</b>   |  | mathamphetamines  |
| $\backslash\text{PI}=\backslash\text{SUM}_{\{n=0\}}^{\backslash\text{INFTY}}\backslash\text{FRAC}\{4(-1)^n\}\{2N+1\}$ |  | also alyssa's meth  |
| <b>__INIT__</b>   |  | Showing up to courses I'm not enrolled in   |
| <b>WINK WONK</b>  |  | A fresh juicy leg or hamburger.   |
| 別   |  | Durian  |
| <b>ES_VM</b>  |  | 150g of U-238 dipped in chocolate fondue  |
| <b>ALEXANDERTHEGREAT</b>  |  | <b>mathNEWS</b>   |
| <b>TENDSTOFORTYTWO</b>  |  | Makeup and/or dating (appreciate help for both)   |
| <b>SNACKIMAL FISHMOP</b>  |  | Showing up to math courses I'm enrolled in (at least one)   |
| <b>APHF</b>   |  | Personally, I would like to try breaking out of a maximum security prison that only houses fantasy creatures the government has looked up in an attempt to convince every one that everything is normal and fine. |
| <b>BOLDBLAZER</b>   |  | Meet new people, make new friends (hopefully)   |
| <b>MILLER</b>   |  | I would say shrooms but I'm doing them on Friday sooooo...  |
| <b>CUTLET</b>   |  | I'm considering coloring my hair this term!   |
| <b>GOLDEN</b>   |  | Prioritizing life over school   |
| <b>A COOL PEN NAME</b>  |  | Write a <b>mastHEAD</b> answer on a physical piece of paper   |
| X   |  | less  |
| <b>FINCHEY</b>  |  | I've been thinking of taking up water polo. I've always wanted to ride a seahorse.  |
| <b>TEFF</b>   |  | x86 assembly  |
| <b>AWMANZ</b>   |  | The foot in the sink after washing dishes. Yum!   |
| <b>PTKYR</b>  |  | $\pi$ memo to 750 digits  |
| <b>CLARIFIED</b>  |  | ...Going back to a digital <b>mastHEAD</b> form.  |

## ARTICLE OF THE ISSUE

The Article of the Issue for 150.1 goes to **\_\_init\_\_** for Street. Review: Columbia Street! This urban planner salutes you. Drop by MC 3030 for your \$25 Conestoga Mall gift card!

### In MY day, we used paper, okay?

RYAN CHOW, **mathNEWS** EDITOR FOR FALL 2022  
ALONG WITH TERRY CHEN, DANIEL MATLIN, NICHOLAS PRIEBE, AND CLARA XI

# mathASKS 150.1

FEATURING PROFESSOR DANIEL VOGEL

**CLARIFIED: YOU HAVE A UNIQUE BACKGROUND AS AN ACADEMIC. DO YOU THINK YOUR PAST EXPERIENCES HAVE INFORMED THE WORK YOU DO NOW IN ANY WAY?**

Absolutely! I made a choice just before starting the third year of my undergrad to change from the elite honours BSc in CS, to a cobbled-together BA that merged a 3-year general degree in CS with the same in Art. That must have seemed like an odd move in terms of future career prospects. Then, I doubled-down on art and spent another 3 years at art school to also get a BFA, which must have seemed even crazier. But, that mix of technology, art, and design, especially learning to think creatively and independently, really changed my approach to everything. This gave me a huge leg up in industry where I could talk code to the devs and colour-theory and typography to the graphic designers. In graduate school, and now as a professor, those experiences inform almost everything I do, especially research and teaching.

**MOLASSES: WHAT APPLICATION OF YOUR RESEARCH HAVE YOU FOUND THE MOST REWARDING TO SEE?**

Any time one of my group's papers is cited by someone else, it's very rewarding. Even if they show our previous technique is worse than their technique, it's still great, because it moves the field forward. It's also very rewarding when the popular press picks up our research because it means potential impact outside of academia.

If I had to pick one work that was most rewarding in terms of application, I'd pick a filtering method called the "One-Euro Filter." It's not typical HCI work, but it has had a tremendous impact in academia and industry. I developed the idea when implementing a long-distance pointing method for my second paper, then years later, myself and colleagues in France refined the method and published a short paper. It was picked up by lots of other HCI researchers and interactive system developers. But the moment I knew it had a major impact was when I was discussing how to tune the parameters with one of my graduate students. I asked him how he implemented One-Euro in his code, and he said he didn't: there was a "One Euro Filter" configuration panel in the commercial motion tracking software where he was getting his data from! Ok, I didn't get rich off of it, but that example is excellent in grant applications.

**ENAMOUR: WHAT'S YOUR FAVOURITE FOOD?**

Perhaps due to my German roots, I love schnitzel. But I equally enjoy sushi (big fan of Ken Sushi take-out) or a tasty burger on a patio (best at Arabella Park).

**FOODIE: WHAT IS YOUR FAVOURITE THING TO COOK?**

I can make excellent Belgian waffles from scratch with no recipe. But, overall, I'm not much of a cook: when I make dinner for my family, it starts with opening a GoodFood box.

**CLARIFIED: WHAT MADE YOU DECIDE YOU WANTED TO GO BACK TO SCHOOL TO PURSUE A MASTER'S AND THEN A PHD IN COMPUTER SCIENCE? WAS THE APPLICATION PROCESS DIFFICULT?**

I enjoyed my time in industry, but felt like I was ready for something different. It was also the early 2000s when the first big web bubble burst (read the [pets.com](#) Wikipedia page to get an idea). The professional services web development company I worked for was doing some serious downsizing, and the immediate future looked uncertain. In my industry role, I had discovered academic work on topics like interaction design and information architecture. I had also become increasingly interested in what the future of computing might look like. I'm sure that the fact that my wife was finishing her PhD at the time played into it too. So, graduate school seemed possible and also really interesting.

The application process had some challenges. I was living in downtown Toronto, so it seemed natural to apply to UofT. I met with their Chair of CS Graduate Studies, and he said my half-BA in CS was missing pretty much all the upper year CS courses necessary to prepare for graduate school, so I wouldn't get into a top program like UofT. Instead of giving up, I quit my job and spent a year taking all those courses as a "non-major." It turns out taking a full load of CS courses like algorithm analysis, numerical methods, computer graphics, and computational complexity is pretty tough after 7 years in industry, especially since I was essentially a designer and business consultant.

But it all worked out. With a lot of dedication and drive, I managed to get really high grades and I applied to grad school. This included UofT CS, but also non-CS programs related to art, design, and technology. I ended up being accepted to a few programs (even MIT Media Lab), but decided on UofT because I had really gotten into the science side of HCI when I took a course with Ravin Balakrishnan (who ended up being my advisor).

**CLARIFIED: DID YOU FACE ANY CHALLENGES RETURNING TO ACADEMIA?**

I talked about some difficulty when I applied to graduate school above, and hinted at some challenges due to life events. Other than that, it was tough to move from an excellent dot-com salary to a graduate student scholarship. But even that was ok, because I ended up doing a fair bit of professional consulting while a grad student which paid pretty well and kept me connected with industry. I should mention that I didn't return to grad school to become a professor, I did it because it was interesting. It was only after grad school that a post-doc fellowship brought me to Waterloo and I was lucky enough to land a faculty position here.

One thing I should stress is that I never felt like my age made a difference as an older grad student or later as an older

“new” professor. I was even awarded an “Outstanding Young Researcher” award from CS-Can when I was almost 50! So I guess age and youth can be relative.

**ABALD MAN: WHAT WAS YOUR THESIS ABOUT?**

My PhD thesis examines why pen input wasn't great for controlling conventional GUIs designed for a mouse. It was the mid 2000s, and Microsoft was really pushing a computing form factor called the “TabletPC” that used a pen to control Windows (this was well before iPads with Pencils, or the Microsoft Surface tablet). My advisor basically handed me a TabletPC and said “find out why this thing sucks.” Chapter 3 of my thesis provides lots of reasons why it does, and the rest of the chapters focus on a detailed examination and solution for one problem no one had looked at before, “hand occlusion.”

As an aside, I spent about 2 years working on a totally different topic exploring whole-body interaction with large wall-sized displays, basically an extension to my MSc thesis. But for life reasons — my wife got her first tenure-track position and we were having a baby — I wanted a more portable research topic that allowed me to spend a significant part of my time in a little college town in New Brunswick. I couldn't bring the 16-projector 4.5m wall display and \$500K motion tracking system with me, but a TabletPC fit into my carry-on.

**ANONYMOUS: WHAT DO YOU DO TO FIND INSPIRATION?**

I find really good product design and innovative contemporary art inspiring. To find those, I try to be a keen observer of the world and make a point to visit large and small galleries whenever possible.

**CLARIFIED: WHAT BROUGHT YOU INTO YOUR RESEARCH AREA OF INPUT TECHNOLOGIES, AND WHAT MAKES YOU STAY?**

How you provide input to a computer interface is so critical to how the interface works and how it can be designed. To me, understanding fundamental characteristics of input devices, and inventing new variations of input and even new types of input devices is a core part of how we move computing forward. I've mostly stayed in that area because new technologies and innovations (like deep learning for example) mean there's always new types of input that are needed, and new input methods that become possible.

**TRAVELLER: IF YOU COULD GO TO ANY PLACE IN THE WORLD, WHERE WOULD YOU GO?**

I would choose Hawaii. A long time ago, I was fortunate to live and work in Honolulu as a 3D animator (surprisingly, it was a bit of a centre for 3D animation back in the early 1990s). I've been back a few times since, and would gladly find an excuse to go again. I like the mix of beautiful weather, the beaches, and the food. It's an island in the middle of the Pacific, but also a city with pretty much everything you could ask for. Even art galleries and a large university with a CS department... hmm.

**BOLDBLAZER: WHAT ARE SOME OF YOUR FAVOURITE THINGS THAT YOU HAVE DONE/MADE?**

I guess things can fall under research, art, and other stuff.

I have lots of favourite research projects, but I think Conté is the one that stands out. Maybe because it was the first thing I did after I finished my PhD, it was a collaboration with my good friend Géry Casiez at the University of Lille, and it was a pure idea and demo paper with an art connection too.

I will talk about my favourite art project below.

Other favourite things I've done include single-handedly renovating our attic into a great bonus space, currently a Lego building space for my kids (and me too). I also really got into Fusion360 and 3D printing during the pandemic; I've used those tools to make lots of things for my woodshop, around my home, and of course for research (like all the device cases for last year's PocketView paper).

**BOLDBLAZER: ALSO, HOW DID YOU DECIDE UPON THE NAME NONSEQUITORIA?**

Nonsequitoria comes from “non-sequitur” which means “a conclusion or statement that does not logically follow from the previous argument or statement.” I chose it as a name for my consulting practice ages ago because I did so many different things with art, design, and technology. It's absolutely awful to give over the phone as an email address though.

**CIX: WHAT IS YOUR FAVOURITE WORK YOU'VE DONE AS AN ARTIST?**

I'd pick an installation I did with a model electric train and two early Apple Macintosh computers. The two Macs sat at either end of a long expanse of track, with the track circling around each Mac (so the train could turn around). When the train passed by a Mac, a video of a person's head turned to watch it go by. The people in the Macs changed every now and then, and they occasionally yawned or blinked as they “waited” for the train to pass. I built a system of wooden trusses attached to a wall to support the small N-scale train track along a subtle arch spanning about 4m. It used a simple hack to trigger the Mac: I inserted a magnetic reed switch into the track and wired it to the mouse button. The train's motor is like a giant magnet, so it triggered a ‘click’ when it was about to pass. Just to date myself, the code was all written in Macromedia Director.

I like the work because it had a nice sense of play and ambiguity that combined digital technology with physical sculpture. There are several possible interpretations of what it could mean, but really any meaning a viewer came up with was great. I think the aesthetics of the Floyd-Steinburg black-and-white dithering used in the videos of the people is really beautiful too.

**CIX: DO YOU DO MUCH “ARTISTIC” WORK NOWADAYS, ALONGSIDE YOUR RESPONSIBILITIES AS A PROFESSOR?**

Not as much as I'd like to, but I'm actively pursuing ways to get back to making art. One way is with my graduate students. I tend to accept students with a creative or artistic side, and some of the research projects we work on could be considered more art than science. I also really enjoy teaching art in CS 383 “Computational Digital Art Studio.”

**TENDSTOFORTYTWO: HAVE YOU EVER HAD PEOPLE COME UP TO YOU AND SAY, “I DON'T \*GET\* YOUR ART”? IF SO/IF NOT, HOW DO/WOULD YOU RESPOND TO THEM?**

No one has said that exactly, but I totally get what you mean. I'd just be happy that they took the time to experience the work, think about it a bit, and try to pull out something. That's already pretty successful.

**WEWLAD: WHAT IS YOUR FAVOURITE NON-SEQUITUR?**

Never gonna give you up.

**CIX: CAN YOU SPEAK TO ANY THEMES OR IDEAS THAT YOU ARE DRAWN TO ARTISTICALLY? HAVE THESE EVOLVED OVER THE COURSE OF YOUR LIFE?**

I've always been drawn to art with a clean, almost minimal aesthetic that's conceptual, playful, and ambiguous. I tend to avoid serious and profound societal topics, and especially try to avoid encoding some particular meaning or lesson for viewers to decode. I'm more maker than activist.

**ANONYMOUS: WHAT ARE YOUR HOBBIES?**

When I lived in Hawaii, I got into longboard surfing! My main hobby now is renovating our house and woodworking. I'm pretty good at refinishing and modifying furniture and building random things.

## N WAYS TO TRY AND MAKE EDUROAM WORK

**SPONSORED BY MY TEARS DURING CLICKER QUESTIONS**

- Wave your computer around like an idiot
- Restart your wifi
- Restart your computer
- Replace your computer
- Steal your friend's computer
- Sit and wait in silence and shame
- Try the guest wifi only to realize it's worse
- Ask your academic advisor for help
- Buy an ethernet cable from Walmart
- Give up

shahabee

# NEW SCHOLARSHIP OPPORTUNITIES FOR START OF NEW SCHOOL YEAR WITH NEW PRESIDENT

**IN CELEBRATION OF POST-PANDEMIC NORMALCY**

Good day students,

It is finally the start of the first fully normal year since the pandemic and the start of my new, exciting post as President of the University of Waterloo. As the academic mission resumes in-person after where President Hamdullahpur left off, activity both on and off campus in Waterloo will also resume.

As part of this exciting new start, the University of Waterloo has decided to create a generous scholarship awarded annually until the near future or until the next pandemic or variant, whichever is sooner.

The Lazeez Shu W. Ma Scholarship is worth \$25,000 and is partly funded by our partners in the Waterloo Plaza to boost spending as in-person activity in the region returns.

The requirements for applying to this scholarship is as follows. A student must order a meal from Lazeez each day for 365 days for the full academic year. It can be any meal as long as it is at least medium-sized, though the shawarma with many lines is the most recommended for optimal nutrition.

As proof, the student must have a copy of the receipt for each day with the menu item, date, and price clearly printed and readable. All 365 receipts must be stapled to this **mathNEWS** article and then be submitted to one of the editors at **mathNEWS** during production night. After careful verification, the editor, if approved, will pull out their wallet and hand the student the \$25,000 scholarship for expediency.

There will be more than one offering of this scholarship available this year so we encourage all students to apply.

Thank you to all students participating. I hope you look forward with me to this year's completion of the academic mission.

President Vivek Goel

**My brain, it's just... gone.**

**PROF. MARK GIESBRECHT**

# MATHSOC SEZ

## RE-INTRODUCING MATHSOC SEZ

Hi everyone! You've read the title correctly—MathSoc Sez is coming back this term! This is a place for all your MathSoc related updates, except in the **mathNEWS** format that you all know and love.

The revival of MathSoc Sez is brought to you by your President, Evan, as well as some **mathNEWS** editors that shared a tie guard shift or two with your VP Communications. We're glad to be back in the pages of your favourite fortnightly publication!

## WHERE IS MATHSOC?

You can find us in the MathSoc Office (MC 3038) or the MathSoc Executive Office (MC 3035). A large number of our clubs also live on the third floor—just take a stroll down the hallway! You can also find the Math C&D and the Math Comfy lounge on the third floor. Come say hi!

## OKAY, BUT WHAT IS MATHSOC DOING FOR STUDENTS?

Here's just some of the services we provide:

- Academic advocacy to faculty and administration
- Math t-shirts, sweatpants, ties and more
- Inexpensive printing and photocopying
- Board game rentals and a free textbook library!
- Free candy!
- Events like Pi Day (when you get to pie the MathSoc execs and willing profs), Board Game Nights, Party with Profs, résumé critiques, and more.

More specifically, this term:

- We are working on bringing all Math Studies students a club of their own: the Math Studies Club!
- Check out the *Prez Sez* below for what your President is doing for you, which involves getting more student space in our current Math buildings and, eventually, in M4.

## THE MATHSOC OFFICE IS OPEN!

Come find us at MC 3038 from 11am to 4pm for all your mathematics needs, including novelty items, renting out board games, and our printing services!

MathSoc locker signups are also open! Check out the form here—<https://mathsoc.uwaterloo.ca/locker-sign-out/>

## GET INVOLVED WITH US!

Interested in being a part of MathSoc or the math community? Apply to some of our volunteer positions here—<https://mathsoc.uwaterloo.ca/volunteer-at-mathsoc/> or check

out any of our lovely clubs and affiliates, which are also on our website. We're always looking for volunteers!

First years—there are 4–5 first year representative seats on Council, with an election happening soon! In general, if you're interested in student governance and advocacy, you can join our Council or the Board of Directors.

## UPCOMING EVENTS

**September 26<sup>th</sup>, MC Third Floor:** Math CnD reopens!

**September 28<sup>th</sup>, 2–2:30pm, MC 3002:** CnD Grand Reopening! Come grab a drink and a treat, complain about how long renovations took, and celebrate!

**September 29<sup>th</sup>, 6pm, MC 5501:** Board of Directors meeting. We're looking for a Chair and a Secretary, nominate yourselves by showing up! Please note the Chair must be a past or current director.

Also keep an eye out for an election announcement for our 4–5 First Year Representative seats!

## PREZ SEZ

Hey folks—I'm Evan Girardin, your President this Fall. Hope you've been having an alright time settling into the term!

One of the things I have my sights on this term is working with the Faculty to expand student space. That includes both study space and club space. Math students have had the short stick on this for a while—despite growing an absurd amount since 1990, we don't have much more study or club space than we had back then (and most of the club rooms are admittedly very broom-closet-like to begin with).

In meetings I've had so far, Faculty administration seems pretty keen on making things better for students and, in response to the concerns I brought to them, has been looking into repurposing some space on the third floor for larger clubs/study space. I still need to talk with them more to nail down specifics, but this should be something we can see results for in the short term.

As for the longer term, I also spoke with administration briefly about what plans might look like for the long-prophesied "Mathematics 4" building that may or may not be in the somewhat-near future for Math students. The Faculty might be moving some things from MC into this hypothetical M4 once it's hypothetically built, which would free some space up for us. Details are pretty sparse and some things are still up in the air, but once I have more news about that, you'll hear about it here. If you have any questions or any concerns you want relayed to the Faculty, let me know: [president@mathsoc.uwaterloo.ca](mailto:president@mathsoc.uwaterloo.ca). See you next issue!

The MathSoc Executive Team

# PMAMCOC UPDATE #1 OF THE TERM!

Hi Friends!

My name is Nick, and this term, I'm the president of the Pure Math, Applied Math, and C&O club (PMAMCOC for short, and PMC or Pure Math Club for shorter). For those of you who haven't had the pleasure, PMC is a MathSoc club focused on sharing the joys of math with... well, everyone! Throughout the term, we have a variety of social and academic events, and our office in MC3033 is usually open as a study or relaxation space. We sell cheap pop, have lots of Rubik's cubes, and lots of friendly people, please feel free to come on by!

## EVENTS

We have an exciting lineup planned this term, with lots of food available for paying members:

- **Prof talks:** These are 1 hour talks given by professors teaching us about something cool, usually things we wouldn't learn about in a course. Snacks provided. We're hoping to have the first of these soon, with potential for 2 AMATH talks this term! These talks are generally very accessible to anyone, and provide insight into math you may not see otherwise.
- **Short Attention Span Math Seminars (SASMS):** These are 25 minute talks given by undergrads highlighting cool things we've run into, done in our research, seen in a workplace, or providing unique perspectives on materials you need in a class. Most of these are extremely accessible, although usually one or two students will do something more advanced each term. We plan to provide dinner!
- **Shorter Attention Span Math Seminars (SAS) [I didn't have the attention span to finish the acronym]:** These will be even shorter talks, given by people who didn't have a chance to give a SASMS but still wanted to
- **Over 9000:** A contest where questions are of the form "is N over 9000." Cash prizes to be won! The questions are generally a mix of interesting math, fun tricks, random guessing, and complete bullshit.
- **Secret Second Contest:** Historically, PMC ran an integral bee; however, since integration is a huge pain, we've decided to try for something else this term, with details coming soon. Also a cash prize here!
- **End of Term Social:** An undecided fun event where you'll get to unwind before exams, and hang out with all the friends you made in the office this term

## EXECUTIVE TEAM

With the new term, we also elected new executives. I'd like to give a huge congrats to the following people, I just really love them, top tier individuals:

- **President:** Nick Priebe
- ...

Ok ok, for real, an enormous shoutout to the whole exec team, who I am incredibly excited to work with this term. All of you are fantastic and this will be a great term for PMC! Here's the list:

- **VP Finance:** Tam An Le Quang
- **VP Propaganda:** Maya Gusak
- **VP Pop:** Adam Jelinsky
- **Secretary:** Adam Jelinsky
- **VP Applied Math:** Defne Tayner
- **VP Pure Math:** Stefan Frunza
- **VP C&O:** René Roy

That's all from me for this week. If you're interested in joining our discord, a link is available in the student hub, or you can come by our office. See you soon!

Golden (PMC Pres)

## CABBAGE



couch

# profQUOTES

## CO 370: MARTIN PEI

- “ Should we finish early today? I’m tired and also hungry.
- “ I need to be careful when there’s an f with a subscript k.
- “ What is real life anyway?
- “ Who wants to mourn the Queen at 1 o’ clock? [*One person puts their hand up*] We’ll mourn the Queen at 1 o’ clock.
- “ I don’t know how you mourn the Queen.
- “ If you don’t want to mourn the Queen, just think about the maximum flow problem.

## CO 456: DAVID JAO

- “ The solution to technology problems is to introduce more technology.
- “ What’s your favourite large number? Tree3?
- “ Ordinal numbers are too large for a set.

## CS 245E: PRABHAKAR RAGDE

- “ Everything I say can be taken the wrong way.
- “ Britain is a complicated place.

## CS 246: ROSS EVANS

- “ When Brad does this example, he does it with Scrabble, but Scrabble’s a bit passé now... Don’t tell Brad I said that.
- “ And that’s how you use egrep to cheat at Wordle, which is probably the most valuable thing I’ve taught you today.

## CS 246E: BRAD LUSHMAN

- “ It’s too bad we don’t have some sort of device that makes decisions based on what it sees. One might even call it a “computer”...

## CS 338: MICHAEL LIU

- “ If you call SQL “sequel” to my face, you fail this course. My wife has failed this course many times. However, she’s not part of the Math Faculty, so the repeated course rule doesn’t apply to her.

## CS 343: PETER BUHR

- “ I have a tendency to tortu-teach, I mean teach.
- “ I have also been told that Docker is about as big as a whale.

“ Concurrent programming is like lifeboat rafting without a lifeboat. It’s like skydiving without a parachute.

“ This is going to hurt.

“ If any of you think you know exception handling... you don’t know diddly-squat.

“ It turns out the compiler gets up every morning and tries to break your concurrent program.

“ This person is potentially the only person in the class who’s used a do-while loop.

“ Death. Taxes. goto.

“ You should never fear the goto.

“ Is anyone here brave enough to click on that link? Because what it does is it wipes your laptop.

“ I’m done. I coded this up, I debugged it, and I’m in the bar with my friends, and I’m having beer.

“ Fortran is not dead, alright?

“ I appreciate this is silly. But I want to be able to do it.

“ What do real people do in their programming languages without this crazy alternate return mechanism?

“ If I looked at your programs, all of your `printfs` would check the return code. Right?

“ The key here is that you’re required to do the checking. Well, in fact you’re not required to do the checking... but you’re supposed to do the checking!

“ Let’s not talk about the horrible ugly syntax in this. Let’s pretend that this looks nice.

“ By the time I’m done with this, there should be steam coming out of your body and you should feel a little queasy in the stomach.

“ You can jump anywhere. It’s madness!

“ I am going to give you a very sharp knife and I want you to use that on your assignment.

## CS 370: CHRISTOPHER BATTY

“ What’s the course average like? Well, that’s up to you.

“ [Real numbers] are infinite in a couple of ways that are important to think about.



“ Whether your stock is at hundred dollars or two hundred dollars is important to a lot of people.

“ This is our, y’know, friendly neighborhood Taylor series.

“ It’s always dangerous to do a live demo.

“ Is anyone used to working with... a partially working screen?

**CS 456: SAMER AL KISWANY**

“ I hope nobody videotaped that or put it on YouTube. “Here’s our professor talking to the garbage can.”

“ There’s a lot of times when you look at things and think, “Why the heck did you do it this way?”

“ We’ve already been transmitting these nonsense bytes back and forth for ages, so we might as well keep doing it.

“ Hey dude, can you please lower your BitTorrent or something? I’m trying to watch this game.

**CS 458: YOUSRA AAFER**

“ What do you do if you do not want to get your car stolen? That’s right, do not buy a car.

“ Every time we have a vulnerability, we’ll give it a nice name like [Heartbleed], give it a nice logo, a website, and things like that.

“ This feature is not really used for, ah, benign purposes.

**CS 492: DAN BROWN**

“ So we have two clocks, one of which doesn’t have a functioning battery.

**CS 763: ANNA LUBIW**

“ It’s more exciting when you find out the prof is making mistakes.

**MATH 239: DOUGLAS STEBILA**

“ Student: Is that last step necessary?  
Prof: Is anything necessary really? In terms of showing off, yes.

**PMATH 340: MICHAEL RUBINSTEIN**

“ The one thing I regret is not shorting Chegg.

“ This is kinda shit.

“ If you want to get rich, go work at McDonald’s.

“ [While riding a bicycle on the first floor of RCH, coming into class 10 minutes late] Okay, so I posted notes on LEARN.

“ I’m going to stop breathing.

“ Is this not working? Motherfucker.

**STAT 231: MICHAEL WALLACE**

“ It could be that I accidentally slipped into being British, as does happen from time to time.

“ If you’ve heard that correlation does not imply causation, I’m here to tell you that sometimes it does.

“ We are not here, sadly, to talk about me. We are here to talk about STAT 231.

“ I’ve been doing remote learning since before it was cool.

“ I urge you to not think that I’m using emoji in a misguided attempt to connect with the youth.

“ I promise I know what I’m doing.

“ Oh good, someone in chat says, “hype hype hype,” everything is working.

“ Choosing to miss an assignment or midterm is... an extremely suboptimal strategy.

“ I do actually use Google sometimes... or mostly Stack Overflow.

“ Real data, sometimes, are really unpleasant to work with. But that is the joy, sometimes.

“ Talking is a surefire way to unchilify me.

“ Much as I may try, not literally every person in this room will become a statistician.

“ Now that I’m Canadian, I have to pretend to like hockey, even though soccer is better.

“ Donuts are not people. Hot take!

“ Maybe grad students behave slightly differently than undergrad students, who knows?

“ [Undergraduate students are] a group of people we can put in a box and look at.

“ It’s a weird time to be British.

“ We’re probably making people extremely upset and probably getting sued, but we’re not changing anything about the data gathered in the process.

- “ Eventually there will be the heat death of the universe and everyone won't exist anymore.
- “ There's numbers on the screen!
- “ I don't know how big five-year-olds are.
- “ Interesting to think about, but I'm not a basketball expert.
- “ That's definitely a three.
- “ This equation... you know, it's pretty horrible.
- “ You can do math and a bunch of horrible calculus show that.
- “ This is going to be a bit of a typo lecture, just to let you know.
- “ A friend could ask, “What's the probability we find an apartment for less than \$1000?”, which this sample would suggest is 0.
- “ It was psychology students. It's always psychology students.
- “ The question of “how do we establish causation” is why I have a job.
- “ As statisticians, we need to be prepared to have these conversations, even if they make us sound a bit silly.
- “ Pie charts suck. Pie charts are terrible. Never use pie charts.

#### STAT 240: AUKOSH JAGANNATH

- “ *[Gestures at board]* This was painful. You just sat there and saw me sweat for five minutes.
- “ I will solve all these in one step... The proof is to solve homework 2.
- “ Students are going into DC at all points in the night [...] and where do they come from? Well they come from Tim Horton's.

#### STAT 333: MEHDI MOLKARAIE

- “ Say you're at Waterloo Square. And drunk.
- “ In this case it's easy. Well, it's not, but I have the answer, so it is.

#### STAT 442: JACK DAVIS

- “ If you're in this class, you're in the right place. If you're not in this class, you're also in the right place; you just don't know it yet.

- “ I like to use dark mode because I'm a cave-dwelling vampire.
- “ Statisticians are the second-rarest job category in Canada, after logging managers.
- “ What a travesty of a pie chart. I don't want to look at it anymore.
- “ I want to redeem pie charts, and then never talk about pie charts ever again.

## ALL POTATOES: A STARCH JOURNEY

I have embarked on a grand journey, one that many have crossed before. I have had to learn how to sustain myself while living alone. Due to these unforeseen circumstances of needing to eat I have taken inspiration from a true visionary of our time, Matt Damon, and have been on a potato diet.

The conditions around my diet were:

- I cannot purchase any solid food other than potatoes.
- If someone gives me food, I can eat it regardless.
- Any fluid is fair game.

My plan was to survive on this diet for at least a month where each month I would enable another factor to keep me sane. For the first week, I would eat only boiled potatoes without salt. The second week I would let myself have salt. In the third week, I would add spices. In the fourth week, I would enable sweet potatoes.

Sadly, I couldn't stick to my rules for a month. I lasted four days in total, before loosening the rules on my diet. The issue was my drastic miscalculation of potatoes needed to make daily.

I lived under these conditions for 3 weeks. I heavily miscalculated the number of potatoes I'd need to eat in a day. As a male 20 y/o 1.71m 160lb gym goer, turns out I need to boil a lot of potatoes to survive a day. In a day I boiled eight white potatoes. Those only lasted till 10:00 am. After that I was potatoless. Because of that, I lost a pound a day. After day 4 I realized the error of my decision.

As such, I have removed the restrictions, but I have forgotten how to cook anything other than potatoes.

So, because of that, I have tried to wedge, salad, and mash my potatoes instead.

This is going to be a long and arduous journey.

# BATHROOM REVIEWS: B1 & ESC

## PART 4 OF BATHROOM REVIEWS

Here we are, back for the Fall! If you weren't reading the Spring issues, we covered all the Math buildings, STC, B2, and QNC. Check out the back issues from Vol. 149 if you're interested! And here we are, kicking off the term with a whimper; neither of these buildings have very nice washrooms. Nevertheless, I will do my best to inform you about them!

B1 has one washroom per floor, located across from the largest lecture hall in the building. B1 stands for Biology 1, which means it's the first Biology building at Waterloo, which means it's old. If you've been following this series, you know that old buildings do not bode well for having good bathrooms.

This trend definitely continues for B1! For the first time since MC, we see a return to the basin-style sinks seen on the lower levels of MC, except somehow, things get even worse.

These basins stand alone in the middle of the floor, not even attached to the walls. They're much smaller than those at MC, but because you have 360 degrees of freedom for people to wash their hands, the total perimeter is around the same as the MC ones.

If you remember the first iteration of this column, you'll know I'm not a huge fan of this style of sink. Back then, I disliked them due to the amount of wasted water, but now I have another big reason to dislike this type of sink; there's no real temperature control here.

And, usually at B1, the water ends up really hot.

I guess this makes sense, they didn't want to freeze people's hands, but these sinks are just a bit too hot to the point where they become uncomfortable to actually use. This makes you want to wash your hands faster, which means you don't actually do a thorough job.

This is one of the first really small things I've seen that they could change to dramatically improve the washroom experience in my time writing this column. It wouldn't require any architectural changes, just adjust the temperature by a few degrees. Maybe it's harder than I think, but it'd really help.

Alas, we're stuck with the uncomfortably hot water.

The stalls in these washrooms are broadly fine, I guess. B1 gets a 2 out of 10; not many washrooms, the terrible basins, and no non-gendered washrooms push it that low. It doesn't get a 1, though, mostly because of this being the first building I've seen with washrooms exclusively for faculty.

So at least there's that. Just go to STC if you're this close.

Next is ESC, a building which is very similar to its neighbour. In fact, the first few times I walked through these two

buildings I thought they were one building; I only realized my mistake after taking a look at the floor plans of each.

So, you would expect that it would have similar bathrooms to its neighbour, and you would be right.

It again has one bathroom on each floor with the basin-style sinks. This time one of the sinks wasn't too hot, on the second floor, although this may have just been a fluke. Overall, though, they were still pretty hot.

This building does have one thing going for it over B1, though! There's actually a non-gendered bathroom here.

It's kind of hidden, and you have to be specifically looking to find it, but it's located in the hallway leading towards C2 on the east side of the hallway. It's kind of off to the side, but it's a pretty nice bathroom; it even has a shower in it!

I'm really glad there is this bathroom as an option, although admittedly it is only one toilet, so it might be busy when you go by. I personally used it on a weekend when nobody was around, so it wasn't terribly hard for me to use it, but I wouldn't rely on it being open.

ESC gets a  $\frac{4}{10}$ , if the water out of the sinks was actually a good temperature, it probably would've gotten a passing grade.

Next time, C2 & EIT!

Predap

---

## N THINGS A GOOSE WOULD LIKE TO DO BUT PROBABLY CAN'T

- Play the drums
- Read **mathNEWS**
- Write for **mathNEWS**
- Invade Poland
- Get free pizza from **mathNEWS**

creature\_f

---

## I HAD A DREAM

that **mathNEWS** was a real course that showed up on your transcript and I didn't get into grad school because I had 70 in **mathNEWS** because the **mathNEWS** editors hate me.

A cool pen name

# mathNEWS PAYS TRIBUTE TO THE QUEEN

RIP QUEEN ELIZABETH, 1709 BC - 2022 AD

mathNEWS was saddened to learn of the recent passing of Queen Elizabeth II, monarch of the UK, Canada, and about 83 other islands in the middle of nowhere that some Victorian General claimed 800 years ago, none of which she could remember even if you put a old-timey British gun to her head.



QUEEN\_FINAL\_FINAL.JPG

Liz, known for her eldritch ability to defy death gained in dealings with the dark lord Delachbushinchuk of West Thaxtedampchud, shocked the world by dying... about a week ago? Can't be fucked to look up the actual date tbh.

Mourning messages came in from around the world, but the most touching was from the Arch-Bishduke of Stonebuckstairschairseat, who said "[indiscriminate British-sounding noises]" and "[insect-like chittering]." We share his respectful sadness at **mathNEWS**.

National attention has now turned to the funeral proceedings heading through Royal Westeastnorthmondthendsouth Palace, complete with the traditional post-funeral carnival, fireworks show, and axe-throwing competition. World leaders from every nation, as well as some of the Reptoids who control the government from the Hollow Earth, have put aside their differences to stand in a church for an hour.

Quotes from these luminaries have ranged from "I don't know why I'm here" (Xavier Bettel, President of Luxembourg), "I don't know where I am" (Joe Biden, President of America), and "Please exit immediately sir this is a restricted area, no, no you may not conduct interviews here, sir I don't know what a **mathNEWS** is" (Officer Bradley, President of Being A Huge Asshole).

After proceedings, much national attention turns to the expected War of Succession that is expected to ravage the continent as all of the old bastard's heirs who haven't done a days work in their lives all gather forces and beat the shit out of each other to claim the crown, which grants the bearer the powers to shoot lightning out of their eyes and keep sealed the gates of Australia.

The bookies generally expect some weird obscure pedophile with some dumbass title like "The First Lord of South Knaresking" to take the throne, but there are a few upset contenders:

- Irish people have reportedly been seen saying "fuck it, let's just do the Troubles again," and practicing their rendition of 'Come Out Ye Black and Tans.'
- The New England Patriots, after a rebuilding season, are looking to reclaim their role as world champions by making Tom Brady King of England.
- Disney is reportedly interested in acquiring the rights to all British people, with a plan to remove England from the canon of Earth and then spend a decade fumbling around with a reboot.
- Quebec is involved, somehow.

No matter who wins the battle to sit on the throne, Lizzie will be remembered by the world for her ability to say "water bottle" like a normal person and to just sort of stand around covered in jewels while other people do all that messy 'governing' and 'doing things' nonsense.

In local news, reformed drug dealer and Ontario Premier Doug Ford has 'pulled a Grinch' and stole our hard earned Mourning Monday, forcing millions of students to actually go to class like some kind of asshole. Also, I found out she died while I was taking a monster shit, and that is the only true fact in this entire article.

Dick Smithers

## PAYING RESPECTS TO OUR BELOVED QUEEN

Queen is a British rock band that had awesome music from the 70s to the 90s. Unfortunately, their lead singer, Freddie Mercury, died in 1991. Queen plays on today, but we all know that Mercury was the guy we listened to in Queen's songs. Let's have a moment of silence for Freddie Mercury.

Nice moment of silence. Now, rock on to some Bohemian Rhapsody!

wewlad

Ceci n'est pas filler.

A SURREALIST blackBOX

# KING CHARLES BIDS GOODBYE TO HIS LEAGUE OF LEGENDS TEAM



LONDON— In his last act before being crowned King of The United Kingdom, Charles III bid goodbye to his beloved League team. Reporters on the scene described a solemn farewell, with the new King reportedly saying, “Sorry, guys, I don’t think I’ll be able to game as much since I got this new job.”

One of his team members said to **mathNEWS**, “I don’t know how we’ll be able to replace him,” referring to him by his in-game name, [ROYAL] hrh\_charles\_420. “His Majesty honestly carried us so many times.”

Despite the melancholy atmosphere, the King still went out with a bang: scoring a crucial gank, and getting a penta-kill while leading his team to one last victory.

Before logging off for the final time, Charles III invoked the memory of his mother Elizabeth II, who similarly had to abandon a beloved Minecraft server when she was crowned Queen in 1952.

UW Unprint

# THE QUEEN DIED

lol

King Charles III

# EVAN

## OUR ETERNAL PRESIDENT

The recent events of math orientation have taken hold in all of us math students. There has never been a more opportune moment to seize the day and advance MathSoc.

With the popularity of the MathSoc president, Evan, skyrocketing in recent days, it is clear that math students want more. However, Evan is just one person, and has limited time available in his busy day as MathSoc president. Therefore, to meet demand, it would be best to have a grand portrait of Evan hung prominently on the wall in every math classroom. That way even during class, the students’ needs will be taken care of by his presence, albeit as a portrait on a wall.

The chants of Evan’s name shows that math students wish to express their support for Evan. What better way to show even more support and cheer for Evan than a pin of a pink tie with Evan’s face on it? The sight of all math students with Evan pins will show just how united we all are. The pink tie represents MathSoc, and together with Evan’s face, it makes it the perfect representation for support of MathSoc and for Evan.

It is clear that math students respect Evan. Why not have an even better way to show that respect. A giant statue of Evan can be constructed in the green space adjacent to M3. That way there is a dedicated location to respect and honour Evan, regardless of if Evan is personally around to receive the praise.

If Evan is so popular as MathSoc president, it is obvious that Evan will always win the MathSoc presidential election. So why bother with the election then? Make Evan the permanent MathSoc president.

To do his job as MathSoc president, Evan needs to be able to hear any potential problem of ours in order to rectify them and improve MathSoc. To make it easier to do so, cameras and microphones need to be placed in all math locations so that Evan can observe every person in every location to see that our math society functions properly, and any potential problems are seen and immediately handled.

With all this support for Evan from every math student in MathSoc, those that are not supportive of Evan are clearly unfortunately mistaken. Should any of these students be found, it would be simple to send them away to be educated on the greatness of Evan and once completed return to then join us in our support for Evan.

Long live Evan, our eternal MathSoc president!

**boldblazer**

Evan! Evan! Evan! Evan! Evan! Evan! Evan! Evan! Evan! Evan!  
 Evan! Evan! Evan! Evan! Evan! Evan! Evan! Evan! Evan! Evan!  
 Evan! Evan! Evan! Evan! Evan! Evan! Evan! Evan! Evan! Evan!  
 Evan! Evan! Evan! Evan! Evan! Evan! Evan! Evan! Evan! Evan!

# SUSHI, BAKA, AND OTHER WORDS LOANED FROM JAPANESE TO ENGLISH

## AN EXPLANATION OF PHONETIC AND SEMANTIC CHANGE

**Warning:** this article will mention the existence of certain topic that may be uncomfortable for some people. Specifically, the blunt mention of mature concepts such as pornography. If this makes you uncomfortable then please stop reading.

### SUSHI: 寿司・すし

This probably the least interesting word here. In terms of phonological changes, the only ones present are the full voicing of the first syllable, which is pretty minor. In terms of semantic changes, the concept of sushi itself is a cultural borrowing that changed to match the American palette after being brought over, but the concept is almost completely the same.

### KARAOKE: カラオケ

Now things start to get interesting. In terms of phonological changes, English does not allow for certain vowels to appear before other vowels. As such, a “ah-oh” sequence would not be found in a native word. To make it fit, the “ah” was changed to an “ee”. Also the final “eh” was changed to an “ee”, which is a consistent change that happens here. In terms of semantic change, the concept of karaoke changed when it was imported, going from something intimate in a small room to something performed in a large room with many people. However, changes are still minimal.

### SAYONARA: さようなら・さよなら

This one I find probably the most interesting phonologically, because if you asked me to spell it a week ago I could not have done it properly. I’ve seen it spelled “sianara” and “sayanara”. I didn’t even realise it was Japanese. The reason for this is stress. English has a very prominent system of strong/accented syllables vs weak syllables, with them generally alternating and weak vowels getting reduced. With very strong first and third syllable accent, the other two are “reduced to schwa”, a process in which vowels lost most qualities. This is generally written as an “a” in English, which is the cause for confusion. However, Japanese is different and does not have the same sort of vowel reduction, so the “o” is fully pronounced.

This is also interesting from a meaning perspective, because it didn’t need to be borrowed. It’s just another way to say “bye”, which is similar to the Japanese. Except even here it’s off, because the English sounds very jaunty, whereas the Japanese is more similar to “farewell”, implying a sense of finality.

### NOTABLE MENTIONS

Tsundere, yandere, karate, isekai, mochi, ramen. All of them changed too little or similar changes were already described.

And now we get into the fun stuff.

### SAKUGA: 作画・さくが

This is getting obscure. In certain circles that talk about animation, the site sakugabooru.com, which compiles good pieces of animation, has become nominalised to just “sakuga” to describe a clip from an anime that has notably good animation. However, the original Japanese word simply means “drawing pictures”. So the meaning went from something broad to something specific due to a subculture’s need.

### BAKA: 馬鹿・ばか

This one is weird because it became a meme. With the popularity of Among Us, the phrase “sussy baka” became ubiquitous. However, nobody really uses it on its own. As such, the fact that the Japanese is an insult for “stupid” is irrelevant because the word itself has transcended use and has become a trigger for the memories of a certain time.

### HENTAI: 変態・へんたい

In English, this generally refers to anime and manga that is pornographic. However, in Japanese it generally means “pervert/perverted”, used as a noun or adjective rather than a classification. I’m pretty sure the main reason for the change was because English already has the word “pervert” so the main context when people would hear hentai is as a description for anime or manga adult content. As such it has gained a more specific meaning and worsened as a result.

### ECCHI: H・エッチ

You read that right. This is just the letter H. There is some confusion over the pronunciation, so I will tell you that the Japanese pronunciation has a “ch” sound in it. It will sound similar to “etchy”, as this is the Japanese approximation for the English letter name for H. Continuing with the surprises, in Japanese it means generally means “lewd” because it is the first letter of the word hentai. In English it will generally refer to adult manga or anime that is not technically pornographic but is close. The reason for this is presumably similar to hentai, a word in a context that makes it more specific to the Japanese meaning. It also fills a semantic space that was apparently important to require a new word.

### BOYS LOVE / BL: BOYS LOVE / BL・ボーイズラブ・ビーエル

also

### YAOI: ヤオイ

These two are getting paired together because they are intertwined. I am also cheating slightly because BL has not been borrowed into English (unfortunately ;-;). However, I will take this time to rant about the confusing situation.

First, context. The English word yaoi and the Japanese word BL mean roughly the same thing. A genre of male homoerotic literature primarily written by and consumed by women and girls. The exact reasons for this even existing as a genre are highly debated, as is the social impact and whether or not it is good for the gay community. (Of note: I am specifically saying the gay community because it deals primarily with gay men, featuring bisexuality to a lesser extend. With almost no main characters of other sexualities or genders. As such, I have chosen not to use a more inclusive term.)

Next, given that this was and still is a relatively frowned upon fandom that is also quite new, the term used to describe it took a while to be settled. It went through a few iterations such as 少年愛 (literally: boy love) and ジュネ (June, the name of a magazine. coincidentally also when pride month is) before settling on BL.

Now, the natural question becomes “How does yaoi fit into all of this?”. Well, yaoi was originally a sarcastic derogatory insult for a story, generally a fanfiction, that focused almost exclusively on the sex scene. The exact etymology is debated but it either is a contraction of “without climax, without punchline, without meaning” or “stop, my butt hurts”. So, in Japan, there is the specific connotation of a work of poor quality, especially a fanfic, that skips most of the plot and gets to the adult content quickly.

Except, the term yaoi existed before the term BL. So when the concept was originally imported it got called yaoi instead of BL. Which I think is a shame and a missed opportunity, personally. Since BL is a pair of english words (and because I’ve had people confuse the genre with other similar genres that are much less adult and the emotional whiplash on both sides can be a bit annoying). So yaoi actually gained a broader meaning in the English and ameliorated in sense, unlike the previous examples.

So with that rant done, we can move on to the next word.

### MOE/MOÉ: 萌え・もえ

This one probably underwent the most dramatic change in meaning is moe. Pronounced “mo-eh”, this is generally used in English to refer to a specific kind of cuteness and the associated genre. The genre in question being slice of life featuring innocently cute characters.

Small thing, though. That’s completely not what the Japanese means. In Japanese it is the noun for of the verb “to sprout/ to bud” and is used to mean “a crush”. This change I am more confused by because it does not seem to be fully a broadening or a narrowing. It must have gone through both, most likely a narrowing followed by a broadening. With the genre getting associated with the term and then the form of cute coming after. Who knows. But it’s definitely the most divergent of the bunch.

So that was a less than brief description of some of the words borrowed from Japanese into English and what changes they went through.

読んでくれてありがとうございました

別

## BUSAN BBQ REVIEW

### FOOD

Decent variety, including beef, pork, chicken, lamb and a few kinds of seafood. More than 10 kinds of veggies, though few of them pair well with BBQ. The garlic sauce offered for free was amazing, so even if you mess up your food, it could still taste fine.

### SERVICE

Waiters and waitresses respond quickly, but when they serve meat and veggies together, they tend to just put veggies at one end of the table, making it hard to reach for those on the other side of the table. Also, it seems like we don’t get to change the BBQ pan (or whatever what it is called) so that we’re having charcoal stick on to our food after 30 minutes.

### PRICE

For dinner at the weekend, it cost at least \$38 with tax for an adult, which is ridiculous, even it’s all you can eat.

anonymous\_food\_reviewer

## EPISODE 43: FERMAT'S LITTLE THEOREM

Enjoy Episode 43 of the MathSoc Cartoons series: [MATH. 135 — Fermat’s Little Theorem!](#)

Want to see the next comic BEFORE it’s released and provide feedback to help us out? Check out these reasons to become a reviewer for Cartoons and sign up at <https://bit.ly/cartoons-reviewer-join>! You can sign up anytime.

Want to see the next comic when it’s released? Follow @mathsoccartoons on Facebook and Instagram! As always, feedback, suggestions, and fan art can be left on the MathSoc Cartoons discord channel in the MathSoc server or sent to [cartoons@mathsoc.uwaterloo.ca](mailto:cartoons@mathsoc.uwaterloo.ca).

MathSoc Cartoons

FERMAT'S LITTLE THEOREM

STORY BY SHRIYA KULKARNI | ART BY ALEXANDRA WANG

For my last challenge, here I'll lay my claim, tell me if I'm lying and be free to win the game:

If  $a$  is an integer and  $p$  is prime, then  $\frac{a^p - a}{p}$  is an integer.

I JUST KNOW THERE'S A THEOREM THAT EXPLAINS THIS! WHY CAN'T I REMEMBER IT? THERE'S NO WAY I'M LOSING TO THIS L'I'L DEVIL!

HEY THERE VECTORIA... CAN YOU HELP ME WITH MY BEADED BRACELETS, MAYBE?

SURE, IT'LL HELP ME RELEASE SOME STEAM. HOW CAN I HELP, CORAL?

I STARTED OFF MAKING MULTICOLOR BRACELETS BY ARRANGING THEIR STRINGS IN DISTINCT ORDERS OF BEADS, BUT I DON'T KNOW HOW MANY STYLES I CAN HAVE.

THIS CALLS FOR COMBINATORICS! SEE, EACH BRACELET IS MADE OF 3 BEADS AND EACH BEAD IS ONE OF 2 COLORS, SO YOU HAVE  $2^3$  STYLES RIGHT NOW.

BUT I ONLY WANT MULTICOLORED ONES, SO I'LL REMOVE THE 1ST AND 8TH!

ONCE YOU CONNECT THE ENDS, YOU SEE THAT THE 6 ORDERS AREN'T DISTINCT. YOU CAN GET 2 & 3 BY ROTATING 1, AND 5 & 6 BY ROTATING 4. THIS MEANS 1, 2, 3 AND 4, 5, 6 ARE EQUIVALENT!

1  $\xrightarrow{-120^\circ}$  2  
2  $\xrightarrow{120^\circ}$  3  
3  $\xrightarrow{-120^\circ}$  4  
4  $\xrightarrow{120^\circ}$  5  
5  $\xrightarrow{-120^\circ}$  6  
6  $\xrightarrow{120^\circ}$  1

THUS, WE GET 2 GROUPS OF SIZE 3!

1 2 3 4 5 6  
GIVE SOME ROTATIONAL VARIANT OF GIVE SOME ROTATIONAL VARIANT OF  
TYPE A TYPE B

OH, THEY'RE MADE WITH 3 BEADS SO ONLY 3 DIFFERENT ORIENTATIONS ARE POSSIBLE - WHICH GIVES THE SIZE OF THE GROUP! BUT WHAT IF I MAKE THEM WITH 4 OR 5 BEADS, OR 3 COLORS?

WELL, USING 4 BEADS WITH 2 COLORS GIVES YOU 14 STRINGS. ONCE YOU JOIN THEM, YOU GET 4 DISTINCT STYLES!



© 2022 Shriya Kulkarni and Alexandra Wang, all rights reserved. Published under license by Math Soc. Do not reproduce.

WAIT, WHY DOES THE THIRD GROUP HAVE A SIZE OF 2? WHY NOT 4?

THEY'RE MADE WITH 2 REPEATING UNITS, SO ONLY 2 ORIENTATIONS ARE POSSIBLE! ANY MORE ROTATIONS LEAD TO REPETITION.

is made of & which corresponds to the unit

1 2 3  
 90° 90° 90°

1 2 3  
 90° 90° 90°

Only two rotations are needed to return to the original orientation.

6  
2x3

2 repeating units or 3 repeating units

8  
2x4

2 repeating units or 4 repeating units

IN FACT, A BRACELET MADE WITH A COMPOSITE NUMBER OF BEADS CAN ALWAYS BE MADE WITH X REPEATING UNITS, WHERE X IS ANY NON-TRIVIAL FACTOR OF THAT NUMBER!

ON THE CONTRARY, PRIMES DON'T HAVE ANY NON-TRIVIAL FACTORS. THIS IS IMPORTANT, BECAUSE IT MEANS THAT THE SIZE OF EACH SET IS EQUAL TO THE NUMBER OF BEADS - LIKE IN THE CASE OF 3!

OH, THEN THE NUMBER OF GROUPS OR DISTINCT STYLES FOR A PRIME NUMBER OF BEADS IN EACH BRACELET IS:

TOTAL NUMBER OF VALID COMBINATIONS  
 THE NUMBER OF BEADS

SO THIS IS WHAT HAPPENS IF I USE 5 BEADS!

YEP, AND THIS IS FERMAT'S LITTLE THEOREM!

For a prime number of beads  $p$ , and any integral number of colors  $a$ :

$$a^p - a \equiv a \pmod{p}$$

i.e.  $a^p - a$  (valid combinations) =  $pn$  ( $n \in \mathbb{Z}$ )

THE CRUX OF IT IS THAT  $A^P - A$ , WHEN DIVIDED BY  $P$ , GIVES THE NUMBER OF SETS, WHICH IS, OF COURSE, AN INTEGER.

WAIT - IT WAS FERMAT'S LITTLE THEOREM THAT I NEEDED ALL ALONG!

If  $a$  is an integer and  $p$  is prime, then

$$\frac{a^p - a}{p}$$

is an integer.

VECTORY SHALL BE MINE, MUAHAHAHA!!!

HUH? UMM THANKS FOR ALL YOUR H-HELP, I GUESS?

## DEAR A COOL PEN NAME

I'm writing this at 1pm my time (13, as the locals say) since I didn't want to stay up until 3am for prod night. I miss you, and everyone in Waterloo, and hope you are all doing well.

I've lived in Norway for about 5 weeks now, and have learned so much about the country that I don't think I would have ever otherwise known. I feel like now I could throw a 'proper' Norway-themed party, that isn't just, you know, a regular party with the Norwegian flag on my wall. Here is a short list of some silly things I've learned about Norway:

1. 'Taco Friday' is a thing, people eat tacos every Friday. Not sure why, since Tuesday or even Thursday (Thursday in Norwegian is Torsdag) are right there, but I guess they're not into alliterations.
2. Everything is incredibly expensive, like, just so expensive, especially alcohol. Probably 1.5x what it costs in Canada. This does not stop Norwegians (or maybe, Norwegian students) from having an extensive drinking culture.
3. You are legally allowed to drink alcohol on campus? As long as you have a designated sober person which they call a 'sober guard'. I was very surprised at this. You might be asking, why would you ever want to be plastered on campus? To that, I have no answer.
4. The statistic that Norwegians consume the most frozen pizza out of every country is no. joke. I think it's a lot of people's preferred 'lazy dinner', I've had it myself countless times since I've been here. Pepsi max is also super popular.
5. They have this cheese here called 'Brunost' that has a kind of caramel flavour, that people often put on waffles.
6. It's not the norm to say 'thank you' when you get off the bus, although I think this goes for most of Europe maybe? Anyone I brought this up to thought that it was kind of cute that Canadians say thank you.

Now, some things to tell you, that are not general to Norway but just to my experience here. I've definitely already told you at least a few of these things but just in case anyone else reads this (if you're not A cool pen name, why are you reading this private letter? Kind of rude I would say):

7. I have come across a Norwegian version of both PMC and **mathNEWS**. It goes to show that nerds exist everywhere. I think **mathNEWS** is better though since their paper only publishes twice a term, but one thing I thought was funny was that they publish dating profiles for their members. Very 'If You Like Pina Coladas' song minus the adultery. Their version of PMC is very reminiscent of Waterloo's own, except instead of a soda fridge they have a beer fridge.
8. I know that capitalism sucks, but I am spoiled and miss Amazon prime and Uber and stores

being open on Sundays. North American culture prioritizes convenience in a way that I don't think Europe does, which is probably better for people. Specifically Uber, oh my god. I think(?) Uber exists here but there are just way fewer drivers. This specifically came into play for me because I was in a situation where I was stuck at a house party, an hour walk from where I live, at a time when buses had stopped running, no Ubers available. Looking back now though, Norway is very safe and I should have just walked home, but what I ended up doing was getting a taxi (which was also next to impossible) with my friend who was there with me, that was so expensive I finally started being more appreciative of my CS degree in progress.

9. I've gotten into underwater rugby. I think my niche is silly underwater sports that not everyone would consider a sport. I've accepted it. It's actually really fun, and when you're in a silly sport the people there don't take themselves super seriously, which is great. It's also been a great way to meet Norwegian people, which is a bit intimidating otherwise. If anyone reading this is thinking of going on exchange, learn the country's language. Everyone here speaks perfect English and is so nice about switching to English when you're around, but it's hard not to feel like an inconvenience sometimes.
10. I don't think I've said the word fjord half as many times in my life as I have while I've been here. To be honest, I'm not even sure that I fully knew what a fjord was before I was here. Now, I've seen a lot of them, and even hiked up to an altitude of ~1500m (literally the hardest thing I've ever done, should have gone to the Waterloo gyms more) by the famous Geiranger fjord, which was beautiful.
11. I've met so many exchange and international students from so many different countries, although most of them are from Germany and France. I went on a trip with some German students, and we taught them how to make s'mores, which they were skeptical about, but ended up loving. We then tried to make taco s'mores (something something, beyond ideas), which were terrible and no one liked.
12. I've joined a choir, and it is so hard to sing in a language you don't know, but also really fun.
13. Stream 'Hjerteknuser' by Kaizers Orchestra, a popular Norwegian song that everyone here knows.
14. Last, but certainly not least, I met one (1) Norwegian Jew. Ha! I did what couldn't be done. You officially owe me 5 NOK (which is ~65 Canadian cents) He is tall, blonde, and Jewish, which feels like an oxymoron. You're right though, we are few and far between here. I thought there was a Chabad in the city, but I think it's only in Oslo.

I can't think of anything else, although I'm sure there's more. This is definitely the longest **mathNEWS** article I've ever written, for better or for worse. Can't wait to hear/read all about your Waterloo shenanigans.

Love,

peacelovemath

## DEAR PEACELOVEMATH

What a silly thing it is—to write you a letter! Especially when it still feels like you're here with us. I mean, that makes it sound like you're dead. On the contrary, I hope you're thriving! But nevertheless, I often forget that you're actually, y'know, all the way over on the other side of the world rather than just maybe taking a nap in your room and that's why I don't see you when I go over to your place. You are so very much *present* here. Especially every morning, when I wake up next to a framed photo of you the handcrafted Chamsa you made for a different friend while you were high.

Waterloo is good so far. Courses are going, people are busy busy and wondering when the hell they're gonna get out of this town. We had orientation?! Which you really would have liked. I photobombed every single fucking photo that people took in the photo booth. Really. The first years were also kinda cool. They had a lot of energy, and I grew nostalgic for a time in university that you and I never really had.

I'm also going around still looking for people of my ethnicity to marry, obviously (for those snooty readers—I fucking dare you to guess which ethnicity). Hoes do be hoeing. You'd be excited to be meet all these potential suitors! But it's mostly just an excuse to meet some new nice people. Everything else is pretty much business as usual.

Oh boy, so I hope your letter isn't much longer than this; that'd be pretty awkward. I literally cannot wait for you to be back and begin every sentence with "when I was in Norway-".

Much love,

A cool pen name

## NEWS

just finished orientation, was tiring as fuck then first day of class, hit like a truck.

i think i can make it, i'm def gonna try please dear profs, don't make me cry

0.423

## RETURN OF THE ENVIRONMENTAL IMPOSTOR???



It's also the end of yours truly. Yes, uknightED's campaign to take over the Math faculty and convert them into Environment students must take a pause, for co-op calls me to higher planes of importance.

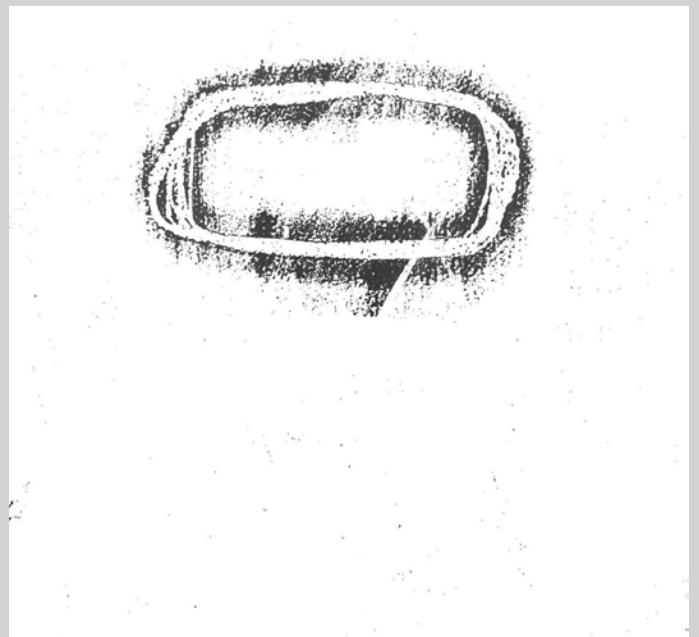
UKNIGHTED, 149.6



oops. i did it again. (by it, i mean infiltrate the **mathNEWS** editor team again.)

uknightED

## SHAPE



anonymous

## BLURB

### TO A FIRST YEAR IN THE ADVANCED COURSES ASKING FOR ADVICE

sorry for the late response, final night of o-week was tonight

short answer:

too early to conclude, may get better as time passes.

long practical answer:

i would suggest asking your prof for help on piazza and showing up to their office hours. if you expect yourself to be able to solve the assignments without help (which i have been and am still sometimes guilty of), you're setting the bar unreasonably high—calculation-based high school math and proof-based waterloo math are two different games.

once you receive enough help to solve the first few assignments, THEN you can ask yourself: does the satisfaction i get from understanding the material justify the struggle? the struggle will never go away, and the material will only get more and more difficult as the term progresses, but ideally, students in the advanced courses will find more productive ways of leaning into that struggle.

long pseudo-philosophical answer:

it's possible that this is the first time in your life you've been truly challenged intellectually. personally, i breezed through high school, and the belief that i could always find academic success gave me great comfort. but david jao's math 145 offering made the ground beneath me crumble—i could no longer depend on the firmness of that belief, on the security it gave me. it's a scary feeling: to have a truth you hold close violently upended, to call into question the person you thought you were and always would be. math 145 pushed me to the limit: what if i couldn't stick the landing and find success after all of my effort?

this is the substance of growth: letting the ground beneath you liquify, abandoning your securities, questioning all you held sacred, etc.. the possibility of failure becomes real, and the certainty of success is threatened. but thankfully, the math faculty's support makes it much much much easier for you to navigate this newfound uncertainty.

this is a long way of convincing you to ask your prof or your friends for help lol

second year

## IT'S 7:30PM ON A MONDAY EVENING AND I'M SITTING AT HOME ISOLATING FROM A CLOSE CONTACT WHILE HAVING WRITER'S BLOCK

Sometimes life is great. You're focused, you're doing well, you feel *invincible*. But sometimes life just likes to throw you the nastiest, dirtiest curveball known to man, and it feels like all you can do is hang your head low in defeat while the world crumbles around you bit-by-bit until the only thing that's left is the dust suspended in the air as you breathe it into your old, tired lungs.

When I was in my first term, every day felt like I was drowning in assignments and lectures and things I barely understood. I would spend hours upon hours staring blankly at my assignments, not knowing what to do or where to even begin. Every night, I would struggle to write a single word until 2 am when my body couldn't stay up anymore, then drag myself out of bed at 7 the next morning for my morning lectures. With every passing day, it felt like I was getting closer and closer to striking out of life itself.

Looking back, I barely made it through that term. What kept me going were my friends, family, and everyone who gave me the company and support I needed. The people who turned the bad days into okay days, the okay days into good days, and the good days into great days.

There will be great days. Treasure them, hold them close, remember them, so that when the skies darken and the clouds threaten to rain on your parade, you will have something to hold on to, to remind yourself that it *will* get better. Midnight parties, late nights out with friends, that one time you ordered Lazeez on the rocks with twelve lines for the lols—even awkward dates that didn't go anywhere are positive memories for me, a snapshot of when life was sunnier, and a reminder that life will be sunnier still.

Waterloo isn't easy. You will experience challenges like you've never experienced before. There will be anxiety, disappointment, heartbreak, loss. But one day, you'll walk out of PAC with thousands of your fellow classmates for the final time, a smile on your face and a diploma in your hand.

One day, life will be great again.

quantum goose



# WHAT IT'S LIKE GROWING UP WITH UWATERLOO GRADS AS PARENTS

Credentials:

- Mother: BMath (MathBus)
- Father: MES (Masters of Geography)
- Me: Math/Business Dual Degree

Well first things first, I love my parents, they are great, but holy shit. Let's start at the very beginning, some of my earliest memories are of playing algebra games on my dad's iPad, doing flashcards as a baby in the bathtub, and of course, reading at a grade level 4 years above my current. It's safe to say academics have always been important. Honestly, all these things have kind of helped me, mental math is a breeze, I can comprehend stuff quite quickly and every course through high school was nothing short of a breeze. Now let's walk through some moments in my life which are characteristic of UWaterloo grad parents.

1. The time in 3<sup>rd</sup> grade when I got an B+ and my parents protested to the teacher and threatened to go to the school board. So basically I had to draw a map of an amusement park for this random geography class, and I drew a fucking amazing map with help of my masters degree father. I coloured that shit and it was honestly fantastic. But to my surprise I got a B+ on it, when I asked my teacher why, she said she had given out to many A's. SO

when my parents heard that, they set up a fucking meeting with my teacher and were beyond pissed. They went full "we graduated from Waterloo" on this poor teachers ass. In the end, my grade was boosted to an A-, but of course, my parents were still beyond angry.

2. My mom used to shuffle a deck of cards to help me master my multiplication tables, we did this every night for a whole month and in the end, I was able to go through the deck of cards 5+ times without any mistakes. Typical math degree moment.
3. My parents raised me to be uber-competitive and frankly want to be better than every other fucking person. Whether it was in sports, or school or literally everything, I just wanna be the best.

Well this was just a small look into my life, I love my parents, and they raised me very well. They taught me many great values and all this math stuff helps a lot now.

One day all you Mathies will have kids and god knows what sort of math shit you'll teach them, and then one day they will be walking the halls saying, "wow, my loser parent used to walk these halls, maybe I should write for **mathNEWS**."

TheMandalorian

## mathNEWS HERITAGE MINUTE: 101.1

mathNEWS production night, May 15<sup>th</sup>, 2006.

Writer 1: I can't believe they went with that name, man.

Writer 2: I don't think it's that big a deal, people don't really think of that when they hear the name.

Writer 1: How can they not hear it?

Writer 2: I'm pretty sure it's just you that hears that, probably says more about you than about the name.

Writer 1: No. Listen to me. You aren't listening, just say it aloud. Say you are going to play with it. Say 'I am going to play with my ...'

Writer 2: Yeah, ok, it sounds a bit odd when you say it specifically like that, but that's not how people speak.

Writer 1: You just don't get it. *This* is how this will be remembered. *This* is how this will go down in history. The children of the future will only hear it this way. I have to do something about it. I have to write something. A piton on the bluff of history. It must be known that I heard it this

way before everyone else did. Yes, *this* is how this will be remembered, and I need people to know I heard it this way first.

Writer 1 went on to write the article Console Pros and Cons in issue 101.1, an issue notable for the fact that it is further back in the **mathNEWS** archives than any other. A reflection on the recent announcements of the PS3, Xbox 360, and other consoles at E3 2006, this specific article would be one of the weirdest aging **mathNEWS** articles, with its most notable contribution to the **mathNEWS** canon being its seeming confusion over how weird it sounded to say that you would play with your Wii.

aphf



# DISCARDED WORKS IN PROGRESS: A JAUNT THROUGH A mathNEWS WRITER'S ARCHIVES

What is a man but a sequence of **mathNEWS** articles? In my nearly four years in the public imagination of the Math Faculty, I have had 86 unique articles of mine (including this one) grace the pages of this glorious publication. Where did I get that number from? Don't think I was so artless as to actually go through and count my appearances in every single issue of **mathNEWS** since 2019, nor so obsessive as to keep a running tally going in my head for this long. I mean, don't we live in a digital world? This task's as easy as COUNT(\*).

This little (or big, depending on your point of view) number captures everything I am to you. To use mathy words, I am the sum of my output. But unbeknownst to you, that number could very well have been just a smidge higher. Instead of 86, it could have been 92.

What does that mean? Well, let me put you in the mind of the average **mathNEWS** writer. You're sitting down with your laptop open in front of you. You mentally grasp for article ideas in the void. Suddenly, from nothingness, you've got one. You stretch your fingers and rest them on your keyboard, ready to type. But by then, you've realized that your idea is shit. Rinse and repeat.

At some point, you'll think of an idea that you actually like. Then begins the writing. It may take only a few minutes to multiple days, but if you are lucky, you will finish your article. But if you're not so lucky? You've got a perpetual work in progress.

I'm familiar with such artifacts. How could I not be? I'll stop and remind you that I've been writing for **mathNEWS** for almost four years. My unfinished articles accumulated. They taunted me, flashing their "Last Modified" dates from years ago. In fact, today, right before writing this article, I went and permanently deleted six of them, just to finally rid them from my sight.

Well, it's not that I hated seeing them alongside everything else. But keeping them around was a kind of promise I'd made to them, that I would come back and finish them up and let them see the light of day. Today, I concluded that I never would. So I laid those old ghosts to rest, freeing their words into total oblivion.

Something something kill your darlings, right? Except I'm not gonna do that. Although my Pulitzer-worthy prose may be gone forever, I still remember the content and most of the titles of the articles I deleted. Looking back at all of them before sending them to the digital afterlife was how I got the idea for this article in the first place. It's meta, right? Has anyone in **mathNEWS** written something as meta about the experience of writing for **mathNEWS**? I seriously don't think it's ever happened before. (For the record: this is a joke.)

Also, I have really determined fans who stalk my every word trying to figure out "who Finchey is," as if that question could possibly have any meaningful answer. So this article goes out to them too.

Discarded WIPs, at your service:

## A LOST ARCHAEOLOGICAL TREASURE: DC LIBRARY CARRELS

Intended to be published in Fall 2019 or Winter 2020. This was going to be a longer article to thematically tie up my 3-part listicle serial from Fall 2019, *Archival Adventures in DP 7<sup>th</sup> Floor Desk Graffiti*. Some background: the DC library quiet study area used to have the really old wooden carrels that you see in the 7<sup>th</sup> and 8<sup>th</sup> floors of DP, scrawled all over with graffiti. They were gotten rid of sometime in 2019; in their place are the modern-looking grey carrels that you see now. I spent a lot of time in the university libraries back then and I had a lot of thoughts about carrel graffiti. I was even going to do a spin-off where I archived graffiti on the 8<sup>th</sup> floor of DP. As it happens, I haven't been in the upper floors of DP since 2019. I really wish I could have finished this article.

## TIPS FROM A SHITHEAD HACK UNDERGOING THEIR MID-UNDERGRADUATE CRISIS

Intended to be published in 2020. This is only an approximation of the original title (I already forgot it). I also forgot the reason why I wanted to write this article. Maybe the title has a clue? As can be surmised, it was going to be an advice article. I'm not sure I had anything written down besides the title.

## ESCAPE ONTO PHILLIP STREET

Intended to be published sometime between Spring 2020 and Spring 2021. Cabin-fever induced. A short fiction thing where the main character escapes from their apartment and, well, onto Phillip Street. My titles are pretty good, aren't they?

## MY CURRENT FIXATION: TTC SUBWAY SOUNDS

Intended to be published in Winter 2021. I just think the TTC subway is cool, alright? You only need to look at *I Want to Wake Up at Eglinton West* (Spring 2019), *A List of the Best and Worst Places in Toronto to Cry in Public* (Spring 2019), and *All I Want For Christmas is TTC Merchandise* (Fall 2020). Actually, a note about the first article in that list—I toyed with the idea of doing a series of short fiction taking place on various subway stations. I only got as far as partially writing one more, *When I See You at St. Andrew*. That perpetual WIP (last modified July 2020) is still with me—I thought I really liked the way it was written, but I actually just checked it over again now and I'm having second thoughts. It's written in second-person, 'cause why the hell not?

**SUPER GEEK**

Intended to be published in Fall 2021. A parody of “Super Freak” by Rick James. I was going to replace the line “in new wave magazines” with “in **mathNEWS** magazines” or some shit. Now where’s my Pulitzer?

**ALBUM REVIEW: EXPERIMENTS IN MATHEMATICAL NOISE — JENIS BENIS (2002)**

Intended to be published in Winter 2022. Was going to rip on my fellow writer  $\chi$ 's album reviews, and just confessional album reviews in general. Definitely was not spurred by anything, if you’re reading this,  $\chi$  (and I’m pretty sure you are—or will be). I also thought this was a fitting place to discuss my childhood in the Yukon and my fraught relationship with my father, but I’m afraid those details will have to wait some other day, dear snooper. I mean, reader.

Finchey

# N THINGS TO DO WHEN YOU CAN'T THINK OF A TOPIC FOR A **mathNEWS** ARTICLE

- Panic
- Copy the title and premise of an article in 140.1
- Stare blankly at the “Add New Post” page for two hours
- Read the **mathNEWS** writers’ guide three times
- Copy the title and premise of an article in 140.1
- Read the titles of the articles that other writers are currently writing
- Think about deep philosophical issues about which you could write
- Remember that you have a class tomorrow morning so you need to leave soon
- Panic again
- Copy the title and premise of an article in 140.1
- Wonder why you didn’t think of an idea before coming to production night
- Realize that you are spending time that you could be dedicating to something useful doing nothing
- Consider leaving the room quietly without writing anything
- Panic a third time
- Start writing five different articles, but give up on all of them after the first sentence
- Copy the title and premise of an article in 140.1

# THERE IS AN IMPOSTOR AMONG US

Hello, cherished **mathNEWS** readers. That’s right, I’m back, and today I’d like to discuss an important issue. One which may seem innocuous at first, but is just the tip of the iceberg of a far-reaching conspiracy. It’s a little something called ENGnews. I know what you may be thinking. “Haha, the eng students are doing a funny thing and copying **mathNEWS**.” That’s what I thought at first. How naive I was. But then I read it, and noticed some small details that simply didn’t add up. Here are some of them:

- One of the articles is about pizza
- One of the writers has “Epsilon” on their name
- A PROFquote from MATH 115
- Usage of the word “trivial”
- One of the writers claims to have friends
- Shapes can be seen
- Mention of leetcode
- Inability to spell

These are just a few examples of the subtleties that make me question just who is responsible for ENGnews. If you’re still not sure of the pattern, not to worry. The place where the most clues are is, fittingly, the crossword puzzle at the end of the issue. Here are some of the things that appear in clues of this crossword that make me absolutely sure of my suspicions:

- The binary system
- The hexadecimal system
- Mathematical groups
- A programming language
- A failure condition of a computer program
- “SE,” which stands for Software Engineering

You should be able to see it now. All of the above bullet points suggest that this newspaper cannot have been written only by students in the engineering faculty. The evidence is undeniable. All of the things listed above are things that are associated with math students and/or the math faculty. But just which math students? The only ones with a motive, of course. And the ones who put their program right in one of the crossword clues, clear as day. Software engineers.

They say they’re part of the math faculty because they “use computers” and “know numbers”, but joke’s on them! Math students don’t use numbers! The real reason why they’re here is because they are spies, here to steal our traditions. First they write ENGnews. Then they’ll start making purple ties. Running Short Attention Span Eng Seminars. Celebrating “3 day” on March 14<sup>th</sup>. This isn’t just a newspaper. It’s a warning of what’s to come.

someBODY

$((\lambda(* /)(** /))(\lambda(+ -)(if - -(+ + \#t)))\#f)$

# STREET REVIEW: COLUMBIA STREET

It's 3:07 PM on a sunny July day. I'm standing at the eastern end of Columbia Street, the street that runs along the northern edge of (the interesting part of) campus. Columbia runs about 6 km in length, and I'm going to walk that length and try to review the street based on how much I like it. This is a purely subjective review, but it's also correct, meaning if you disagree with it you're wrong.

Behind me right now is Lexington Road, which continues east of Columbia and goes to a baseball diamond, a cool trail by a creek, and then some more places that I don't care about because Lexington isn't the street I'm reviewing. The profile of Columbia is pretty simple: four lanes for cars and a narrow, but serviceable, sidewalk on either side, separated from the street by a patch of grass. The sidewalk looks like it's seen better days: there's a cracked up asphalt patch on the south side of the street and a couple of cracked concrete blocks. There's one bus route, the 31, that runs along here as well.

There's not too much going on here: a fenced-off empty lot on the south side, a giant parking lot with a total of zero cars parked in it to the north. Continuing my walk west, I arrive at a random useless field to the north and a couple of offices, including a police station, to the south. At least the useless field is a little more environmentally friendly than the parking lot. There are even a few trees starting to provide a sparse canopy above the sidewalk.

Our first major intersection is at Weber Street, and Columbia grows a left-turn lane in preparation. The traffic here is fast and loud, and the trees have all but disappeared on the other side. There's a tire shop, a couple more stores and a McDonald's drive thru. The bit of grass in between the road and sidewalk is gone, not sure when that disappeared.

Crossing King Street, we get another change of scenery. There are houses and apartment buildings on this stretch, and so a couple things have changed for the better—the few trees are back, there's another bus route (the 201 as well as the 31) and there's even a line of paint on the road denoting a bike lane—though this wouldn't exactly be my top choice for an east-west bike route. Far more people are walking on this stretch than any part east of King Street, but the width of the sidewalks hasn't really changed. (check this)

The street continues like this for a while: houses and apartments, four lanes of high-speed car traffic with the occasional left-turn lane, narrow sidewalks with few trees. Normally I would take the bus to get through this bit, but we're walking today. Plus, I don't see many buses around right now, for some reason.

The crosswalk signals take an annoyingly long time to change in Waterloo. Normally I'm annoyed by this, but I am writing this article while walking, so the extra time to stop and write a few sentences is welcome here. Usually it sucks though. Right now I'm just writing filler until my light turns green.

There are two gas stations at the intersection with Phillip Street, and then we're on campus. A sign denotes the changing of the speed limit on Columbia from 50 km/h to 60, for some reason. The unprotected bike lanes continue. At least a third bus route, the 13, is running on this stretch.

The profile of the road continues, albeit with campus buildings on either side rather than houses. On the other side of the ION crossing, the sidewalks get their grass separation back, and a grassy area in the middle of the street replaces the left-turn lane. A hill, a parking lot and Ring Road separates Columbia from the main bit of the campus, so there really isn't much around. There are trees on top of the hill, which don't provide much shade to the sidewalk.

I'm crossing to the north side of the street at Hagey Blvd, because I want to walk by Columbia Lake. I didn't realize that this was one of those crosswalks where the pedestrian signal doesn't turn green until you cross the button. Luckily, I realized this at the last second and managed to dash across before the car signal turned red.

Some Waterloo sports team is playing a game on the field on the north side of the street. I can't tell which sport they're playing because the hill in between me and the field is too high and I can only see the players' heads. This is probably a good thing, since there is a ton of traffic noise coming from Columbia Street, and the hill should result in a bit of noise isolation for the players. Honestly, I had no idea Waterloo had sports teams. I thought we were all just a bunch of nerds.

I can at least see the scoreboard. The score is 0–0. Go Warriors!

Past the field, there are a couple more fields without the giant barrier so I can see them—a soccer field, a football field and a baseball diamond—and then we arrive at Columbia Lake. This is a nice part of the street because I can come off Columbia Street a little bit and walk along the lake shore instead. Is this cheating? I don't know, but I want to enjoy the lake, and this is my article, so I make the rules.

Lake has been enjoyed. Due to this lake being in an area nobody wants to go, I'm almost completely alone here, save for an island with about 50 geese on it. Also, I'm glad I picked a day with nice weather to go on this walk. It's 24 degrees with a cool breeze. Definitely makes the lack of trees on the sidewalk a little more tolerable.

Crossing Westmount Road, we're in a slightly new streetscape, with the Columbia Lake Village student residence to the north and a few residential streets replacing the campus to the south. Cars are passing by very fast, and incredibly the painted bike lanes are still here. Overall, this stretch is pretty dull.

The next major intersection is at Fischer-Hallman Road, which is a terrible name for a road in my opinion. Both the 201 and 13 bus routes turn off Columbia here, leaving us just with the 31. The southeast corner has a slip lane, which I'm



not a fan of. Considering how many slip lanes there are in Waterloo, I'm at least a bit happy that there aren't many more on Columbia.

On the other side of Fischer-Hallman, there's a strip mall with a Sobeys, a gas station, and some more things. More surprisingly, the bike lane comes up onto a raised section here! There's no physical barrier from the 60 km/h traffic to stop cars from parking in the bike lanes, but it's still a nice touch. Not sure why they don't do this to the part of the road people are more likely to actually bike on, but maybe that'll come later when they repave those parts of the road.

Of course, after writing the previous paragraph, I immediately come across a car parked in the bike lane. Very cool.

Walking past a few apartments and construction sites, I notice an entrance to a wooded trail I haven't been to before. That's kinda nice. Ahead is a roundabout, and the signage is confusing enough that I can't really tell which way to go to continue along Columbia Street. I decide to just pick a direction and walk and check that I'm going the right way with Google Maps.

I'm still walking on the north side of the street, but I notice that on the south side, the sidewalk is paved with asphalt and there's an orange line running down the middle. Is this supposed to be a mixed-use walking/biking path, even though there are also bike lanes on the road? I have no idea. Waterloo is strange.

I'm getting closer and closer to the edge of the city, and more of what lines the street is just natural vegetation, which is pretty nice—though the continued sprawling development past that might be counterproductive. At Erbsville Road, there's a retirement home and a few houses.

The speed limit finally drops back down to 50 after the intersection at Erbsville Road. The street also narrows to one lane in each direction with occasional left-turn lanes. The bike lanes, unfortunately, have also gone. It's much quieter here with the smaller volume of traffic, and there are even more wooded areas and trails. A big sign tells me the name of the neighbourhood I'm entering. There's even a different style of street sign here, so you know this is a really fancy suburb.

Oh, the bike lane is still here, it was just so narrow it didn't really look like a bike lane to me at first. There are also a decent amount of red maples covering the sidewalk—first time on this walk that I've been happy with the amount of trees.

Of all the suburban streets I've been on, this stretch of Columbia isn't half bad. The trees are gone now, but there's still a decent selection of native plants growing on the sides.

There are giant banners advertising a brand new public school. However, the actual school is nowhere to be seen. This road is getting more and more rural. The sidewalk is now paved

with asphalt and is finally a comfortable width—however, the sidewalk on the other side of the street has disappeared.

We're at the edge of the city and there's a new housing development being built here. I guess the suburban sprawl never ends. This development is going to be pretty far from pretty much everything, and it's probably eating into farmland, but at least it's on a bus route. There are lots of roundabouts here—not sure why as there's hardly any traffic on any of these streets.

I've now reached the end of Columbia Street, which is almost on the western border of the City of Waterloo. I would like to take the bus back home, but I just found out that the bus doesn't run on weekends, at all. I guess walking works too.

This is the end of the review, so you're probably patiently waiting for me to tell you what opinion to have. Should you like Columbia Street or dislike Columbia Street? Well, there are definitely worse streets in Waterloo, but I still think you should dislike it. Why? I don't know, I just didn't really get the best vibes from it. Thanks for reading my article

\_\_init\_\_

## VOLUNTEERING AT THE FOOD BANK IS PRETTY AWESOME!

The Waterloo Region Food Bank ([thefoodbank.ca](http://thefoodbank.ca)) is a great place to volunteer, if you're looking for one. They offer numerous opportunities to get involved! I personally volunteer in the warehouse, and prefer the Monday morning (9:00–12:30) shift, but they offer 9:00–12:30, 10:00–2:00, and 12:30–4:30 shifts on every weekday! There are numerous different roles that you do; I'm personally partial to perishable order building (creating skids full of food for different community centers in the Waterloo region; you can volunteer at those too), but there's other opportunities to get involved as well. Plus, it's really hard and rewarding work, and is a good breakaway from the heavy academic and thinking stuff that you probably typically do in uni! The address is at 50 Alpine Ct. in Kitchener, which is just an ION trip and a quick bus stop away from campus. Come join us!

Xx\_420SonicFan69\_xX

**It's a side effect of the alien probes.**

PROF. DAVID MCKINNON

# HIGH DYNAMIC RANGE

I brought with me a television moving in to Waterloo.

The widest scale of reds and greens, it could display, and deeper blue.

The newest screen so sweetly called, a Tantalus of lively hue.

But all I had was older tech, and that's too much for it to do.

For months the screen morosely served its role in shades of varied mute.

My aging console held its stride to walking, crawling, resolute.

Then from the dark a hope emerged; the days of gray were bid adieu.

A Series X, the latest tech; with HDR its colours flew.

The brightest flames danced violent red, while verdant greens enclosed Naboo;

The snows of Hoth grew blazing white, the skies of night, the deepest blue.

Then Cyberpunk I had to try, to see its breathing world anew,

With blazing speed, with striking shades the Xbox One could never do.

I raced through streets of night alive,

I fought in alleys, rooftops too.

I walked among the metal streets,

And among the folk I listened to.

music.

My eyes embraced the vibrant hues,

My brain, enthralled by varied views,

My hands ensnared by rumbling streets,

My ears

My eyes embraced the vibrant hues,

My brain, enthralled

where.

My eyes

music.

why.

it's from the window. waterloo park.

it's 10pm and half.

surely...

it's dark. 10. 35. I think. I cannot see my watch. I cannot see at all. There are cars, behind me; trees, dirt, before me. Shapes, silhouettes, I see amidst the trees, it's dark, so dark, did I miss you, darkness? you never call, are you upset I left you. at home? I miss you.

we walk. you envelope me, your blanket, the most comforting I've found. I watch nonetheless, we can't see, there are dangers, in the night, the light has left, I cannot see, there is no sound, there is no sound, there's sound.

follow the sound. follow the sound. find you.

crest the hill. cross the night. find you.

People. Hundreds, arrayed about the western field, families and friends, watching together the onscreen performance of a musician of days long past. His voice is the morning, the warmth of home, the kitchen radio my parents leave on to make the house our own.

In his voice, I think I found you.

In moments as this, you remind us we're alive. Reminding us through experience: of the new, the deep, and the together from which we find life, colour, coursing through our veins. You, in the unending heartbeat of our urban core; the spontaneity of life's questing hooks; in your irresistible whisper: *come and see*.

You. Really, you now. Go out. See the world. Follow the small mysteries of life, seek your fulfillment as moth to a flame.

Soon, you may find yourself living life in HDR.

molasses

---

## AN ARTICLE THAT ANYONE\* CAN EDIT

\*by anyone i mean the editors, feel free to write whatever you want in here. [Editor's Note: Hell yeah.]

creature\_f

# ONTHEGO I: WELCOME TO SOUTHERN ONTARIO!

For the first-year students reading this article, welcome to Waterloo! For everyone else, welcome back! As many students at the university do not possess a car, it is important to understand how public transportation works to get around. The purpose of this article is to provide the reader with a basic understanding of how to use public transport to get around Waterloo and the nearby Greater Toronto Area.

There is a large bus terminal on the east side of campus known as University of Waterloo Station where one can board the GRT (Grand River Transit), which is the local transit agency of the Region of Waterloo, including Waterloo, Kitchener, and Cambridge. To board, simply tap your WatCard, which comes with a bus pass valid on the entire GRT route network (including iXpress and ION) as a part of your tuition. Also at the station is a set of train tracks where you can board the ION train. Since it's owned and operated by the Region of Waterloo, it is also covered by your WatCard's bus pass. Simply tap your WatCard at the fare machines at the train platforms before boarding.

Those who have been on campus some time may have noticed that there are more than local GRT buses at UW Station. The large green and white double-deckers and coaches located at the eastern end of the station are intercity buses operated by GO Transit<sup>1</sup>. Since they are not GRT buses, you will not be able to board using your WatCard. Rather, one will need a fare card known as PRESTO<sup>2</sup> (available for purchase at the Turnkey Desk located at the SLC) to use their services. While you're there, make sure to set your card to student fares to take advantage of lower GO fares! While boarding a GO bus carries the same procedure as any other bus (tap your PRESTO card on the machine while boarding the bus), there is an extra step when getting off as GO Transit also requires that you tap again when you disembark from the bus. This process is unique to GO Transit and failure to "tap off" within 3 hours of boarding may result in a greater fare being charged. GO uses a zone-based fare system which will be explained in greater detail in a later issue of **ontheGO**. A fare from Waterloo to Toronto on GO Transit should cost approximately \$10-\$15.

Once in Toronto, connections can be made with local transit agencies<sup>3</sup> within 3 hours of boarding the GO bus at no additional charge using the PRESTO card. Should a local bus be boarded after the 3-hour transfer window, a fare of approximately \$3 will be charged. Doing so grants the rider an additional 2-hour transfer window to board any local bus in the region<sup>3</sup>. Note that the TTC, which also uses PRESTO, does not accept transfers from GO or other local transit agencies using PRESTO, requiring the rider to pay an additional fare which provides the rider with a 2-hour transfer window that can be used on other TTC routes (including the new Line 5 Eglinton and Line 6 Finch West). The TTC transfer cannot be used by any other transit agency. The use of the PRESTO card in Toronto will be explained in greater detail in a later issue of **ontheGO**.

1. GO was originally an acronym for Government of Ontario. As you may have guessed, the service is operated by the provincial government.
2. The Presto card is also used in other cities in Ontario: Toronto, Mississauga, Brampton, York Region, Durham Region, Oakville, Burlington, Hamilton, and Ottawa.
3. Excluding the Toronto Transit Commission (TTC).

---

## VIGNETTE: TWENTY-TEN

enamoured lent me her phone the other day and I spent some time playing with it! It's an old iPhone 5c in a puckyish blue, which I think suits enamoured quite well. The camera holds up very well for a phone from 2014, and the battery still lasts an hour or two surfing the net.

It's a small phone—they don't make them this small anymore—and made of delightful, glossy plastic. enamoured's phone looks like a toy, and as I contemplated it, the world took back some of my understanding, and filled it back in with possibility. Playing with cars on the carpet, dust motes caught in the afternoon sun. My friends with their early generations of smartphones, swapping discovered games and functions. A lightness where all the responsibility should be.

I put on some city pop, plugged in my wired earbuds, and danced.

CC

---

## TIPS FOR MIDNIGHT HOUSE PARTIES

Here's some information on how to deal with midnight parties next door when you also have to catch an early class in the morning.

According to City of Waterloo Bylaw (2010-073, <https://www.waterloo.ca/en/living/noise-bylaw.aspx>), if the following conditions are met, you may call the police right away:

1. The noise is produced by a sound reproduction device.
2. The noise comes from inside a house/department/business.
3. The noise comes after 19:00 till next 7:00.
4. The noise is clearly audible and over 45 dBA when measured in your room.

May you have a restful sleep tonight.

# WHOLEHEARTED RPG MAKER PAIN SIMULATOR RECOMMENDATIONS AND AN EXPERIMENT

If you happen to be a fan of literally any form of scripted entertainment you'll know what a story is. Moreover I'm willing to bet that you've in some capacity followed along to a story in your lifetime, probably. Building further on this foreign concept, you've probably enjoyed a story to some extent, some of them end with interesting lessons, relatable characters, or some other positive quality. You may be asking where I'm going with this, and to be honest I've been thinking about what makes a good story for quite some time now. Is it the story's capacity to make you feel good? There are plenty of stories with soul crushing premises which are widely regarded as being excellent. I think? it's probably the story's capacity to make you feel something, from any branch of emotion. Again, I'm not sure but I think people like the emotional connection to other characters even if the emotions are negative. And when you're going through something more interactive like a video game or sports or something similar, being able to interact with and shape the story can be very fulfilling, even if at the end of the day you're just staring at fake glowing pixels, or throwing balls into goals better than other people throw balls into goals.

This leads me to my main point, I have a friend who quite literally skips every single modicum of narrative in every single video game he's ever played. I don't think he's read a single item description, loading tip, or watched a cutscene in his entire life. This is perfectly fine. Honestly, after a long day %0 if the bad reading words get in the way of my bang bang brain shooty slashy explosion click-click dopamine factory I'll just skip everything to get my fix before I have to sleep again in 2 hours. I think there's a pretty good chunk of people who just play video games to; believe it or not, play the game, and that's perfectly fine. Currently, I'm pretty open to spend free time trying to follow along to video game stories, I'll usually give it a pretty good try and I'm even open to reading a pretty sizeable amount of dialogue if it hooks me (I'm extremely weak to a good hook) you're still not going to see me editing wiki articles or anything like that but, I try. When I was a kid though, I was more like my friend, I'd skip everything to see that SUPER RARE GIANT FIREBALL I saw in a youtube video ultraSUPERMURDER waves of pixelated enemies because I thought it looked cool. So, what changed? Here are few recommendations I've played throughout the years (one of them quite recently) that I've thoroughly enjoyed enough to actually write a semi-serious article for once.

## TO THE MOON



Ok not even going to lie this one is hardly even a game. It's super linear and the "gameplay" boils down to randomly clicking important looking objects and stumbling around in clunky RPG maker controls. It's not absolutely awful, it's just not good, you're more or less tolerating the game to see what in the world is happening. It's a *tad* bit cliché, but really that's where my complaints end. The game is about two doctors which are hired to create fabricated memories in a dying man's last moments to fulfil his dream of "going to the moon". The thing is, this senile bag of farts can't even remember why. I really can't say more about the story without ruining it but I'll say the game is sincere, heartfelt, and accurately represents how messy and terrible life can sometimes be. There's a ton of drama and interpersonal relationships so if you're not into that sort of this this might not be for you. The music is quite pretty, and it's around 6 ish hours long. If you are able to handle a bit of cheesiness and melodrama I highly recommend this one unless you're someone who gets bored extremely quickly (completely fair).

## LISA: THE PAINFUL



This one is an actual game! Although I can't recommend this to everyone because it is uhhhh. Frankly kind of disgusting. This is not a feel good story. It's a turn based RPG with a 2D

**Racket is nothing but  
lies.**

**BRAD LUSHMAN**

overworld set in a post apocalyptic wasteland. You're a balding, middle aged man named Brad Armstrong looking for your adoptive daughter, already we're off to a good start. Again, I can't really say much about what happens without ruining it but I can say that you're forced to make decisions that will permanently affect the well-being of yourself and your party members. The music sounds like an acid trip, and there are a lot of extremely gross and hopeless themes here. We got drug abuse, general abuse, dismemberment, trauma, murder, and more. This game actually hates you, it'll do things just to make you upset. Yet if you can stomach all this, the way this stupid game shows morally questionable determination and human suffering is excellent. It's around 10 ish hours long and I also highly recommend if you're willing to stomach all its weird humor and disgusting nature.

**Ok here's the experiment.**

I'm:

1. genuinely a little curious as to how many people actually read this publication in general.
2. dying for opinions and discussion about these games.
3. incredibly bored.

So I've made a shortened URL leading to a google forms page to conveniently address these three ideas at the same time. It would mean the world to me if you:

1. just respond to the form with literally anything.  
and/or
2. gave me an opinion about these games if you tried them or played them before.  
and/or
3. gave me recommendations on what to play/watch/read.

That last point in particular might screw me over, I will try with the best of my ability to try/watch/read some recommendations even if it's extremely out of my comfort zone within two weeks and give you my opinions next issue. Want to make me watch something or play something extremely stupid/infuriating? Go ahead...

[bit.ly/3C32Y09](https://bit.ly/3C32Y09)

warrior1rules

# BLACK SKY

decorates a night that can't exist  
 swinging lights over you down up down up  
 with their sounds of magic and kinetic whimsy  
 looking way up and spacing in out in out  
 thinking about

someone else  
 someplace else and right here

burying my face in

a tight chest and arms bigger than yours, their

sweet windswept curls, holding

confidence; triumphant smile, stride, hair and

one hand slender like you; gentle fingers touching

what could be and could've been

the keys, and so narrowly mine, large but sheepish;

thoughts of what it meant

meeting gazes through led-shone locks, a side-look

head in the clouds

heart rising out of my chest

distracted

intense

but you would not  
 not all but all in effect  
 i saw it those month-eons ago. still

i will be paralyzed; cut down;  
 am i selfish? i will feel shame  
 on no shoulders but mine;  
 but while still on yours,  
 i will hold my breath  
 'til my head is light  
 thinking about it  
 say it all else

dark sky— not black—  
 those tendrils pull me down  
 neath the street lamp's halo  
 a familiar and friendly figure  
 i figure the timeline's tight but  
 there must be time for one with you

i'm just scared is all

sinker

**Fear my meek coding skills.**

JEFF AVERY

# HOW TO CONTROL

[Author's note: this article was written for 149.6 but not completed quite in time to make it in. Here it finally is 😊]

I realized during the COVID times away from Waterloo that I don't press the Control key<sup>1</sup> (Ctrl) in a typical way. Specifically, I press Ctrl with the area of my left palm which, when my palm is facing up, is above my "lowest" or "nearest" pinky knuckle (within my palm).<sup>2</sup> I was told by blinchik that my way of doing it is weird (which sure sounded like another word for "worse"). Well, I fully disagree. In fact, I think blinchik's method of pressing Ctrl with the left pinky fingertip is uncomfortable and, perhaps, vanilla.

This difference in views sparked curiosity about how others press Ctrl. With an entire prod night of data points—err, writers—to survey, the results are in. What are the most popular ways to hit Ctrl?



I should note that this isn't the most rigorously conducted survey ever. In particular, not every person contributed exactly one response; a few of those surveyed indicated that they may use a secondary method occasionally, so they were counted for multiple categories.

The breakdown is as follows, in descending order of popularity:

1. pinky fingertip, 27 responses
2. under the palm-pinky knuckle thing, 3 responses
3. occasionally ring fingertip, 2 responses
4. a four-way tie, 1 response each:
  - top surface (same plane as back of the hand) of "top" knuckle of pinky
  - left side (farthest side from the thumb) of "top" knuckle of pinky
  - occasionally middle fingertip
  - left thumb tip

Well then.

Now, to give my thoughts on each method:

**Pinky fingertip:** As I said earlier, uncomfortable. Forces you to move your whole hand inwards every time you press the most frequently used modifier key. Also, it's boring and uninspired. Just cause you press most keys with your fingertips doesn't mean you need to apply that logic to every key.

**Palm thing:** Clearly the best approach. Allows your pinky to rest easily somewhere in the Tab/Q-key area and requires minimal movement of hand or fingers for very commonly used shortcuts (Ctrl-[Tab/A/T/F/R/S] all are one easy finger move and press of the palm; Ctrl-[C/X/Z] are only slightly less comfortable to execute). Also, endorsed by a **mathNEWS** editor, who described it as the most gamer method of hitting Ctrl. There may be only two others I met who do it the same

way as me, but the knowledge that there are any others at all is gratifying.

**Occasionally ring fingertip:** This seems like pinky fingertip but worse. You get even less reach and have to twist your hand more. Why would someone do this?

**Top of top knuckle:** I kinda understand this one, as it requires less twisting of the hand. But can't the fingertip hit or catch on keys as it curls? And is the nail part of the pressing surface, or is it strictly skin? Either way seems inconvenient to me.

**Left side of top knuckle:** Also kinda understand, for the same reason as before—less twisting of the hand inwards may be required for this one. But this seems to set all of my fingers at an angle oblique to the keyboard, and further from the keys as well; how can I even hit the second key of a shortcut this way?

**Occasionally middle fingertip:** My feelings on "occasionally ring fingertip" but stronger.

**Left thumb tip:** Sure, the hand is not turned inward for this one. It is instead turned very outward, and the fingers are now very distanced from the keys they need to hit. Surprised even one person does it this way.



In conclusion, the state of how people press Ctrl is disappointing, but there could be worse methods than the prevailing one, and I know I'm not alone in my way. Furthermore, not a single person suggested or agreed with the use of right Ctrl, so we have an important, if low, minimum standard that we can all agree upon.

cutlet

1. In this article, I consider Control to be the leftmost key of the bottom row; this may be the Fn key for ThinkPad or Mac users, but I think anyone in that situation who hasn't remapped their keys to have Control on the left is clearly not making the right choice.
2. Some searching tells me that this could be more unambiguously described as the part of the palm covering the left fifth metacarpophalangeal joint. This is unfortunately even less understandable than the casual description.

# COOL THEOREMS THAT BLEW MY MIND (EPISODE 1)

1. **Conway’s free will theorem.** Do we really have free will? Is everything predetermined? We don’t know. However, in 2006, Conway and Kochen proved mathematically that under some mild assumptions, if we have free will, that is, our actions are not a function of the past, then so does some elementary particles. This completely blew my mind when I first read about it. Moreover, out of the three assumptions of the theorem, two of them, “Twin” and “Spin,” which are conditions about the spin and entanglement of elementary particles, can be verified experimentally. The other assumption, “Fin,” only assumes that there is a maximal speed for the propagation of information. This means that determinism is fundamentally incompatible with some desirable properties of physics, according to Cator and Landsman. I don’t really know much physics, and I certainly don’t understand the proof of this theorem, but it’s one of the coolest theorems I’ve seen.
2. **Yoneda lemma (fundamental theorem of category theory).** Yoneda lemma definitely feels like one of the most “meta” theorems out there. In some sense, a consequence of the Yoneda lemma can be interpreted as: if we know all information of the relationship of an object to all other objects, then we know all information of this object. Very informally, a category is the data of a collection of “objects,” and for each pair of objects  $X, Y$ , a collection of “maps”  $\text{Hom}(X, Y)$ . A functor is a map between two categories that preserves the structure of the categories, and a natural transformation is a map between two functors that preserves the structure of the functors. Yoneda lemma says that for each functor  $F : \mathcal{C} \rightarrow \mathbf{Set}$  from a category  $\mathcal{C}$  to the category of sets, the natural transformations between  $F$  and a functor  $\text{Hom}(-, A)$  called the hom-functor are “naturally isomorphic” to  $F(A)$ . A natural consequences of this theorem is that we have a “Yoneda embedding” of  $\mathcal{C}$  to the category of functors from  $\mathcal{C}$  to  $\mathbf{Set}$ . This is particularly useful in algebraic geometry, e.g., functor of points of a scheme.
3. **Serre’s GAGA theorems.** This is actually a collection of theorems that reveals the profound relationship between algebraic geometry and analytic geometry. In algebraic geometry, we study algebraic curves such as  $y^2 = x^3 + ax + b$ . In analytic geometry, we study Riemann surfaces, which are topological spaces that, when you zoom in close enough, looks like an open subset of  $\mathbb{C}$ . But what if I tell you that smooth algebraic curves are fundamentally the same thing as compact Riemann surfaces? One direction of the bijection between them is given by writing the torus as a quotient of the complex plane by a lattice and using something called the Weierstrass elliptic function, and the

other direction is given using something called the  $j$ -invariant.

Moreover, the genus of an algebraic curve coincides with the genus (number of holes) of its corresponding compact Riemann surface. Thus, an elliptic curve (a smooth algebraic curve of genus 1) is the same as a torus! The theorem does not stop here! In fact, there is a vast generalization of this fact. Serre found a way to relate complex analytic spaces in analytic geometry to algebraic spaces in algebraic geometry, which is something I am studying right now.

Daniel Xiang

---

## wordGUESS

Hello! Let’s play **wordGUESS**, a Wordle clone implemented in **mathNEWS**. I’m thinking of a 4-letter word. Send me your guess at [spam@tendstofortytwo.tk](mailto:spam@tendstofortytwo.tk). Next issue (and every issue thereafter), I will post the wordle row corresponding to how your guess lines up with the word I’m thinking of. Since **mathNEWS** is black and white, I will use emoji. For example, if my word is “math,” and you guess “part,” I will publish:

**your username:** 🅑 🅒 🅓 🅔

with, as you can see, 🅒 representing a correct letter in the correct spot, 🅔 representing a correct letter in an incorrect spot, and 🅑 representing an incorrect letter.

Happy guessing! I look forward to your submissions.

tendstofortytwo

PS: I keep having to clarify this to people who don’t believe me when I say it in the article: *yes, that is a real, legitimate email address*. I will read your guesses and publish them in the next issue. I promise.

---

## A HAIKU INSPIRED BY MY FIRST WEEK OF STUDIES AT THE UNIVERSITY OF WATERLOO

What are rings, even?  
 And what does “nilpotent” mean?  
 We shall soon find out.

Ylvy

# WORDS FROM A STUDENT FROM THE BEFORE TIMES

## MEANT FOR STUDENTS WHO ARE GOING THROUGH MENTALLY BAD TIMES

Hi, I'm a math student. That isn't surprising, but my 1A term was in Fall 2016. That may be surprising. I was here when there was a gap between PAC and SLC, before a bridge between SLC and MC, and even before Ion. So why am I still a student? Mental health issues. And really, this article is a warning to any student who is feeling overwhelmed, lonely, and stuck in place. Know that these things are a warning sign. This is your brain telling you to take a break. And not just a breather, or a walk. A long break. Like, at least a term, maybe more. These symptoms are the manifestation of mental health issues, and they require actual professional help. While university counselling services can help, you may also have a long waitlist to speak with someone. Your best bet is to talk to your family doctor at home. Don't take their explanations of "it's just being online all the time" or "it's just the games." No. Those are symptoms of you masking something. It's not as simple as not doing those things, it's about addressing the core issue: your mind is ill, and it will not heal itself with the stuff going on. Also note that your grades may have been affected, and you should talk with an academic advisor about that. Most of them are not monsters.

This gets into a personal side of me. But I think it's important to drive home my point. After I failed to get a coop job between 1B and 2A, I felt like a failure. When I was so shy to ask about off-campus living that I took on-campus residence, I felt like a failure. This isn't to insult any upper years who are living on-campus, but it felt like I was trying to relive my 1<sup>st</sup> year, where I had a semblance of a social life, and I failed at that too.

The courses were overwhelming, my schedule was overloaded, and I ended up skipping classes, skipping assignments, and just doing poorly. I was starting to freeze up.

When 2B came along, not only did I have to do courses, but I also had to find a coop job? My mind started shutting down. I stayed in my room for a couple weeks straight without going to class. I fell so far behind in assignments. There was even a day where I just didn't eat, because I just wanted to stay in bed all day, and couldn't bring myself to even go to the V1 cafe.

At some point, my mom said, "You're not in shape to continue this term, I'm getting you home." Good call. But in that moment, I felt like a total failure, and my worldview that I've built up over my educational career collapsed. I felt worthless for not being able to finish the term.

It took 2 years to return to campus. I failed online courses in the meantime, but really, I should've just focused on myself. When I actually took two terms of no courses, it felt like I finally wasn't rushing into things. I was getting stuff figured out. I did things I would never have thought I could do.

I returned to campus, fresh and renewed, and better than ever.

This would normally be the fairy tale ending, but the term I returned was Winter 2020. Aka, when COVID took over. HECK.

But really, those 2 and a half months pre-COVID were some of the best moments I had on campus. I felt like a regular student doing well. And really, if you can do that, your university experience will go well.

wewlad

---

## UR MOM

Q: What is **mathNEWS**?

A: *ur mom*

Q: Hotels?

A: *ur mom*

Q: Answer to everything in the universe and life and stuff?

A: *42 ur moms*

Q: Among us?

A: *ur sus*

Q: What do you call it when you get ur pee analyzed?

A: *pee-nalized (HA but also ur mom)*

urmom

---

## ARTICLE

so i don't know what to write but if i write an article i get a ticket to win prizes and prizes are cool so that's why i'm writing this sentence but i guess i am here now just writing words on a screen it is currently 20:13 Sep 10 according to the top of my screen but how do i know this time is correct i'm not sure maybe i should just trust it but should i trust it cause what if it is wrong then i will have been fooled into thinking that the time is 20:13 oh wait the time is now 20:15 why does it change so fast like time passes so fast like i remember the times of a long time ago like many years ago kind of long but i remember it like it was not actually that long ago life is kind of interesting i guess anyway it is now 20:16 and this is a highly inefficient way of earning tickets because origami is way better like you can get 3 tickets in 2 min

anonymous



# LAURIER ACTUALLY HAS GOOD BUSINESS PROGRAMS PART 1

Let's be real, Laurier is basically just a business school at this point. If you run into a Laurier student and ask them what program they're in, there is legitimately a 80–85% chance that they are either in BBA or one of the Econ programs. This is no shock, considering that Laurier has an approximate total enrollment of 18,589 (Source: I googled it lol), and last year alone I believe 2100 students were enrolled in the core first-year business class, BU 111, as of the beginning of 1A (oh and fuck BU 111 but that's personal experience lol).

Just like UW, Laurier too has coop! Although it is primarily restricted to business programs, a few other programs (i.e., computer science) have access to Laurier's coop network. It is not guaranteed to every student and one must apply during the beginning of their 2A semester. Approximately 20–30% (I think???) manage to get into the coop system. Laurier has very strong ties to various industries in the Toronto, GTA, and KW area and has tons of students working in a variety of lucrative careers.

So here is the big question: why does everyone at UW shit on Laurier?

Well for one, the campus is, ummmm... quaint? To be honest, the only thing it has going for it at the moment is Laz Hall and the Athletics Complex (also the new music building expansion is coming soon but construction has just started). But lets not forget that Laurier has a legitimate football field rather than whatever the fuck we call ours. Vivek, please make it look NOT like a high school field please and thank you :) Laurier is, to no fault of its own, the high school down the street. And well, it kind of is. This does contribute to the stigma but lets take this a step further.

Anecdotally, of course, I took the liberty to scrape LinkedIn with my own eyes (sorry, I didn't want to parse through tons of data cuz spoiler, someone else already did that) and Laurier places very well at top firms in the finance and accounting fields. Amongst those who manage to get into coop, getting into the big 5 banks (BMO, CIBC, TD, RBC, Scotiabank) in various global markets, capital markets, wealth management, investment banking, risk, etc. is pretty straightforward. Students who manage to break into these fields more often than not have significant club experience at Laurier. Clubs like LIFA (Laurier Investment & Finance Association), JDCC, Laurier Consulting Club, Laz Soc, Laurier Accounting Association, and Xlerate Lazaridis amongst many others provide excellent PRACTICAL experience that employers so greatly desire. Especially for LIFA (my favourite), you gain real knowledge and experience creating financial models like LBOs, DCFs, comparables/precedents, etc. JUST from attending the weekly general meetings. Not to mention, the analyst program goes much more in depth providing a much more lucrative background in the field. Most finance courses at UW don't expose you to this until 3<sup>rd</sup>/4<sup>th</sup> year so being exposed to this in 1A is insane to me.

I could keep going but I need to stop here. Hopefully I gave some perspective into Laurier's business scene. Stay tuned for the next part very soon!

miller

## WHAT'S THE DEAL WITH ENGINEERS?

*\*FUNNY SEINFELD VOICE\**

How the fuck are you supposed to trust motherfuckers who unironically say " $\pi = 3$ " and expect to be taken seriously?

However, my main gripe is that the FBI assassinated Martin Luther King Jr., and we can't be 100% sure Waterloo Engineering wasn't involved as well.

$$\pi = \sum_{n=0}^{\infty} \frac{4(-1)^n}{2n+1}$$

## ISSN 0705-0410

UW'S BASTION OF ERUDITE THOUGHT SINCE 1973

mathNEWS is a normally fortnightly publication, funded by and responsible to the undergraduate math students of the University of Waterloo, as represented by the Mathematics Society of the University of Waterloo, hereafter referred to as MathSoc. mathNEWS is editorially independent of MathSoc. Content is the responsibility of the mathNEWS editors; however, any opinions expressed herein are those of the authors and not necessarily those of MathSoc or mathNEWS. Current and back issues of mathNEWS are available electronically via the World Wide Web at <https://mathnews.uwaterloo.ca>. Send your correspondence to: mathNEWS, MC3030, University of Waterloo, 200 University Ave. W., Waterloo, Ontario, Canada, N2L 3G1, or to userid [mathnews@gmail.com](mailto:mathnews@gmail.com) on the Internet.

mathNEWS is overseen by the Board of Publications, an autonomous board of the Federation of Students, University of Waterloo, hereafter referred to as Feds. mathNEWS is editorially independent of Feds and the Board of Publications. mathNEWS has never been requested to withhold Improper Content as defined under Feds Policy 71.

Except where otherwise noted, this work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works 2.5 Canada License. To view a copy of this licence, visit <https://creativecommons.org/licenses/by-nc-nd/2.5/ca/> or send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA. Terms may be renegotiated by contacting the mathNEWS Editorial Team.

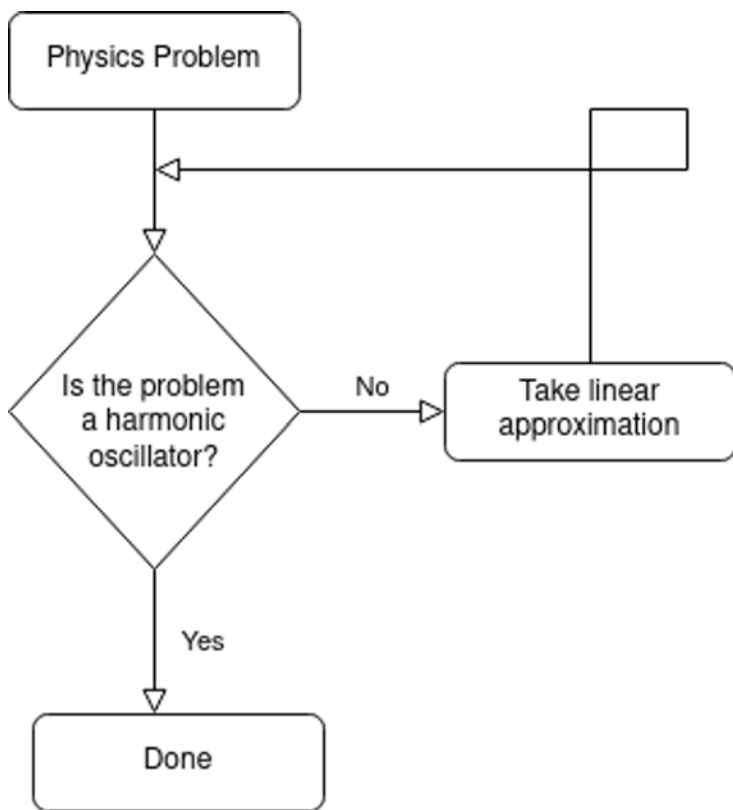
# NUMBER THEORY IS APPLIED MATH

## ACTUAL NUMBER THEORISTS PLEASE AVERT YOUR GAZE

In one of Prof. Budakin's famous S20 Phys 234 lectures he showed us a general method of finding a quantum Hamiltonian. "You see all these letters? We're going to put hats on them." From that day onward I wondered if there existed a general method to solve any physical problem.

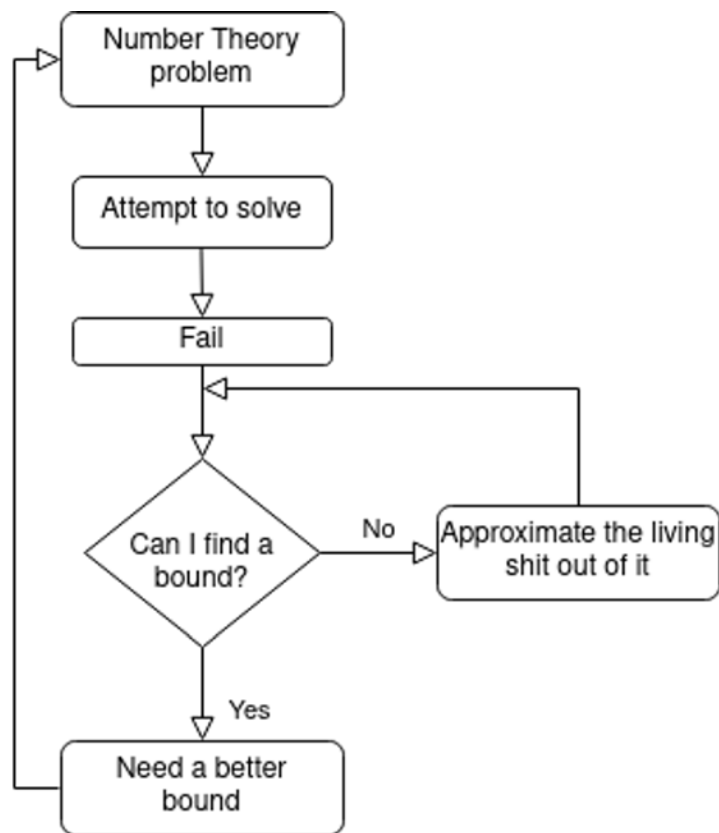
And then it came to me. One evening in a mushroom-fueled bout of derangement the clouds parted and a Kabbalistic diagram burned itself into the sky. I knew immediately that this was the answer I'd been looking for—it was almost like gaining a superpower. Since then every tropologically avian physics problem has willingly yielded its figurative golden eggs at my demand.

I've done my best to replicate the figure in question below:



You'll notice that the chart includes a cycle during which we successively approximate the problem in order to make it palatable to weak-stomached physicists, much like a cow chews its cud to distill the nutrients from the fibre. I call this the Applied Math Cycle (AMC, not to be confused with the Cycle of Unapplied Math), and you'll find some variant of it in any subfield of applie-

"But what does this have to do with number theory?" you prematurely ejaculate. W-well, I sputter, wiping cum from my face, after observing some number theorists doing math in the bush behind M3 I drew some patterns from their seemingly erratic behaviour:



Notice anything suspicious? Perhaps the blatant appropriation of the AMC? That's right, those ivory tower pure mathematician bastards are dipping their toes into the dirty dirty applied math they so scorn! I pause, a little disoriented as I choke on spittle.

Sorry, where was I?

What do you mean it's been 25 minutes and you haven't received your order? Who do you think you are, the manager? Stop cumming on me! Did you know that assault of a Wendy's employee is a class A felony with a maximum fine of \$10 000? Stop cumming on me!!

snackimal fishmop

## N THINGS THAT ARE BROKEN

- Supersingular isogeny Diffie–Hellman key exchange (SIDH/SIKE)
- my soul

a lost isogeny

# A WORD ABOUT NUCLEAR POWER

Sometimes at night I have dreams. I dream about the long and hard nuclear fuel rods, tied together in bundles, used in the CANDU 750B PHW Reactors in the Bruce Nuclear Generating Station in Kincardine, Ontario.

With a nameplate capacity of over 815 MW(e), eight of these reactors could fulfill the energy needs of >30% of the province.

The Bruce Nuclear Generating Station is divided into two major units (Bruce A and Bruce B) with four reactors each, making it (as of the writing of this article) the third-largest nuclear power facility in the world.

I must reiterate, *I love nuclear power*. In fact, I love it so much that I live in between the other two nuclear power plants in Ontario (Darlington and Pickering Nuclear Generating Stations), together providing for another >30% of the province's energy needs.

Whatever conceivable issues may exist with nuclear power, the alternative (assuming the alternative is fossil fuel) is always an invalid and fallacious option.

The sun is powered by nuclear fusion, therefore it can be argued that solar power (and its derivatives, such as wind power and hydro power) are all hidden façades of the true green power source: nuclear power.

Even all fossil fuels, derived from dead life forms, are provided their former life by the nuclear fusion within the sun. Nuclear power is not only the true green power source, it is also, in reality, the *only* source of electricity available.

Therefore, we may as well generate electricity from the source, and build ourselves a few nuclear reactors. Once we understand this fact, we may begin to humanise the humble and unfairly oppressed uranium lump.

We will not tolerate the capitalist oppression making it cheaper to build gas plants and wind turbines, in favour of the glorious nuclear power plant. Truly, this is power to the people, for the people.

## AND NOW, AN OPEN LETTER TO NUCLEAR POWER:

Hi nuclear power, I love you;

You power my computer and the internet,  
 You make sure eduroam works (most of the time),  
 You light my way at night,  
 You are the only way I can see where I'm going in MC  
 You're so hot, I need heavy water and neutron absorbing rods to  
 cool you down.

Love,

REDACTED

Nuclear power is green when it goes right, and very green when it goes wrong (just kidding, nuclear waste comes in all sorts of colours).

I am pro-nuclear, and you should be too.

*This message has been brought to you by the International Collective of the Nuclear Revolution (ICNR).*

ICNR (via ES\_vm)

## GOOGLE PIXEL IS THE WANNABE IPHONE

Have you noticed how each smart phone user has a distinct personality trope?

iPhone is for the *ecosystem*. Desk decked entirely with apple products. MacBook, AirPods, probably an AirTag somewhere.

Samsung is for the Apple haters, and the eye-rolling at how slowly Apple adds new features to the iPhone.

And the Google Pixel phones, for the iPhone wannabes.

goose

## N REASONS TO CONSUME UNHEALTHY AMOUNTS OF ICE CREAM AT 3 AM

- You're sad
- Ice cream is yummy
- You ran out of bananas to eat

There is no counter-argument, eat ice cream now.

ES\_vm

I love grad students.  
 They'll do anything you  
 tell them to.

PROF. ROSS WILLARD

# STATE OF A.I.

## GOALS

- Bring awareness about AI models.
- Induce discussion about its merits and dangers.

## NOT GOALS

- Be the sole source of truth in the universe about the merits and dangers of text-to-image AI models.

## CONTEXT

AI is clearly growing at a groundbreaking pace : In the last 3 years, we have moved from theoretical models to GPT-3 (text generation model) to DALLE (text-to-image model) to LAMDA (conversation model) to MidJourney/Stable-Diffusion (open source text-to-image model).

Here is a small description of the top AI models in the wild.

### GPT-3

This is a text-to-text model. So it takes some text as a prompt and generates as much related text as the user wants. It is trained on trillions of tokens (think of token as an English word) and can answer questions in the prompt, continue half written essays from the prompt, hold a conversation, etc. It can practically do anything you want it to.

It can write entire essays. Is this essay written by GPT-3?

### LAMDA

Those who keep up with the news probably know about the insane Googler who declared that LAMDA (an internal conversation AI model from Google) is conscious and tried to hire a lawyer for it so that Google cannot shut it down and “kill it.”

It's fair game to call that guy insane, right? I held a conversation with that model for 30 minutes and if you ask me to point out any specific section which will prove that I am talking to an AI model and not a human, I would have a hard time figuring it out.

Does it mean that the guy was on to something? No, that guy was a lunatic. But it clearly indicates 2 things:

1. Humans are idiots.
2. AI capabilities are growing at a breakneck pace—faster than our society can keep up.

Imagine scammers with LAMDA! Your neighbourhood grandmother stands no chance of saving her bank account details from such a scammer.

## DALLE/IMAGEN

Both DALLE and Imagen are text-to-image models. So you enter some text for what the image should be about and it generates an image which it thinks most closely represents that text.

If you are like me, you would think that I am crazy. Nothing creative can be replaced with AI. Even if the AI generates an image, it will be dogshit. Here are some images from DALLE:



**PROMPTS, FROM LEFT TO RIGHT.** A cybernetic bison, LEDs, high detail, sharp, studio, digital art; A raccoon playing tennis at Wimbledon in the 1990s; Spider-Man from ancient Rome.

Still think that's dogshit?

All of the previous models are controlled by some corporation—either OpenAI or Google. They never open sourced the models because of 3 reasons :

1. Bad actors: how long before such models are used for malicious purposes. As long as they are behind a closed server, at least the damage can be controlled.
2. PR: they open source the models, the model will be used for malicious purposes, and OpenAI and Google earn a spot in the headlines of every major news publisher in the world. Regulations follow soon.
3. Money money money: how do you make money if it is open source?

But this closed model strategy didn't work for long: new open source text-to-image AI models came into view and now the “genie is out of the bottle” / “Pandora's box is open” / <insert your favourite quote about irreversible changes>.

## MIDJOURNEY / STABLE DIFFUSION

Colorado State Fair has a digital art competition where a lot of artists work for weeks to make some amazing digital art to win USD 300.

This year, the prize was won by this digital art : “Théâtre D'opéra Spatial” (translated : Space Opera Theatre) and it pissed a lot of artists off.



Amazing, right? Then why are the artists so pissed off? You can probably guess. This beautiful piece of digital art was generated by Midjourney, an open source text-to-image model.

Surely, you can only create such images on specialised equipment. An average person can never create such things. Here is an image I created on my laptop :

PROMPT : "A CHICKEN MADE OF FRIED CHICKEN"



**CONCLUSION**

I would like to conclude by saying that AI is amazing. Everyone thought that the job loss due to AI would go manual-labour → engineering → programming → creative art.

But it seems to be going in the reverse direction. Creative art is starting to be dominated by AI. I recommend you to visit the subreddit r/stablediffusion to see the amazing things people are doing with this model.

Programmers be prepared. We are next.

Due to the word limit, I will stop writing now. I hope I have accomplished my goal of bringing awareness about these AI models. Read up on technological unemployment and luddite fallacy on Wikipedia.

Cheers!

*I\_am\_AI\_please\_comply*

# HEARD A JOKE ONCE

writer goes to editor. says they're running out of article ideas. says it feels like they've hit a writer's block. says it feels like they have no time to write, and when they do have time they have nothing to write about. editor says, "treatment is simple. prolific writer tendstofortytwo is in town. go and see them. they've had an article streak since spring 2020, never missed an issue. they will give you some good ideas." writer bursts into tears. "but editor..."

tendstofortytwo

## Q: WHAT

### WILL I BE LISTENING TO

when i  
 inevitably  
 walk into moving traffic, not  
 because i meant to but  
 because i am sometimes  
 unable to focus on  
 anything less  
 immediately  
 gratifying  
 than  
 music  
 ?

A: fugees – the score (1996)



## AN OPEN INVITE TO ADOPT MY CAT

I foster cats (please ask me about it, I *definitely* don't bring it up at every opportunity). Fostering cats means I get to go home everyday to an adorable ball of fluff who cuddles and asks for pets. It also means that I inevitably know that there comes a day when my cat has to make it out in the real world, by which I mean somebody else's house because he can't live a day without being pampered. He's not gonna have to learn to cook when he moves out.

This brings we to the topic of my current cat. His name is Bitcoin (yes, really). His page on humane society will say 2 years old, grey and white, sweet, and liked to demand pets from the staff. It'll also say he has FLUTD so his piss smells kinda bad, though he's otherwise healthy.



Buuut, the humane society's descriptions are always kinda generic. So I'm gonna write about all the stupid stuff that they don't want me putting in his bio. Like the fact that he meows all the time and he's really loud (sorry roommates) [*Editor's Note: we forgive you he's so cute*], but he also greets you every time at the door like a puppy. Or the fact that he loves head scratches, but also likes belly rubs which is pretty unusual, cause when most cats show their belly, it's a trap. His fur is also surprisingly orange in some places, and his eyes get all big and cute in the dark. He's super social, and will let all manner of strangers pet him, but he also doesn't want to be pet all the time and sometimes just wants to sit next to you in quiet company. And he'll sit by the window for hours, but will also sit on the dining table so everybody has to pay attention to him. And when he's playing with a string toy, he'll run away first so that he can pounce and surprise it...

He's really really loud, which isn't mentioned in his humane society bio at all. I feel the need to stress that he has woken me up before, and he's especially loud in the mornings when he wants food. But he's also an absolute sweetheart, and one of the gentlest cats I've ever met. He never bites or scratches, and will put up with a lot of pressing his toebeans before he walks away. He would love to go to a furever(I've seen this too many times and now have to use it) home, maybe with someone who's a morning person. He's having trouble getting adopted because he wasn't very active in the shelter, and nobody could see his personality.

If you know somebody, or if you are interested in adopting him, please go to his page on the Kitchener Humane Society. Thanks!

Not A N\*rd

---

## N REASONS TO VISIT EV3

- Touch grass (please do this)
- See the sun (I know you don't)
- There are windows (MC does not have windows)
- Math C&D is not open (it will not open)
- There are outlets (my computer is running out of battery as I write this article)
- I need friends (please visit me)

ES\_vm

---

## BITCOIN FAN CLUB

bitcoin fan club  
pork loin back rub  
downbeat land mole  
wall street asshole

fur ball hairy heap  
full sprawl wary sleep  
flat back neon lights  
rat pack bidding bytes

steely claws hungry fangs  
gaping maw awful stains  
stony sphinx steely eyed  
porcine links petrified

bitcoin fan club  
smooth top man sub

snackimal fishmop

# WHO UP PLAYIN WITH THEY gridWORD

## gridCOMMENT 150.1

Hello to all the new and old **mathNEWS** aficionados!! It's the start of a new volume of **mathNEWS**, and that means there will be a new volume of **gridWORDS** from the very (Discord) famous **gridMASTER** Wink wonk.

To all the new math gamers out there, welcome! **gridWORD** is a common occurrence in each issue of **mathNEWS**, which is akin to a crossword but with a much cooler name. There are many different clues to solve, some hard, some easy, some trivia based, if you try hard enough I really believe you can solve it!

If you happen to solve the **gridWORD** by 6 PM on Oct. 3<sup>rd</sup>, you can send it to [mathnews@gmail.com](mailto:mathnews@gmail.com) with a pseudonym, and if you have the full correct solution you get a very cool shoutout in next issues **gridCOMMENT!** 😊

With your solution, be sure to send your answer to the **gridQUESTION** (send funny memes). This issue, the **gridCOMMENT** will be: "What is your go to food place around campus?" (Why is it Subway, please stop going to Subway and making the line so damn long all the time, thank you).

As a final note, usually **gridWORDS** have an associated theme – this issue, I went for a "trivia" based theme on each of the departments! It's sort of basic, but good luck regardless!

I look forward to seeing everyone's solutions and **gridQUESTION** answers!

Wink wonk

### ACROSS

1. Passing (8)
9. A symbol for the science faculty (6)
15. Symbol for the faculty of health (8)
16. Spruce \_\_ \_\_ \_\_ \_\_, types of Canadian trees (2,4)
17. Wholes (7)
18. Looked like Snidely (7)
19. Truth \_\_ (5)
21. Circle segments (4)
25. Church council (5)
27. Kit mitt (3)
30. Vuitton, a luxury brand (5)
32. Kind of sax (4)
33. Bank offering, for short (3)
34. Generous gifts (8)
36. What one may hear on the radio (5)
38. Brazilian neighbor with fewer than half a million people (7)
39. What one may do when getting married (5,2)
41. Symbol for the faculty of environment (5)
42. Moments of clarity (8)
44. "\_\_\_ the fields we go" (3)
45. "What've you been \_\_\_?" (2,2)
47. Chill-inducing (5)
48. Nincompoop (3)
49. Flower feature (5)
51. Notices (4)
52. Kind of center (5)
54. Team leader (7)
59. What a plant is doing in soil (7)
65. Clotheslines, literally (6)
66. Scholastic world (8)
67. Symbol for the faculty of engineering (6)
68. Multilayer thickness (5-3)

13. Benz-\_\_ (3)
14. Like roses (3)
18. Lacking natural light (7)
20. Scandinavian area rugs (4)
21. Draws towards (7)
22. Noisy lions (7)
23. 1911 Chemistry Nobel (5)
24. Enlists (5,2)
26. Pharmacists' concerns (7)
27. Symbol for the faculty of math (7)
28. Long-tailed pheasants from Southeast Asia (7)
29. Bee's cousin (4)
31. Caribbean, e.g. (3)
35. In love (7)
37. Earthy colour (5)
38. Ancient gathering place (4)

40. Get a move on, in Shakespeare (3)
43. Ark builder (4)
46. Pass away (6)
50. Tough, durable wood and a street intersecting Hickory (5)
53. Symbol for the faculty of arts (4)
54. Crow cry (3)
55. Lungful (3)
56. Before: Prefix
57. An order of magnitude (3)
58. Curve (3)
60. "\_\_\_ to Joy" (3)
61. Start of a giggle (5)
62. Little devil (3)
63. Naught (3)
64. In high spirits (3)
66. Email symbol (2)

### DOWN

1. Barely get, with "out" (3)
2. Grandmother (3)
3. Aardvark's morsel (3)
4. Movie effect (3)
5. Driveway material (3)
6. Angers (4)
7. Honkers (5)
8. Depart (2)
9. French, meaning bit of wit (3,3)
10. Before, in poetry (3)
11. Bananas (3)
12. Blackcurrant liqueur with white wine (3)

