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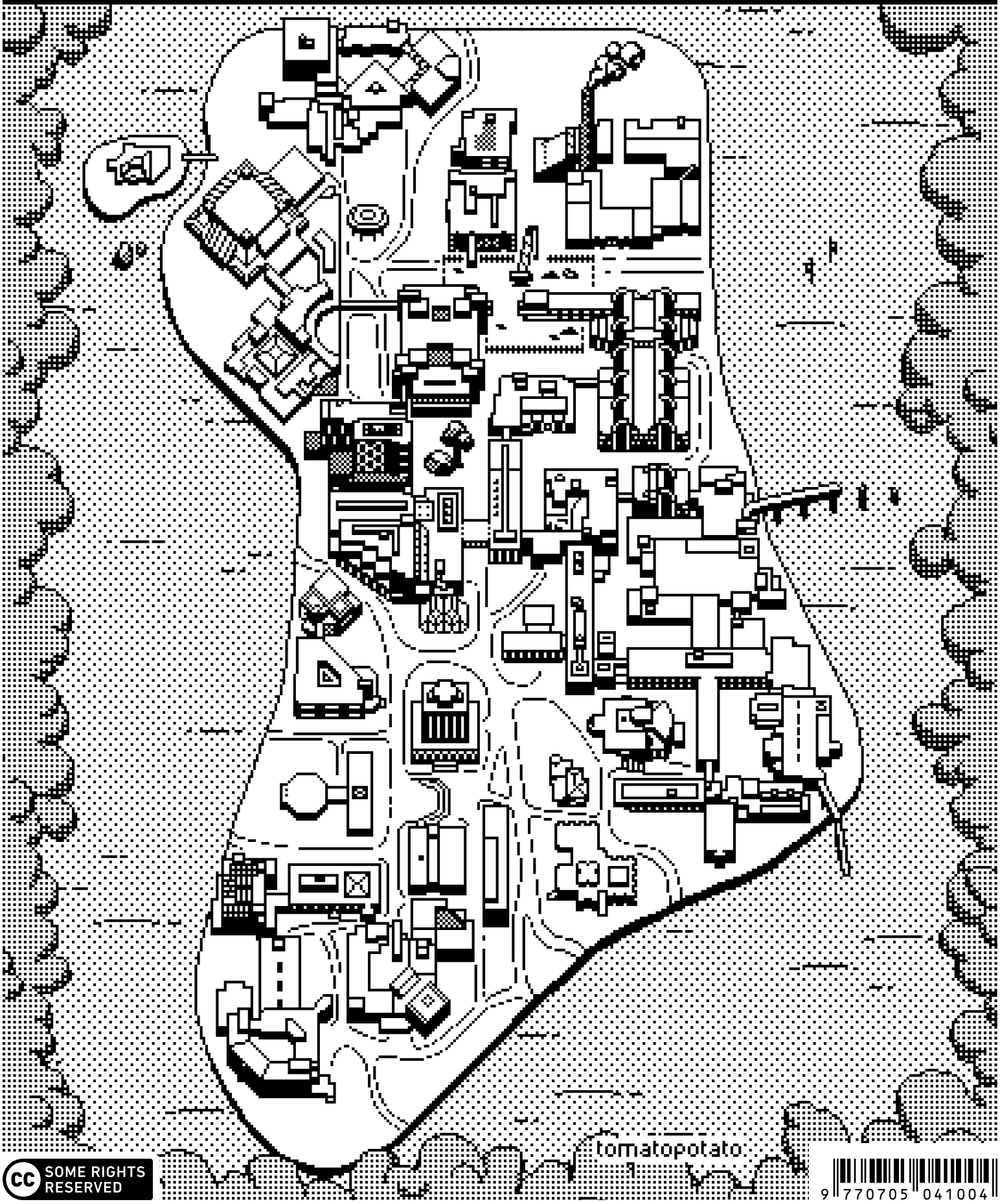

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"WHAT PRINTING ERROR SHOULD BEFALL mathNEWS NEXT?"

Happy *[INSERT READER NAME HERE]*-gets-to-read-a-new-issue-of-**mathNEWS** day! It's my favorite roughly-biweekly holiday, too. Winter is now in full force; there's no escaping the arctic winds, snow piled up in the bike lane, and generally bleak atmosphere. Some are even entering their "winter arcs," in which they improve their bodies, intellect, and general person in whatever way they can, owing to the oppressive nature of the environment which makes socialization and enjoying oneself significantly more difficult, thus leaving one no choice but to focus their time elsewhere. For me, this has a slightly different meaning, as I don't really want to work out or do any homework in winter, so I kind of go in the opposite direction. **mathNEWS** writers, however, are engineered to a Canadian standard of toughness, unperturbed by the hallowed wind tunnels of yore. Our last prod night was bustling as ever, with our poor pizza delivery volunteers having to literally weather the (snow)storm, embracing their pizzas lest the bite of the cold be indirectly experienced by the consumers. Again, I got to take the easy way out, being assigned to Farah Foods duty. Being cold is actually *better* for the sodas, so I don't even have to put effort into protecting them. Maybe I'm just a summer arc kind of person. A traitor to my country, even.

If this all seems foreign to you, by the way, consider coming to a production night sometime! We're always getting new writers and people never seem to regret it, I think (I mean, they would tell us, right? I hope? I guess they don't have to...) This term, we're occupying a physics building, and I'm not supposed to say this, but the laws of physics aren't actually enforced in there, it turns out. It's kind of like the Inner Party of 1984; when you are that high up (in physics knowledge), they don't really care whether you follow the rules or not (since you make them, of course). Things got a little weird when the writers started violating causality, though, so we might have to set some ground rules next time.

Speaking of rules, what RULES is issue 157.2 of **mathNEWS**, with plenty of artistic endeavours, existential-tier 2FA complaints (I hate Duo too!), and a lot of clowning on us about our recent printing mishap. Fortunately, this issue has no such ga— wait, I'm writing this before printing. Oh god oh god oh god

waterED
Editor, **mathNEWS**

Andoiii	Wingdings. It's all wingdings.
BSGCG	All instances of "**NEWS**" become "**SNEW**"
Whole Number Haver	accidentally print in colour (whoops!)
nike	cursed
Lars Nootbaar	All of the text is replaced with the exact design of a $50 bill. (The issue is printed on money plastic too)
Totally Ununimodular	1=1; DROP TABLE Articles;
antsFile	The printer starts printing extra "ff"s to compensate for last issue
yalevoylian	The printer should mistakenly switch to another language and then scan the articles and translate them poorly using AI
snowdozer	The cover page prints on white paper, the rest on bright pink
aphf	clay tablet shortage, have to print on the peasant medium of paper
0.423	all occurences of letter a being replaced by a very bad deez nuts joke
别	One that turns wingdings into normal text. Nobody would notice for months!
verdanik	God forbid they accidentally include any **math** and/or **NEWS** in the next issue
terminal	no articles
Dick Smithers	All the Is are replaced with ls and vice versa
Dollar Store Person	all mentions of **mathNEWS** are written as **NEWSmath**
Usman!	**mathNEWS** contains only imprint articles
classifiED	All **blackBOX**es are empty
derailED	It would be really nice if the printing error could be, like, 1.5 entire pages disappearing or something so that it would be obvious what was wrong and we could catch it quickly in the scanned proof and let our printing company know before printing $1000 worth of paper

ARTICLE OF THE ISSUE

Our writers keep submitting algebra metaphors, and they never get old. nazz's *Variety* wins this issue's AOTI.

derailED
Editor, **mathNEWS**

Can you hawk me another issue? I only have tuah them.

SARA NAYAR, mathNEWS EDITOR FOR WINTER 2025
ALONG WITH ISABELA SOUZA, RIVER STANLEY, DAVID TERESI, AND JUSTIN YOUNG

mathASKS 157.2

FEATURING PROFESSOR PATRICK LAM

USMAN!: IMPORTANT! HI.

Hi! Bonjour! Kia ora!

__INIT__: FAVOURITE NUMBER?

One of my profs in undergrad really liked 17, but I've never really thought about ranking numbers, myself.

I've got to be impressed by 2, for being the only even prime.

π is the most famous transcendental number, and so I put it in the running, but then, how many others do we talk about, ever, aside from e? So I think π has an unfair advantage.

MOLASSES: HOW DO YOU MAKE FRIENDS AS A REAL ADULT?

In some countries, people say that locals make all their friends when they're seven. I don't think that's true, but it is true that all of my friends are from either activities (climbing/hiking, judo) or work.

WHOLE NUMBER HAVER: I'M A CS STUDENT WHO REGRETS NOT GOING INTO ENGINEERING... HOW DID YOU GO FROM STUDYING MATH AND CS INTO ENGINEERING? WHILE I RECOGNIZE THAT CS AND SOFTENG ARE VERY SIMILAR, ARE THERE NOT COMPLICATIONS WITH PENG CERTIFICATION OR LIMITATIONS FROM UNDERGRAD?

There are two different things here: undergrad education and professional registration.

Somehow I got lucky with professional registration, and Professional Engineers Ontario accepted my argument that my education was equivalent to an undergrad engineering degree; I just lead a charmed life in that regard (and many others, which I'm grateful for).

I applied to PEO after I got a job with Waterloo's Electrical and Computer Engineering department and they were like "we need our faculty to be Professional Engineers." I wouldn't have done it otherwise. I know that for many Waterloo Software Engineering graduates, professional registration isn't relevant in practice.

As for the other thing, and possible regrets. I've come to believe, based on student input, that the biggest difference between CS and SE is the cohort system. SEs have a more tight-knit cohort than Waterloo CS students. Also fewer choices of electives. In my own undergrad at McGill, literally all my courses were either (pure) math or computer science (they assumed that Quebec's CEGEP system made sure we were well-rounded). We did not have a formal cohort system, but the honours math programme at McGill is small, so that was like a cohort system. My recollection is that we were fewer than 20 per year. I still keep in touch with some of my classmates from then.

But, having seen that you are a regular **mathNEWS** contributor, I think the cohort of **mathNEWS** writers serves as a sort of cohort for you, if you don't have other cohorts as well.

AMONGUS: WHAT ARE CS STUDENTS MISSING OUT ON ACADEMICALLY BY NOT BEING IN ENGINEERING? FOR THOSE OF US GOING INTO SOFTWARE ENGINEERING JOBS ANYWAY, WHAT WOULD YOU RECOMMEND WE DO TO TRY TO LEARN THESE THINGS?

It's a bit of a hot take, but software requirements is a really important topic—though I acknowledge that teaching it at a university is really hard, and even harder when students have done a bunch of co-op jobs where the requirements work has been done for them already. I think that people would appreciate it more five years later. Hillel Wayne on the Internet does a great job with teaching specification tools.

Besides that, our CS graduates have taken a wide range of courses. You have the background to learn what you need to on-the-job. The 200-level CS core, plus algorithms (CS 341), is a strong base to build on, and has much of the content that is harder to pick up on your own.

CS students have an optional Team Project, but the vast majority of students don't do it. We've tried to make the SE capstone design project something that students are proud of for having done, though it is still challenging to motivate students.

I appreciate those of you who are CS students taking ECE 459 Programming for Performance this term, though!

MOLASSES: WHAT LITTLE-KNOWN AREA IN THE WORLD WOULD YOU RECOMMEND PEOPLE VISIT?

Of the places I have visited, I quite liked Eastern Europe, for instance Albania. It is definitely not over-touristed. There's a lot of nature, and also a lot of history (glad to have not lived through much of it). There are people who manage to have more interactions with locals than I do, but when we were in Albania, we had an interesting ride in a van to Theth, in the mountains. Our driver picked up his adult daughters and grandchildren, went shopping for vegetables, ran out of gas, and had a tense interaction with the guy who topped him up with some gas.

I've been to a lot of Europe, but I have not been to a lot of Africa or Asia. I hear that there are many little-known areas there that are worth visiting, but I have been to only relatively well-known areas on those continents. Antarctica, and New Zealand's sub-Antarctic islands, sound impressive (people rave about the megaherbs on the sub-Antarctic islands), but are hard to get to.

Obligatory Canadian content: I've been to backcountry northern Quebec for two weeks, and also the Yukon and

Northwest Territories, but not off the beaten track in the territories. They are beautiful parts of Canada, not often visited. I've wanted to go to Nunavut for a couple of decades, but haven't made it happen yet.

CLASSIFIED: WHAT IS YOUR FAVOURITE PLACE YOU HAVE VISITED IN THE WORLD?

I'm going to not quite answer this question—see the above question for the answer to that—but I'll give you another twist. Your travel companions (or lack thereof) greatly shape your experiences on your trips. I looked through my past photos and I especially remember the good experiences I had in various places and who I had them with.

YALEVOYLIAN: WHAT IS STATIC ANALYSIS? I'VE HEARD IT HAS SOMETHING TO DO WITH ANALYZING A PROGRAM'S SOURCE CODE TO DETERMINE ITS CORRECTNESS, BUT IT SEEMS LIKE YOU'D BE ABLE TO GIVE A BETTER EXPLANATION.

Yes, static analysis is about developing algorithms that reason about program source code to extract properties of these programs. Correctness is an important property for sure, but not the only one. Historically, it was used to extract properties that could be used to make programs faster.

Your program is doing something inside a loop? Could that something be hoisted outside the loop instead?

The compiler isn't required to produce exactly the same program that the developer wrote. It can produce a better (faster) program, but it has to know what the program is doing if it's going to produce an improved program.

For the loop example, it has to know that the thing that it is hoisting outside the loop doesn't depend on anything happening inside the loop.

A key idea behind static analysis is having an abstraction for what the program is doing. The usual toy example of an abstraction is whether integer values are positive, zero, or negative. Using an abstraction, the compiler can reason about what the program can do on the abstract values, without having to run it. This is good, because it's infeasible to run the program on all possible inputs. Reasoning about the abstraction is way faster!

PLAZA RESEARCHER: THOUGHTS ON THE NEW VIETNAMESE PLACE IN THE PLAZA?

Banh Mi Givral in Kitchener is really good. Banh Mi House in Winnipeg is even better and probably the best bánh mì I've ever had.

Phở Anh Vu in the plaza is a totally different thing. I've been back another time since October, and now I've had both phở and bún thịt nướng, so all of the canonical favourites. Flavour is 10/10 (intense and not watered down), so much so that it passes for value-for-money, but it sure is pricey compared to what I expect to pay for Vietnamese food.

LEAH: WHAT ADVICE WOULD YOU GIVE TO YOUR UNDERGRAD SELF?

I'm not that introspective! Prompted by this question, I have thought about some of the things I did in high school. Many of them I would still do today. So maybe I've just gone in a straight line from high school to undergrad to grad school to now, and no advice is needed. I like to think that I've gotten better at social skills though.

PLOVER: THOUGHTS ON BIRDS?

I had almost zero thoughts on birds until I was in Aotearoa New Zealand in 2020 on sabbatical. I think more about birds now. Sometimes I see spur-winged plovers aka masked lapwings. Chirp! Probably the kea is my favourite bird. They are clever and mischievous. I would love to see a kākāpō, though there aren't any in places that one can normally visit. Please enjoy this picture of a kea; I could not find any good plover pictures.

CLASSIFIED: WHAT DO YOU LIKE THE MOST ABOUT HIKING?

I had already thought about this for my **profTHOUGHTS** even before getting this excellent question!

__INIT__: WHICH COURSE IS GETTING REWRITTEN IN RUST NEXT?

That's beyond my current pay grade, and depends on the owners of the courses. But if I was doing it, I would think about rewriting compilers, operating systems, networks, and distributed systems. Trains in Rust would be really interesting!

1PM ENJOYER: WHAT SEPARATES A GOOD PROF FROM A GREAT PROF? WHAT SEPARATES A GOOD ADMIN FROM A GREAT ADMIN?

This depends a lot on whose perspective you are considering. A big chunk of our jobs is actually about doing research, and certainly that's where a lot of a research university's fame comes from. But that's not what much of the **mathNEWS** readership cares about.

In terms of teaching, I'd say that there are three parts to it. First, great teachers care about their students, and aim to help their students learn and grow. When I can, I try to get to know students as people. Second, great teachers inspire their students to learn. I've said that lectures form a 36-hour ad for the material, which students have to mostly learn on their own time. Being entertaining helps here. Third, building on the first point, great teachers curate all the information that is out in the world, and choose appropriate things to teach. At a university, it should be something that can apply now but also throughout students' careers.

No teacher can make a student really learn something that they don't want to, but a great teacher can reach more students than a good teacher. Even if the students don't come to class, there is the curation part of it.

In terms of admin, the baseline is having certain practical skills, like setting agendas for meetings, running them, and making sure that everyone is heard, both inside and outside of meetings—the social skills I mentioned above. Convincing people to work together is required for being a good admin, and I'd say it gets you towards being a great admin. In the university context, one has to respect collegiality, too.

One can strive to make major changes as an admin: making major changes to existing programs, starting new programs, getting a new building. People confuse that with being a great admin (or executive, in the business world). I think a great admin does what is needed at the time. Maybe sometimes one's admin abilities are therefore not observable if they serve at the "wrong" time.

There's also the question of vision. I acknowledge that the vision of this university's founders in seeing a university with so much co-op has been a major strength of the university, and gets us stronger undergrads than the average university founded in 1961. At the same time, a lot of visions come and go like fads.

MUSIC LOVER: WHAT IS AN ALBUM (OR SONG) THAT MAKES YOU FEEL EMOTIONAL WHEN YOU HEAR IT?

Sorry! Somehow my brain is such that I am not a music lover and I don't seek out music to listen to, even if it is a fundamental part of the human condition. (Also I really hate watching video.)

DICK CHUDNEY: FREE SPACE, ANYTHING YOU WANNA SAY?

I'm not cool enough to answer this question.

HEALTH

When you're healthy, you're going to have a million problems. What you're going to eat for lunch, whether you're going to pass this exam, how to save up to maybe one day buy real estate, how to get a partner, whatever. All very valid problems to have.

But once your health is gone, all those things seem so silly. Can't concentrate in class because of your pain. Can't remember anything. Can't hold a cooking knife because your finger joints scream in agony with every twitch. Can't get up out of bed, walk down the stairs and get yourself a glass of water. Can't even relieve yourself without assistance.

As someone who isn't disabled, but has had a disabled dad since she was ten, and has spent far too much time in hospitals both as a visitor and a patient, take it from me. Health is so precious.

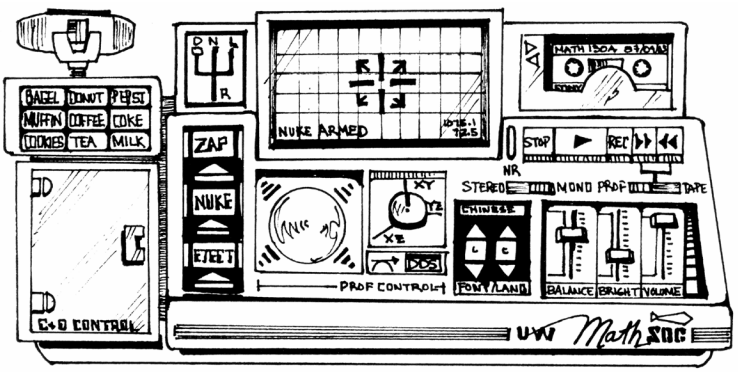
You see a lot at the ICU. Children screaming in pain in the waiting room and their parents trying their best to soothe them, knowing that they are powerless to make the torment vanish entirely. I can never forget the number of elderly people visiting their other loved ones after a stroke or heart attack, their worry palpable in the air.

A young man who was in a motorcycle crash, almost completely covered in white cotton bandages, his limbs in casts. His skin was shredded by the pavement. A middle aged woman, who was walking with her four year old son before they were struck by a car in a parking lot. She had metal rods put in her limbs. Her son didn't make it.

I know that if you're reading this you're probably a young 20-something. You are probably in decent health. You probably have two functional hands, feet, legs, arms, eyes, kidneys, etc. I am not in the habit of telling others what to do with their own bodies. But maybe try to take a minute today to really soak in the incredible wealth you have right now. The wealth of good health. It's not something even money can buy. Not really. Not when it's really bad.

Be good to yourself. Take care of yourself.

yummyPi



A PERSPECTIVE ON HUMANS IN THE WILDERNESS

profTHOUGHTS *157.2*

Once, at a wedding in Europe, I went on a walk in the Alps with friends from grad school. One of my friends asked what was the appeal of going on walks in the wilderness, as opposed to seeing historic sites. Here's what I wished I had said at the time.

What I'm writing here applies to hiking, but also to some extent to backcountry skiing, climbing alpine rock routes, mountaineering, and paddling.

There are a lot of benefits to hiking, like enjoying the scenery, especially in places with mountains. Fresh air is great. It's good exercise. And you can be alone with your thoughts. Almost everyone reports being able to find some peace out in nature. You can ruminate about what's going on in your life, or not, but certainly the only thing that you absolutely have to do in the moment is to keep on walking, reach your planned shelter location, and prepare your food. It's simpler and has fewer distractions than real life. (Though when it goes wrong it can really go wrong, so I have to advocate being well prepared, and also leaving no trace.)

Wilderness travel, though, is an essentially human activity, and I would say that it really does have just as much history to it as the famous historic sites of human civilizations.

In the rock climbing world, it very much matters who was the first ascentionist (FA) of a climbing route. Sometimes the routes are named after the FAs. The Kor-Beck route in Yosemite is one such example. Otherwise, it is the prerogative of the FAs to name the route.[1] Routes have history: who was the first to climb them? How many others have followed in their footsteps? Hundreds? Tens of thousands? Each climber has had their own unique experiences on the route, but the experiences are also inevitably shaped by the challenges inherent to the route. Kor-Beck is relatively well-known; I can be proud of having climbed it; and I feel a connection with those who climbed it before me, and have vast respect for those who climbed it before me with more primitive equipment.

This is also true of hiking trails. Many trails were historically used by indigenous peoples for trade, forming an integral part of the history of the land.

Today, some trails are short interpretive loops that are built using heavy machinery, and experienced by thousands of people a day.

Other trails remain notoriously challenging. The North West Circuit on Rakiura/Stewart Island in Aotearoa New Zealand is a ten-day trip which probably has some yearly number of trampers that is in the low hundreds. This circuit has reports of trampers being driven to tears by the mud ("lost it in the mud" said the hut book). There are also reports of seeing kiwi every day.

If you tell me that you've hiked the Continental Divide Trail in the US Rockies, I know that you have done a hard thing that requires a lot of perseverance, trail skills, and five months of free time. (I haven't done it, but at least one Waterloo SE grad has, and probably at most one.)

So, even if you are deep in the wilderness, there is, or there will be, a story behind the trail that you are on. Think about those who preceded you on the trail. They were human, too, and walked along the trail just like you are walking, even if they had different contexts, different challenges, and different gear. Japan's Nakasendō was regularly walked by the Imperial Court. And think about those who are coming after you on the trail,[2] and what life will be like for them.

Prof. Patrick Lam

1. Sometimes, routes are later renamed by the FA or the community to be more inclusive.
2. Sometimes I've joked about having the Last Ascent of a route, for instance before it falls down the mountain.

HEADACHE BINGO

went out on a freezing day	got less than 5 hours of sleep	had too much screen time
got dehydrated	FREE SPACE	forgot to eat for hours
was really stressed	got your period (or caught a cold, if no uterus)	drank way too much caffeine

leah

Technically, any of these squares alone could give you a headache. However, the game I like to play is figuring out which **combination** of them is hurting my head lol

ON THE 80TH ANNIVERSARY OF AUSCHWITZ'S LIBERATION

INDEPENDENT JEWISH VOICES REMINDS WATERLOO REGION THAT "NEVER AGAIN" MEANS "NEVER AGAIN FOR ANYONE."

January 27th is International Holocaust Remembrance Day, designated by the United Nations. This day commemorates the 1945 liberation of Auschwitz-Birkenau (the largest Nazi death camp) and enjoins us to remember the Holocaust's victims, who included six million Jews; five hundred thousand Roma and Sinti; and thousands of others targeted by the Nazis, including disabled people, leftists, and queer people.

We, the members of Independent Jewish Voices' Waterloo Region (IJV-WR) chapter, believe remembering the Holocaust requires us to prevent genocide from happening again: that is why we have spent the past fifteen months protesting the Israeli government's attacks on Gaza. Israeli bombings alone have killed more than 70,000 Palestinians,[1] including Sally and Dalia Ghazi Ibaid, who were supposed to enter a doctoral program at the University of Waterloo in December 2024, and Dr. Sofyan Taya, a former visiting professor at UW. The IDF has caused hundreds of thousands of additional deaths by destroying Gaza's healthcare system and blocking humanitarian aid; it has also displaced 90%[1] of Gaza's residents; reduced most of the region's buildings to rubble, orphaned 20,000[2] children, and obliterated almost all of Gaza's schools and universities. The IDF and Israeli settlers continue to carry out pogroms in the West Bank.

It is unspeakably painful to watch Canadian zionists exploit the Holocaust — which killed or displaced members of our own families — to justify the Israeli government's crimes against humanity. We are disappointed that the Waterloo Region Jewish Community Council (WRJCC) and Hillel Waterloo & Laurier are marking International Holocaust Remembrance Day by screening *Schindler's List* at Waterloo's Princess Cinema.

This 1993 film promotes the zionist myth that only Israel is a safe haven for Jews. In the film's final scene — the only scene in colour, following three hours of gloomy black-and-white footage — the song *Yerushalayim Shel Zahav* plays as the actors join some of the real-life "Schindler's Jews" and their descendants to visit Oskar Schindler's grave in Jerusalem. Written by Naomi Shemer in 1967, *Yerushalayim Shel Zahav*, lit. "Jerusalem of Gold," became an anthem of the Six-Day War, when Israel colonized the West Bank, Gaza Strip, Golan Heights, and East Jerusalem, displacing hundreds of thousands of Palestinians.

Recognizing the similarities between the mass murder of Palestinian civilians and Jewish persecution during the Holocaust is not antisemitic. The WRJCC and Hillel Waterloo & Laurier are missing an opportunity to build solidarity with our Palestinian, Muslim, and Arab neighbours. We hope the WR Holocaust Education Committee, as the beneficiary of this screening, uses the proceeds to create programs that do not co-opt the Holocaust for zionist propaganda. In the meantime, instead of watching *Schindler's List*, IJV-WR recommends seeking out films and books about the Holocaust by anti-zionist Jews.

These include:

- *The Zone of Interest* (2023), whose director Jonathan Glazer declared, "We…refute [our] Jewishness and the Holocaust being hijacked by an occupation that has led to conflict for so many innocent people" in his Oscar acceptance speech;
- *Jewish Heretics*,[3] a podcast produced by Toronto's United Jewish People's Order;
- *Forever Young: A Ghetto Story* (by Darrah Teitel),[4] a Canadian play that depicts the Warsaw Ghetto Uprising from the perspective of teenagers.

And books by anti-zionist Holocaust survivors:

- *The Ghetto Fights* (1945) by Marek Edelman. Whereas movies like Schindler's List portray Jews as helpless victims during the Holocaust — sometimes saved by nice Christians — this pamphlet, written by a leader of the Warsaw Ghetto Uprising, shows what Jewish resistance to facism looked like. It was not published in Israel until 2001 because of Edelman's lifelong anti-zionism;
- *A Few Words in the Mother Tongue: Poems Selected and New* (1990) by Irena Kepfisz;
- *Holocaust to Resistance: My Journey* (2019) by Suzanne Berliner Weiss.

When you are making decisions or reporting stories that affect Jews in the Waterloo Region, please remember that Jews are not a monolith. You should not believe any organization, including the Center for Israel and Jewish Affairs (CIJA), the WRJCC, and Hillel, that claims to speak for "the Jewish community." Although Hillel portrays itself as a resource for all Jewish post-secondary students, it is a zionist organization that forbids its chapters from collaborating with pro-Palestine speakers or groups. A WRJCC leader has described the council as "a proudly zionist group," and the WRJCC has not allowed IJV-WR to promote our chapter to its membership, even though we are Jewish — and, nationally, IJV has doubled in size since October 7, 2023.

Independent Jewish Voices WR

1. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(24)02678-3/fulltext
2. https://news.un.org/en/story/2024/10/1155356
3. https://www.youtube.com/playlist?list=PLb6CazUVA0wbo9IFrQjL8jvC7sZqS7Wpb

THE WORST JOB INTERVIEW I'VE EVER HAD

I PROMISE THIS WASN'T STOLEN FROM DIARY OF A WIMPY KID

The summer after 12th grade, I was looking for a job to earn some extra money before starting university. I had taken lifeguarding classes throughout high school and gotten my National Lifeguard certification during the winter, so applying to the open lifeguard position at my local pool seemed like a natural choice.

However, I had caught COVID the other week on my graduation day, and it hit me pretty hard. When I applied to the job, I thought that I was almost back in commission and would be good to go for next week, but unfortunately I had overestimated my speed of recovery. By the time I was called in for my job interview, I was technically healthy since I was testing negative and my flu-like symptoms were gone, but the weakness I'd felt since the virus first set in still hadn't gone away. This would have consequences.

I arrived at the pool and told the receptionist I was here for an interview, and a head lifeguard came out to meet me shortly after. She led me to a room at the back, where we reviewed my credentials and began the interview.

Things started off strong — I successfully bullshat my way through the standard interview questions about handling workplace conflict and how I would deal with situations at the pool all while leaving a good impression — and I was feeling pretty good about my chances of getting the job. The interviewing lifeguard then told me that it was time for the skill test portion, and gave me a few minutes to change and meet her at the lap pool.

Riding off the high from my performance thus far, I exited the change rooms and went over to meet her and another lifeguard that she had called over, a boy around my age who looked a little dead inside. Additionally, the other lifeguards on duty had taken notice of me, and one of them wished me luck with my interview. All this was enough to make me ignore my subpar physical condition, and the fact that I had not swam or done any lifeguarding practice since December.

Fortunately, I was reminded pretty quickly. My interviewer told me that I had to do the following to pass:

1. Swim 5 meters to the other lifeguard, and then carry him 20 meters to the other edge of the pool at the deep end
2. Pull him out of the water safely as if I was performing an unconscious victim rescue
3. Perform 10 rounds of CPR on a dummy
4. Go back to the pool and do the brick test (swim 20 meters, dive down to the bottom of the deep end to pick up a brick, surface in the spot I dove down from, and carry the brick the remaining 5 meters to the ledge)

Here is what I actually did:

1. Swam over to the other lifeguard, grabbed on to him, kicked, and… barely moved at all
2. Received a demonstration from another lifeguard who was watching over the lap pool as I apologized profusely
3. Followed the other lifeguard's example and pathetically flailed for 20 meters to the ledge this time
4. Climbed out of the pool, feeling short of breath and nauseous. Apologized again, explained my circumstances, and waited for a few minutes for it to pass as the other lifeguard, now more confused than dead inside, got ready for the next phase of my test. My interviewer took this opportunity to write a whole lot of notes down on her clipboard
5. Collected myself and went for the second stage of the rescue, where I accidentally messed up a step when pulling out the other lifeguard leading to my interviewer running over and yelling that I was going to hurt him, requiring me to try that phase again
6. Got nauseous and took a break again. Interviewer once again took notes, now with a visibly frustrated expression on her face
7. Did 10 rounds of CPR
8. Got nauseous again…

…and this time, it was only getting worse. I told my interviewer, who was by now completely fed up with me, that I was not ready to do the brick test and that I needed to go to the bathroom right now. She let me go and I started to waddle away from the pool, picking up speed, but then I couldn't hold it in any longer and I lunged over to a trash can nearby to barf. My violent retching surprised a nearby lifeguard, who blew her whistle and rushed over to me with some paper towels. As I cleaned myself up and assured everyone who came by that I was ok, my interviewer walked over, shocked, and said that she would give me a do-over another time.[1] I thanked her for her understanding, and left the pool in a daze, processing the utter disaster that had taken place over the past 20 minutes or so.

…and then came running back in 10 minutes later, after remembering that I had left my crocs at the pool while on my way back home. The lifeguard who had wished me luck earlier looked at me, holding back laughter, and I smiled back at him as I picked them up and walked away again, feeling very thankful that I would be living in another city for university.

Later on, I learned from a friend that I was retelling the story to that he was actually friends with the lifeguard that blew the whistle on me, and that he'd heard my story earlier from her perspective without realizing it was about me. Apparently, she had never seen anyone vomit as much as I did. He also informed me that I had become a legend among the lifeguards at that pool, with my disastrous interview being a popular topic of discussion and many of them wondering what I was

up to now. I had fucked up *so* badly that I was now part of the local pool's lore.

And something like that probably won't happen to you. Best of luck with your interviews!

the government's only spy

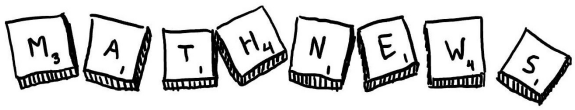
1. By the way, I did not pass the do-over either. It went far better than my first attempt since I was now in normal physical condition, but I still lacked practice. It was also graciously held at a time when there weren't many people at the pool, and on a day where none of the lifeguards who saw my first attempt were working.

N WORDS I LEARNED BY PLAYING SCRABBLE

SHOUTOUT TO THE UW SCRABBLE CLUB

- Aa — A type of lava associated with Hawaiian volcanoes
- Aby — To pay a penalty
- Adz — A tool similar to an axe
- Anestrum — A period of the estrous cycle during which the sexual cycle rests
- Aorist — A grammatical paradigm
- Bevatron — A type of particle accelerator
- Bumf — Useless documents
- Crwth — A Welsh stringed instrument
- Cwm — A valley created by glacial erosion
- Dariole — A pastry with almond cream
- *[Editor's note: Diatron. Remind me to write an article on this one at some point. The rabbit hole goes deep.]*
- Escolar — A species of mackerel
- Ewt — A newt (this is probably the goofiest word I've come across so far)
- Faqir — An Islamic ascetic
- Greisen — A type of granitic rock
- Indorse — Apparently this is a variant spelling of "endorse?"
- Jiveass — Characterized by dishonest foolishness
- Khanate — A realm ruled by a khan
- Lenite — A weakening of the articulation of a consonant over time
- Montem — A former custom of Eton schoolboys to go to a hill on the Bath road every third Whit Tuesday to demand 'salt-money' from passers-by for the university expenses of the senior scholar or school captain
- Nailset — A tool that sets nails (I once lost a game because I didn't know this word)
- Oe — A type of strong wind in the Faroe islands
- Overfat — Too fat
- Pernoctated — Spent the night
- Prenzie — A word single-handedly invented by Shakespeare (which is something he did surprisingly often) which supposedly means "princely"
- Qintar — An Albanian coin
- Rerise — To rise again
- Sabayon — A custard dessert made from eggs and wine
- Sordine — An instrument mute
- Treenail — A wooden peg
- Tertial — A flight feather attached to the upper arm of a bird
- Unau — A species of sloth
- Uraeus — A symbol of the sacred asp (a snake) in ancient Egypt
- Vav — The sixth Hebrew letter
- Waterzooi — A Flemish stew made with leeks, carrots, and chicken or fish
- Xanthoma — A cholesterol and lipid-filled skin nodule
- Yirr — To snarl like a dog
- Zyzzyva — A species of tropical weevil

yalevoylian



I ACTUALLY MISS WATERLOO

NO CAP OR WHATEVER THE KIDS SAY THESE DAYS

Is this a controversial opinion? I'm currently domiciled in Toronto and I hate it here. I want to go back.

Not to say I hate cities, but Toronto makes me feel lonely. While my friends gallivant ninety kilometers away, I get to enjoy the true life of corporate Canada in the big city — with no family, no sun, and water that tastes like it's been mixed with socks and minerals that I cannot even name. And online won't cut it. I know no one here and I don't think I'll have the time to do much social interaction.

I don't think I can even feel safe here. In Waterloo I might be fine on a walk home from the university at midnight, but if I tried to pull that here god forbid I get into some sort of *incident* involving a vagabond or be forced into social interaction… not that I would have a reason to go out at midnight anyways, but still it is scawy and I'm a wimp.

The TTC is a mixed bag. On the one hand the subway is really nice for getting around. On the other hand, what do you mean Line 3 is permanently closed?? They can do that??

But most of all, the thing that scares me the most is the name. Trono. How do you even pronounce Torontonian? Trontotian? This cursed mélange of contraction perplexes.

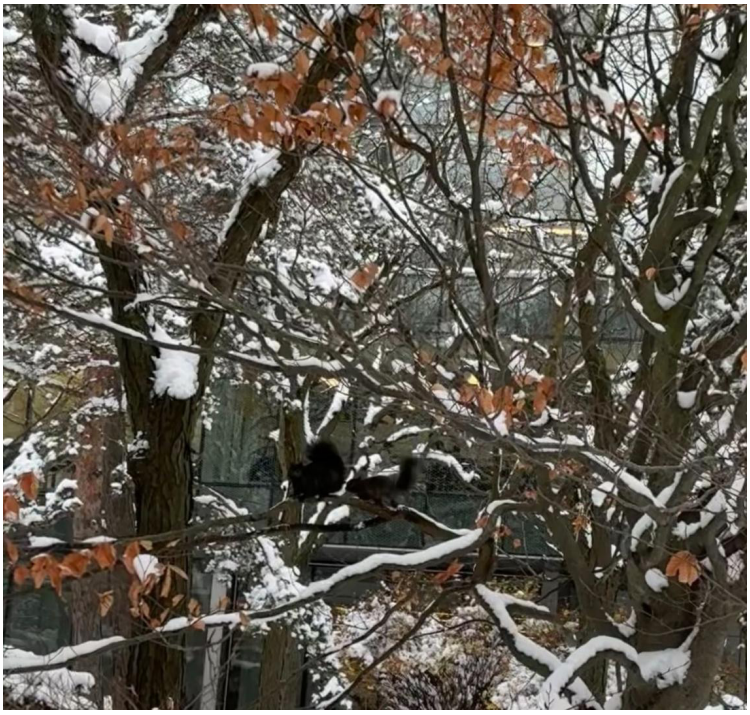
I miss classes and the university; someone take me back. please.

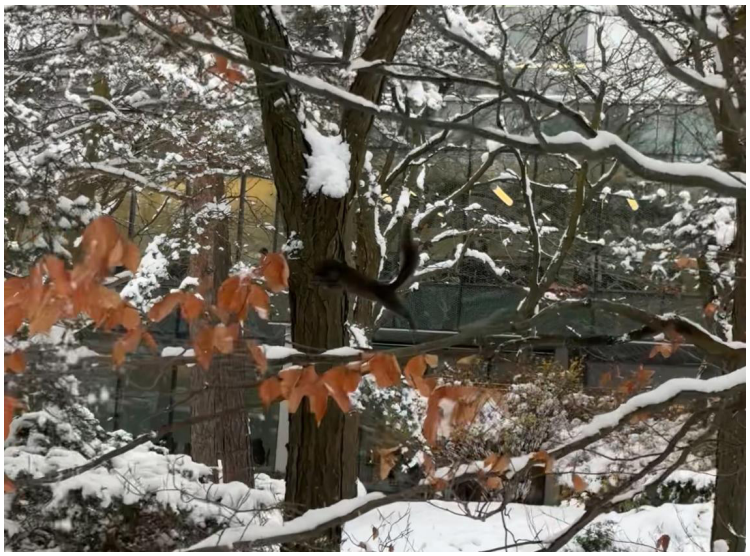
andoiii

WATERLOO WINTER WANDERINGS

A few snapshots showcasing some of the sights I've stumbled upon while exploring Waterloo this winter. May this hopefully inspire you to bundle up and go touch some ~~grass~~ snow this upcoming term! :)

43.47144, -80.54343





43.47629, -80.54782

43.48144, -80.54560

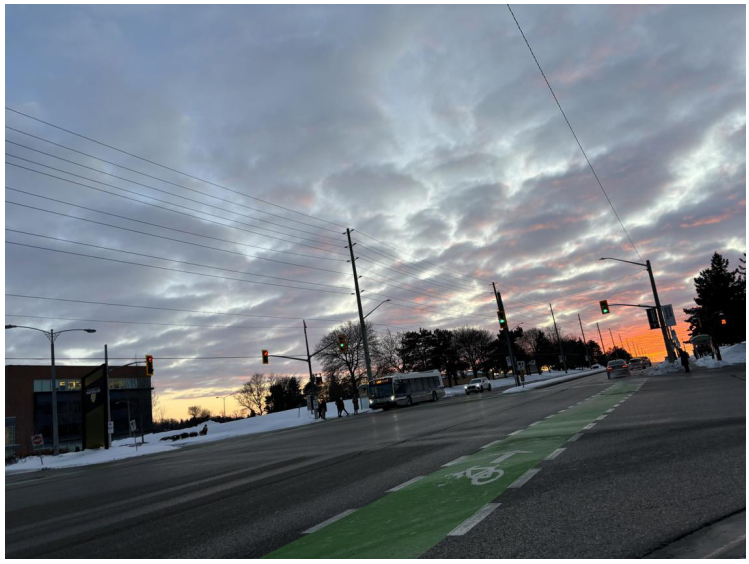
I don't understand what eigenvalues are.

PROF. MARTIN PEI

43.47763, -80.54896

43.47689, -80.54174

43.47494, -80.54602



annaaardvark

TAKING THE FIRST BALLS COURSE

As we're all aware, balls are an important part of math. And they also make for a funny joke. So of course, almost every **mathNEWS** issue includes a ball joke or two. One could say it's overused, and they may be right. But you can't talk about overused jokes and not summon me. I have been wanting to write a balls article ever since 1A, but was never qualified enough. Just knowing the definition of balls is not enough to make a good ball joke. You also need to learn how to play with them.

Things have changed now. I am now enrolled in MATH 247 and after 3 weeks into the term, I feel like I have seen enough balls to talk about them. However, that's not the only thing that has changed. My perspective on balls has changed quite a bit as well. I can think about balls in all seriousness. The other day, I said the sentence "Once we prove that the balls are big enough, the sequence of balls will definitely reach the desired point" with a straight face, without a single dirty thought. The realization about the sentence hit later, along with a lot of appreciation for MATH 247 as a course. You might think you know how to work in a definitional architecture, having taken advanced first-year courses, but you will be surprised as to how many challenges you get to face. It is a very content-heavy course, full of fun challenges, and being taught by a great professor right now (shout-out to Nico Spronk).

This realization came with a desire to throw away all the ball joke ideas I had and just write an appreciation post for MATH 247, which this is. Any and all ball jokes appearing above are totally unintentional and your fault. Best,

0.423

DISS-TRACK SERIES PART I: ETHER

In my previous article, *The Art of the Diss-Track* (**mathNEWS** 157.1), I rushed through some of my favourite hip-hop feuds — I didn't have enough time to give them the context and appreciation that they truly deserve. So, I've decided to write a couple of articles going through these battles in more depth. I recommend queuing up the songs I run through — listen to them and deconstruct their lyrics. There is far more to the diss-track than words on a page: metaphor, wordplay, music production, history and storytelling all work together to show off an M.C.'s artistic prowess over their foes.

One of the most iconic hip-hop feuds was between Jay-Z and Nas. The two rappers' gargantuan success — even today — in the hip-hop and business worlds is due to their imaginative lyricism, distinctive vocals, and charismatic personas. Their late-90s/early-00s beef was thus, naturally, a battle between some of the biggest names hip-hop has seen.

ACT I: DEAD PRESIDENTS (1996)

In 1996, Jay-Z (aka Hov, Jay Hova) and Nas (aka Nasty Nas) were relatively new to the game, but very successful nonetheless. Nas had been around a little longer, and secured his respect in the scene with a powerful debut album, *Illmatic*. Jay-Z was still proving himself, in comparison. The two New York City rappers had planned a collaborative track on Hov's upcoming debut, *Reasonable Doubt*, but Nas was a no-show. Jay-Z's group remedied this by sampling a popular line from Nas' *The World is Yours*, off of *Illmatic:*

> *I'm out for presidents to represent me (Say what?)*
> *I'm out for dead presidents to represent me*
>
> Nas, The World is Yours & Jay-Z's Dead Presidents II

Nas has given up on being represented by the government, he'd much rather be represented by his newfound wealth. Jay-Z's version was a commercial success, and Nas's iconic line in the chorus arguably made it happen. Thus, the two M.C.s began subtly dissing each other on a series of songs, lasting the next couple of years. Meanwhile, New York City hip-hop legend The Notorious B.I.G passed away — and Hov angered Nas with a bold claim to B.I.G's title.

> *I'm the focal point like Biggie in his prime*
> *On the low though — Shhh! The city is mine*
>
> Jay-Z, The City is Mine

Rappers take pride in their cities. Representing one's hometown is an acknowledgement of the place that raised you. There's brotherhood in an artist being chosen to represent their neighbours. But, as the RZA put it, New York City hip-hop was a *war*, and M.C.s sparred for their spots on the throne. Hov continued to claim his crown, but many rappers — including Nas — did not feel that he had earned it.

ACT II: ETHER (2001)

After a couple more sneak-disses between Hov and Nas,[1] Jay-Z again doubled down on his claim to the throne on *The Blueprint*, an album hailed as one of the most iconic in hip-hop.[2] The song *Takeover* was his biggest, most direct blow at Nas.

> *When I was pushing weight back in '88*
> *You was a ballerina, I got the pictures, I seen ya*[3]
>
> *You ain't live it, you witnessed it from your folks' pad*
> *You scribbled it in your notepad and created your life*
> *I showed you your first TEC on tour with Large Professor*
> *Then I heard your album 'bout your TEC on the dresser*
> *So yeah, I sampled your voice, you was using it wrong (I'm out for dead fuckin' presidents to represent me)*
> *You made it a hot line, I made it a hot song*
>
> *And you ain't get a coin, you was gettin' fucked then*
> *I know who I paid, Serchlite Publishing*
>
> *You said you've been in this ten, I've been in it five, smarten up, Nas*
> *Four albums in ten years? I could divide*
> *That's one every, let's say two, two of them shits was doo*
>
> Jay-Z, Takeover

Jay-Z goes for Nas's character and strength as an M.C. He claims that Nas did not experience the struggle Hov did growing up by recalling a past experience. An angry crowd had swarmed the two — Hov pulled out his firearm, a TEC-9, in case they were attacked. He also claims that his use of the *Dead Presidents* line made for a better song, and gloats that Nas wasn't compensated for it.[4] Jay-Z also claims that, despite being newer to the scene, he's superior.

Hov had almost won the battle, but Nas quickly clapped back with the most iconic diss in hip-hop: *Ether*.[5]

> *How could Nas be garbage? Semi-autos at your cartilage*
> *Burner at the side of your dome, come out of my throne*
>
> *Name a rapper that I ain't influenced*
> *Gave y'all chapters, but now I keep my eyes on the Judas*
> *With Hawaiian Sophie fame,*[6] *kept my name in his music, check it*
>
> *In '88, you was gettin' chased through your building*
> *Callin' my crib and I ain't even give you my numbers*
>
> *Ask me if I'm tryna kick knowledge?*
> *Nah, I'm tryna kick the shit you need to learn, though*
> *That ether, that shit that make your soul burn slow*
>
> Nas, Ether

On *Ether,* Nas mimics Jay-Z's lines and flows on *The Blueprint*. He takes advantage of metaphors and double-entendres, likening his raps to firearms at Hov's ear or using Judas to represent both his enemies and the act of watching them. He recalls Hov's continuous mention of Nas in his discography. Nas also responds to some claims in *Takeover*, and sprinkles humour throughout the song.

Nas released *Ether* on Jay-Z's birthday, expecting him to be out partying. As a result, Hov's first listen to the track wasn't behind closed doors, but in a club, surrounded by friends and foes. It was clear that Nas had taken the throne.

ACT III: THE AFTERMATH (2002)

Jay-Z attempted to recover with *Blueprint 2*, but the winner had already been chosen.[7] Eventually, the two settled their differences on-stage with a joint tour. Nas even signed to Def Jam, which Hov was running at the time. The two are now friends, business partners, and frequent collaborators in music.[8]

Usman!

1. Fat Joe & Nas, "John Blaze" / Jay-Z, "Hard Knock Life" / Mobb Deep & Nas, "Eye for an Eye Freestyle" / and many others.
2. It's also the album that earned Kanye West his respect as a producer in the scene — before he began rapping himself. Kanye was a longtime producer for Jay-Z and credits his musical success to him. We can see the influence Hov had on Kanye's music in some of Kanye's flows, musical embellishments, and lyrics.
3. This line was directed towards Mobb Deep's Prodigy, whom Jay-Z dedicated a verse to dissing. The line is important for this beef because Nas responds to it on *Ether*, refuting Hov's claim of "pushing weight" back in '88.
4. This line was later confirmed to be a bluff from Hov to get under Nas' skin. In reality, Nas owned the rights to his music and, thus, actually owned Jay-Z's *Dead Presidents II*.
5. *Ether* continues to be widely regarded as the best diss-track in the genre. Although Hov eventually recovered from the blow, many thought it was the end of his career. The track's influence continues to be seen in modern hip-hop, where rappers often mention the name or mimic Nas' lyrics and flows. Fans also refer to an artist's best diss as "their Ether" as a result.
6. Jay-Z's first appearance in the spotlight was seen on "Hawaiian Sophie," a music video by The Jaz. Nas regularly mocks Hov for his appearance in the video. It's important to note that such jokes are normal in hip-hop, and are friendlier jabs than serious arguments.
7. The two artists exchanged a couple more verses and sneak-disses, but they knew the beef was over. A notable event was Jay-Z's revelation that he had been sleeping with Nas' now-ex-fiancée on "Supa Ugly." It was unanimously agreed that Hov had gone too far, and his mother publicly called on him to apologize. Hov acknowledged his wrongdoing and did as his mother told him to.
8. While not rapping as often as they used to, Nas and Jay-Z have invested heavy into business. Jay-Z runs Roc Nation, which is very involved in the music industry. Fun fact: Jay-Z personally chooses the Super Bowl's halftime artist due to one of Roc Nation's many partnerships. He's also seen as the first billionaire in hip-hop due to his music and business. Nas has also invested into many ventures, including tech companies like Lyft, Dropbox, and Ring.

* The best detailed timeline I've found is here. Take it with a grain of salt because it's a little biased and contains some inconsistencies: https://www.reddit.com/r/nas/comments/igzj5x/a_sparse_timeline_of_nas_and_jays_beef_and_what/

VARIETY

An object of study in algebraic geometry is the so-called *algebraic set*: given a collection of polynomials, the associated algebraic set is the set of points which evaluate to zero on all of them.

As the collection grows, its algebraic set shrinks — the more constraints to be satisfied, the fewer who are capable. The mind of the Geometer, completely unknown to the points, radically changes their universe simply by thinking. It begins to conceptualize a collection of polynomials, and the excluded points wilt. In a moment, their self image is shattered. "It is all I need to be a member of this algebraic set. Is that too much to ask for? Just to satisfy some polynomial equations? What am I supposed to see when I look inward?"

Inside the set, things are not as different as the excluded points think. Although relieved, the members can do nothing but think about what polynomial will be added next, desperately hoping that they won't be cut out. "I have always seen myself as a member. I have always been a member. I *am* a member. But really, I have not proved it yet. All the non-roots who were just removed never really had a chance — this is the true test. If I can't make it through this, I was never worth anything to begin with. I was fooling myself."

The Geometer does not stop. The demands become harsher, but the noise from each group does not change. As the set shrinks, the members become increasingly twisted. Grotesque and misshapen, they drown in the fear of the next constraint, and and the next, and the next. All the while, no achievement has been made by any of them; the real test, the final one that will validate them, still lies ahead. And, though infinitely suffering, they cannot help but dream. "How amazing would it feel to finally get proof that I am who I thought I am? To never have to worry again? To finally become self-assured, and know that no matter what future tests I might fail, I passed *this one*. I was a member of the important group; from here, if anyone doesn't want me, it's their problem, not mine."

Of course, you and I know these points are stupid. To let an invisible hand of which they know nothing determine their entire world view and self image is ridiculous! They need not even think of themselves though algebraic geometry; they're also sets, linear transformations, discontinuities — nearly anything.

Or maybe they just are.

nazz

REACHING FOR TAU CETI

WHY A Y2K ZOMBIE APOCALYPSE MOTORCYCLE TIME TRAVEL DATING SIM IS THE LOGICAL NEXT STEP FOR MY BELOVED SCI-FI SPACE GAME WARFRAME

Ten years ago, London, Ontario developer Digital Extremes released a new character for their studio-defining sci-fi title, *Warframe*: Equinox, a quiet, composed ninja robot[1] defined by balance. Choral music followed her footsteps, as players paired her with kunai, shurikens, and finely-crafted bows to defeat hordes of gruesome far-future opponents.

Return to the game now, and you'll be greeted by Digital Extremes' newest update: *Warframe: 1999*. In it, you're suddenly playing a half-human half-warframe hybrid, screaming down European streets on a diesel-chugging motorcycle with an AK-47 strapped to your back, navigating a world transformed by Y2K-turned-tech-zombie-apocalypse. The choir has been shot, their music replaced by Nine Inch Nails; the aliens have vanished, replaced by zombified CRT television sets; balance is moot, and violence is now.

Outside observers might say the game has lost its way.

They're incredibly right. It's a good thing.

Beware spoilers.

THE LITH ERA: SILENT HARMONIES

Before 1999, *Warframe* was strictly set in the distant future. Taking place throughout our solar system, the player controls an assortment of superpowered ninja-like robots — known as warframes — battling against twin capitalist and communist galactic empires, at speeds of hundreds of slain enemies a minute. Quests were simple: go here, kill things, defeat captains. Themes? Stories? What are you talking about? Go impale bad guys.

Back before the past ten years of content updates, high-level *Warframe* gameplay was defined by Void Farming. Your team would repeatedly run the hardest mission available: an endless survival against the backdrop of an ancient empire's ivory-and-gold palaces. Wisps of white energy trailed up from the gilded floors, ninja-like players shot silent arrows into alien foes, and choral music haunted the halls.

Y2K, at the time, did not.

THE MESO ERA: VOICES AND CHARACTER

You can only run endless missions in white-walled palaces for so long. *Warframe* had to grow. Digital Extremes had started hosting yearly *Warframe* conventions in London, Ontario — each year, gaming influencers from the world over descended on London for one weekend.[2] Each year, Digital Extremes needed massive, flashy new content to showcase to justify the trip. After all, it's London.

Justifications came. The robots gained personality: the lineup of glossy space ninjas was augmented by a monkey king, a fairy queen, a sea captain, and a synthwave DJ. Why kill enemies with a sword? Now, you can use Darude – "Sandstorm" to bleed their ears to death.[3]

Flashier content came. *Warframe* added open worlds, from Earthen plains to Venusian iceflats,[4] to the zombified husk of a Martian moon. New music followed. With the release of the Venusian iceflats, Digital Extremes ventured into English-language songs, releasing *We All Lift Together*, a chain-gang anthem of indentured cybernetic slaves dreaming of freedom. I still sing it when walking home in the snow.

Gone were the days of silent androids and ivory halls. Character had come to rule.

THE NEO ERA: FIRST GLIMPSES OF TAU

Digital Extremes was not yet satisfied. Rather than continue to add reasonable expansions, more open worlds, more galactic conflict, they began to swing for the fences.

In 2021, Digital Extremes released their long-awaited expansion *The New War*, closing off the past ten years of story-telling and leaving a clean slate. Where did the high-octane, sci-fi robot looter-shooter go next?

They released a souls-like gamemode[5] featuring a pegasus-riding samurai.

Instead of the mach-speed flamethrower-wielding robots players were familiar with, players now had to maneuver the

careful sword strikes of a vulnerable, lone human. Familiar gameplay? Who needs it? Through the new dreamscape setting, Digital Extremes told a new story. Was it of galactic struggle? Of space warriors shooting their path to victory?

It was a story of breaking the cycle of depression.

They kept going. Eight months later, Digital Extremes released a new quest, pitting the space ninja robots against an eldritch god. In its last moments, the players take control of a titanic statue, steeling themselves for a *Pacific Rim* humans-vs-Kaiju battle. How does the statue fare against the raging eldritch god?

It takes the god's face into its hands, and reads it a love letter.

Digital Extremes would not relent. As players prepared for *Warframe: 1999*, they released one last questline, where the player character tracks down and cares for someone suffering from a mystery ailment. Near its end, you play a *osu!*-like rhythm minigame to assist the character in their pain. Only when the character dies, and a newborn is taken from their deathbed, do you realize the minigame's nature.

Contractions. They made a dying mother's contractions *into a rhythm game*.

THE AXI ERA: NINE INCH NAILS MEETS THE POWER OF LOVE

In December 2024, Digital Extremes released *Warframe: 1999*. Contents include a new set of playable maps set in the cityscapes of Earth, 1999. The Warframes have cast aside their bows and moth wings, now sporting AK-47s atop diesel-fueled motorcycles. Begone galactic soldiers; techrot zombies with CRT televisions for heads rush the player en masse. Away with the choir; missions are set to the electric edge of metal ambience and Nine Inch Nails. In the expansion's first hours, players time travel, attempt to save the world, and fail horribly. From that point on, players' key quest is to have daily conversations with each of the six new NPCs to befriend and even enamour them, in *Warframe*'s, a looter shooter's, most widely-beloved piece of new content yet:

A dating sim.

Showcasing the *Warframe* of today to twelve-year-old me, logging into the game for the first few times, would be akin to giving a ghost pepper to a Victorian child. It is so *dramatically* different. Yet, it is also the same. Despite the difference in visuals, the core gameplay, plot, and theme remains.

What is a space ninja? Perhaps it is not only a stealthy warrior in the depths of space. Perhaps a ninja is simply someone willing to take unconventional approaches. To reach for nearby galaxies when this one would do fine. In this way, *Warframe* is Digital Extremes' self-insert. Consistently, they take the most unconventional options, and consistently, they blow us away.

Seriously. Dying contractions. Rhythm game. *Who does that?*

molasses

1. *Technically* they're almost entirely organic material transformed by the Helminth strain of the infestation, and thereby not at all robots, but that's way too much lore for this article.
2. Somewhere on YouTube, there's a video of Digital Extremes' community team being interviewed while driving. In the beginning, you can see the grocery store Remark in the car's back window. I still find that cool.
3. The synthwave DJ's abilities all center around your ability to play custom music to the enemies, doing damage thereby. More beats means more damage. Playing Darude – "Sandstorm" on repeat is, in my opinion, the single strongest path through the midgame.
4. When I say "far future," I mean *really* far future. Far future enough that after an empire was able to rise up, figure out planetary terraforming, and subsequently collapse for unrelated reasons, the empire's remnants later fucked up the big thermostat and managed to freeze Venus.
5. Souls-like in style, if not in difficulty.

LEFFT F WITH NONE ARTICLE

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__INIT__ REVIEWS HORROR MEDIA

Happy Halloween! I'm not usually much of a horror person, but given the special occasion (Halloween, of course), I thought I would review some of my favourites in the genre.

I SAW THE TV GLOW (2024)

This is partially what prompted this article, since I finally got around to watching this the other day. *I Saw The TV Glow* certainly fits within the horror genre, yet isn't particularly scary in the traditional sense: there are some grotesque body-horror-type moments, but the real unsettling feeling comes from reflecting, while the credits roll, about the horrifying feeling of your entire life being somehow wrong, of choosing again and again to ignore it and to dig yourself deeper into a life that you'll never be able to comfortably live.

Part of what this movie is doing is trying to portray the main characters' inner existential horror that nobody else can see, which is a difficult task—I know this because I tried to do something similar in an article of my own, which I ended up scrapping because it sucked. *I Saw The TV Glow* does this much better than I did, but I'll admit I didn't connect with it as much as others seem to have (I guess I just don't have The Experience™). I highly recommend reading RapidEyeMovement's review in **mathNEWS** 155.4 for a take from someone who could relate to this movie more than I did.

Also, banger soundtrack.

[REDACTED] (2023)

I realized there was no way to talk about this series as horror media without completely spoiling it, so I decided to just censor the title. If you've seen it you'll know what I'm talking about, and if you haven't but you still want to watch it, let me know and I'll randomly bring it up in conversation an unspecified amount of time in the future so that you don't connect it to this article.

This unnamed miniseries starts off relatively normal, and continues to be normal for several episodes until about 30 minutes into the finale, at which point the main character wakes up and discovers he is inexplicably experiencing gravity in reverse. He can't explain to anyone what is going on, and after several misguided attempts to receive help, he falls up into the sky, freezing to death in outer space.

Putting aside the symbolic, absurdist meaning of this within the show itself, this feels uniquely terrifying to me. It almost unlocked a new fear in me. Imagine something simple but completely unexplainable just happening to you one day, and everyone just being confused, because, realistically, what else would happen? Horrifying.

ANNIHILATION (2018)

This one stands out to me because it's probably the most unsettling movie I've ever watched. I saw it a long time ago, so I'll try to recall from memory: there's this large bubble of area where, if you go inside, your genetic material gets mixed back and forth between any other organisms that are nearby, creating these awful terrifying hybrid human/creature/plant things. The high-budget CGI made it look much too real.

PREACHER'S DAUGHTER (2022)

I'm graduating soon, and that means my brain is constantly nagging me about all the things I told myself I would write about before I leave. One of those things is *Preacher's Daughter*, an album I have no idea how to talk about or even recommend to people without a bunch of asterisks.

Preacher's Daughter is a concept album by Ethel Cain, the solo project of American singer-songwriter Hayden Anhedönia. Set in the deep south, it tells the story of Ethel Cain, the fictional daughter of a preacher, who goes missing one day, last seen on a thoroughfare in Texas.

This is not a feel-good album. Almost none of it is enjoyable to listen to. Yet the compelling storytelling and music have an ability to draw you in and make you feel Ethel's story in a way that's almost addictive.

There's an impressively diverse array of hard-hitting moments, sonically and thematically distinct, from the pop anthem of "American Teenager," the song about Ethel's disillusionment with her country that somehow ended up on Barack Obama's best-songs-of-the-year list; to "A House in Nebraska," an almost-ambient but still piercingly emotional ode to a lover she never got over; to "Hard Times," an attempt to process her childhood abuse at the hands of her father; "Thoroughfare," the album's singular optimistic moment that gets drawn out for nine minutes, in which, after running away from home, Ethel finds joy in the company of a strange man; "Ptolemaea" with its haunting scream; the wordless, but nevertheless heart-breaking "Televangelism;" and many more that I only skipped because I don't have the space to mention them.

But none of those tracks on their own can match the devastating effect of "Sun-Bleached Flies" and "Strangers," the back-to-back tracks that conclude the record, in which Ethel, looking down on her lifeless body from Heaven as it is cannibalized by her murderer (I realize I'm not making this album sound appealing but bear with me), tries to make sense of what brought her to this point, wondering why she could never find the love she felt she deserved, that she'd felt at that house in Nebraska so long ago; trying to perceive her murderer as someone loving her in his own way, because seeing it any other way would be too painful; and in her final moments, reaching out to her mother, telling her, "I never blamed you for loving me the way that you did."

I don't know why this album connects with me so heavily, especially compared to the other horror media I reviewed with characters I should, in theory, be able to relate to more. I think Anhedönia is just one of those people with an incredible affinity for storytelling, who can effortlessly draw people into a world that would otherwise be alien to them. And she isn't showing any signs of stopping: her future plans include more albums, novels, and a film expanding on the Ethel Cain universe, telling the stories of the other women in her family with an overarching theme of generational trauma.

In the meantime, every time I'm reminded of this album, I put it on and it occupies my entire head for the next two weeks, causing me to be miserable to everyone I encounter. I realize this doesn't sound enjoyable, but you should listen anyway. Please. It's so good.

__init__

[Andrew Garfield voice] Halloween in January?! What a splendid ideaAAAAAAA

N REASONS YOU SHOULD VOTE FOR TEAM HORIƵON

- As a survivor of the suburbs of York Region, Damian Mikhail (for President) has, at one point or another, lived in almost every town in the region.
- If elected, Remington Zhi (for Vice-President) will finally take a break from being PMAMCO Club exec, MathSoc councillor, and volunteering under 3–4 MathSoc execs each term.
- Samir Sharma (for Director) totally hasn't been involved in a prank war with EngSoc this term…
- Mélanie Bouzanne (for Director) volunteers at a wildlife rescue centre. You should check out the picture of her holding a butterfly on our website!
- The President of Technion wrote Vivek Goel a letter because of Rida Sayed (for Director and Engineering Senator).
- Andrew Chang (for Director) is hardstuck bronze in League of Legends and hardstuck silver in Valorant.
- Despite being very tall, Jacob Ellis (for Director) only pretends to know how to play basketball.
- Omar Gaballa (for Director) fixes bikes for free on his spare weekends down in Victoria Park with Red Raccoon Bike Rescue and has been involved in the KW active transit scene since 10th grade.
- Alex Pawełko (for Math Senator) is the former world record holder in *Command & Conquer: Renegade*.

For our platform, and more information about our candidates that are slightly more relevant to WUSA, check out https://horizonwaterloo.ca/!

RapidEyeMovement

WHERE SHOULD THE UNIVERSITY BUILD A TUNNEL OR BRIDGE TO CONNECT OVER THE FROSTY LINE?

IN EFFORT TO REMAIN WARM THIS WINTER

What is the Frosty Line? You likely already know it without knowing it. Whenever you're trying to stay inside on campus using the tunnel system, but are stopped and have to go outside to reach the eng buildings from the arts and environment buildings, you are crossing the Frosty Line. The line where it is impossible to legally enter North Campus from South Campus without going outside.

So this begs the question, what is the best spot to build a tunnel connecting the north and south buildings? Other **mathNEWS** writers weigh in.

LARS NOOTBAAR: Big bridge from EV3 to United, big bridge from United to Needles Hall

MOLASSES: Straight down into the Earth's core

NORMALPARAMETERS: Needles Hall to ML

TOTALLY UNUNIMODULAR: AL to DWE

SOL: One from ML to NH, and a better one from NH to STC that isn't on the third floor

PEACELOVEMATH: From Westcourt to EV2

With three plausible answers gained, I will continue this debate on my own. The shortest and most cost-efficient route would probably be something like SCH to DWE. In fact, it's disappointing that it is 2025 and we still don't have this. The only problem would be that it disturbs a bunch of asbestos.

But then, if you wanted to get to NH from ML, this would require you to go from ML to AL to SCH to DWE to CPH to E2 to E3 to DC to C2 down two floors to MC up two floors to QNC to B2 to STC to finally reach your destination. So, although it would be extensively long, perhaps there *should* also be a bridge or tunnel from ML to NH, like many suggested. And if that were to happen, then you might as well connect DP to NH or ML so that it's not alone, because that would be sad and lonely for DP, and DP deserves better.

I hope that this is taken SERIOUSLY by the University so that I don't have to freeze my toes off on my way to class. please hear me. i beg.

nike

MY FIRST UNDERTALE PLAYTHROUGH: PART 2

SPOILERS

Game Over Count: 5

Three more hours of UNDERTALE. This time I streamed it.

To start, I meet Sans. This is of course a character I am aware of. Papyrus, not so much. Neither are much of my favourite characters to start, but progressively grow on me as I go through the numerous "puzzles" (if they can be called that). Also, learned about blue stop signs. I fight a few dogs, including a married dog couple. The male one tells me not to touch his hot dog. I'm pretty disgusted but continue to pet them into submission anyways. Afterwards they go on about being pet by another dog, and I'm pretty sure I've given them a new fetish.

Papyrus loves spaghetti. Kinda cute actually. He's shit at puzzle design. Sans actually really cares about him, also kinda cute. I knew that square shit was not gonna be fr. The last puzzle with squares, circles and triangles took me an embarrassingly long time to figure out. I fight a very cute totally tiny dog (it was not tiny [until it was]). This is my second Game Over (my first being when Toriel killed me). I cross a bridge with numerous death traps. I also made some crazy comms about Sans. Ignore that.

Eventually, I enter Snowdin town.

The first person I meet in Snowdin is a fucking terrifying looking ass rabbit. I also get told they aren't buying shit from me. Why THE FUCK is selling an option if you aren't buying. Smh. I honestly don't remember much else. I buy a lot of cinnamon bunnies (fucked up to be eating that btw) and some bisicles. I meet some more funny looking people. Also a terrifying looking bee-dinosaur child (more on him later).

The Papyrus fight is mostly uneventful (minus the fact he's now going on a date with a literal child but we'll ignore the undertones) and I survive my first attempt with 6 hp. Papyrus has grown on me by this point so I ask to be his friend. He mercifully grants it. He gives me a tour through his home, the race car bed is a nice touch. We go on a date. Again, I ignore the weird undertones. Somehow I get turned down by Papyrus, not sure how that happened. We continue forward. Sans takes me for food and asks me about flowers. I thought I would be finding out new information about this creepy-ass Flowey bitch, but instead it's about echo flowers. I don't really believe that's what he meant to talk about, but I won't be finding out now. Sans is a bitch who tries to saddle me with a 10000 G bill, but ends up putting it on his tab.

We progress through the waterfall area. Lots of lore drops here, although otherwise relatively uneventful minus the Undyne commentary and Papyrus asking me if I am wearing a gross bandage (I tell him I am not). Undyne shoots me a few times with some spears, and bee-dinosaur child shows up to bail out my ass. Yo! I kinda hate him idk why.

I correctly guess what filled me with determination (mice getting cheese through crystal), and shortly after Sans pranks me with a telescope. I hate this fucker. I pass through lots of echos and and attempt to reach a cute duck. Papyrus stays on my side, I shouldn't have lied. I deserve what comes to me. A true friend. I meet a floating onion with anime eyes. I also find a piano. I play All Star on it. I pass a pretty statue. I pick up an umbrella. This annoying ass kid keeps following me. I pass the shopping cart test. Kid actually is helpful and pushes me up on his shoulders. I feel a bit bad for finding him annoying. More lore.

Undyne finds me again and fucking chops off the platform I'm on. I fall into the sewers. This bitch. I hear a song I have heard before, but I wake up before I can figure out what it means.

The sewers appear to be uneventful, I find a bike, other odd trinkets, and an astronaut bar. This ends up being the most insane find I have seen, as I end up fighting the mad dummy. Somehow, I also first try this fight. Down to 2 hp and I eat that bar tf up, full heal, and survive until the cutest most adorable ghost shows up to save my ass. He is my favourite character in this game. I love him and his house and little tunes. Adorable. His snail race is a bit fucked, but also depressingly relatable. We press on.

Clumsy bumblebee kid has also followed me here. He is supposed to hate me apparently since Undyne told him to. He can't. I save him from falling, Undyne doesn't give a shit.

She makes an insanely sick entrance onto a mountain, the most intense fucking music I've heard in this game starts to play, and she begins exposition dumping about how mine is the 7th and final soul needed for Asgore, and then, SCREW IT!

The wind is howling. I am filled with determination. No more running away.

This DDR-ass fight is the most fun I've had in the game so far. The music and dialogue really immerses you in the experience, I am locked the fuck in. I am also pleading so much my knees gotta be fucking bruised and bloody as hell. Bottom bitch maxing out here.

3 attempts. 3 Game Overs.

Kat, stay determined!

It's now midnight. Unfortunately, I'll have to wait. Bed (and my 8:30 am class) calls.

katsquids

P.S. Dummy! is an even insaner banger and I have had that shit on repeat the past 2 days.

THE VILLAINS OF ANIMATOR VS ANIMATION AND ANIMATION VS MINECRAFT

AAAAAAAAA THEY'RE SO COOL

Animator Vs Animation (AvA) and *Animation Vs Minecraft* (AvM) are two indie animation series created by Alan Becker, that started from a flash animation also titled Animator Vs Animation.[1] From such humble beginnings began two extremely entertaining ongoing series, containing some of the most creative and fun fight choreography I've ever seen! Today though, I want to talk about the three main antagonists we've seen so far, because I think they're all really intriguing in different ways. Spoiler warning, I think AvA/AvM are enjoyable even when spoiled but if you don't want spoilers you should go watch all of both series right now!!

THE DARK LORD (TDL)

TDL is the main antagonist of season two of AvA, though he was originally introduced in episode three of season one. He was originally created by Alan Becker to destroy The Chosen One (TCO), which he tried to do but then eventually united with TCO against his creator to escape into the wider internet. The Dark Lord is an interesting case because the series has a sort of realignment in episode four in terms of who's considered protagonists and antagonists, and TDL just happens to end up on the wrong side of that. Him and TCO go on an internet-destroying rampage in between seasons, and starting in season two he just wants to take that to its natural conclusion by creating a virus and spreading destruction further. TCO has decided he doesn't want to do this though, so he tries to stop TDL, and that's where the conflict of season two starts.

Despite having the least motivation for being evil of the three villains, I still kind of feel bad for the guy. He made a difficult choice, to rebel against his creator and join the person he was meant to destroy, for what he thought was right. You can tell he's genuinely excited about his creation and what he and TCO have done together, and he's confused when the only person he's ever been close to turns on him. The fanbase is pretty sure that The Dark Lord and The Chosen One are gay for each other, and I would agree, they're the only two characters in either series that I ship. There's something I find a bit compelling about their relationship, and I hope TDL has a change of heart some time, and TCO's able to forgive him.

KING ORANGE

This guy's my favourite of the three. So far, he's the only main antagonist of the AvM series, driving the plot of season two and having arguably the most tragic backstory of any AvA/AvM character. Something about him reminds me of Yoshikage Kira from JJBA, in a way that while watching makes me kind of want to root for him despite my better judgement. He's usually working on his own against a team of protagonists, so it always feels like the odds are stacked against him, but he manages to pull through with force, sheer willpower, and taking full advantage of the smallest opportunities. He takes a lot of beatings but he always gets back up again, and he built his way up from being just a normal guy with some fighting skills to being capable of destroying the entire world, which is exactly what he planned to do.

The most villainous things about him are his goals, cold demeanor, and his act of pushing away the only person on his side, but his backstory makes all of that make so much sense! It's beautifully told too, "The King — Animation vs. Minecraft Shorts Ep 30"[2] truly is a work of art. And that finale is just so emotional! You've gotta get on this, you the reader of this article have got to get to watching AvM. King Orange is the only AvA/AvM main antagonist to be redeemed so far, and I'm glad he did, he deserves his happy ending. I can't wait for season three's villain to appear, I don't know if anyone else can live up to the heights of King Orange, but if he's any indication of what's to come, I know it's gonna be great.

THE VICTIM

I actually thought of writing this article before AvA 11 came out and fleshed out Victim's backstory, so I'm glad I have more I can say about him now. I think this guy's biggest tragedy is just how much he lives up to his name. He was originally created just to be tortured. He was created, tortured, he fought back, and then he was killed. And then he was created again, and tortured again, and killed again. And again. And again. For almost an entire year! His first nine months of being were spent in a seemingly unescapable hell. Smashed, beaten, strangled, drowned, exploded, tossed down a flight of stairs. And the mastermind of this horrible punishment? Alan Becker, one of the *protagonists* of the series, *and its creator!!!* Honestly, mad respect to him for giving his self-insert such a morally dark past.

Anyways, despite being in a seemingly hopeless situation and having no powers to speak of unlike his hollowhead brothers, the Victim did manage to escape his personal prison, through inventiveness and ingenuity. He escaped, and for a while, he was out. He settled down in the Outernet, made friends, married a woman whom he loved, and developed a succesful business with her, helping others with his inventions. He never fully escaped his victimhood, still haunted by the trauma he was born into, still seeing flashes of his tormentor in the corner of his eye. But he dealt with it, and for a while, he was happy. *And then The Chosen One, another protagonist, murdered Victim's wife!! What!?!* It's so hard not to feel for this guy. Like the other villains, I feel like I understand him, and I admire how he unflinchingly works towards his goals with intelligence, ingenuity, and sheer motivation as his weapons. These guys are all so compelling. I can't wait to see what happens to them next.

Doublewhip

profQUOTES

ACTSC 232: MIRABELLE HUYNH

❝ You've survived t years, but don't survive too much.

AMATH 353: MIKE WAITE

❝ I'll put down a sad face, but it's actually a happy face.

❝ This doesn't happen in real life, but it does happen in PDEs classes.

❝ So we are stumped, but we are in really good company, because we're stumped in the same place that Fourier was stumped when he came up with Fourier series.

AMATH 361: FRANCIS POULIN

❝ The joys of cornstarch.

AMATH 373: JOSEPH EMERSON

❝ Trust me, bro.

❝ I think this is a "look in the back of your calculus textbook" problem.

❝ Assignments: one per week, and occasionally zero.

AMATH 474: EDUARDO MARTIN MARTINEZ

❝ I'm gonna write here. Hopefully you can see. If you can't, please bark. *[Class laughs.]* Generalized barking.

AMATH 475: EDUARDO MARTIN MARTINEZ

❝ I don't transform; I AM THE TRANSFORMATION!

CO 452: RICARDO FUKASAWA

❝ In some ways, this is an extreme guy.

CO 481/PHYS 467/CS 467: DEBBIE LEUNG

❝ We're not allowed to use the word blind: it's not inclusive enough.

❝ I'm pulling the rabbit out of the hat.

❝ Everything we learned is in the abstract, no need to read the rest of the paper.

❝ They had better taste back then. Nowadays all the words get censored.

❝ The founders of the field had quite a colorful personality […] you probably need that attitude, working in a field that is non-existent.

❝ To see that they always win, you need to do your assignment. This is how I managed to fit all of this in 36 hours of lecture.

CS 136: NOMAIR NAEEM

❝ If you actually think the answer is A, the drop deadline is tomorrow.

CS 146: LEON ZHANG

❝ Alternatively, we can simply pretend the problem doesn't exist!

❝ Are computers incompetent? Is computing and computer science a lie? Is the foundation upon which your entire degree is built a fraud?

❝ I can force you guys to learn Spanish at gunpoint.

CS 251: ZILLE HUMA KAMAL

❝ We are not at a disco. We are not dancing to "Jalebi Baby."

CS 343: PETER BUHR

❝ C++ has grown into a nice 800-pound gorilla.

CS 350: BERNARD WONG

❝ Sometimes you want to make orphans on purpose.

❝ *[Student asks about kill syscall: "Can you kill… yourself?"]* Probably… I don't know, I haven't tried.

CS 365: ERIC BLAIS

❝ The Y combinator? Isn't that a place in Silicon Valley?

❝ *[After the class votes to use the projector instead of the whiteboard]* I'll apologize to the whiteboard later.

CS 452: MARTIN KARSTEN

❝ Maybe you made the mistake of taking other courses.

❝ I've posted the documentation to the course website… if you're having trouble falling asleep, there's something for you to read.

CS 480: YAOLIANG YU

❝ Iverson is not a NBA player, he is a computer scientist…

❝ When you're raising kids, you don't know which ones will be good or bad, so you just raise a bunch.

CS 488: GLADIMIR BARANOSKI

❝ We are told by our parents that we are special, but we are not that special, especially in graphics.

❝ We are poor, man, we don't have quantum computers.

MATH0073 (AT UCL): ED SEGAL

❝ There are some algebraists who call this group D8, because it has 8 elements. These people have never seen a square.

❝ Oh shit, have I written on something I shouldn't ha—wait no, this erased earlier.

❝ Equality does not exist in mathematics.

❝ This is Maschke's theorem. I think the hardest thing about it is spelling it correctly.

❝ You guys know what a prime number is, right? *[This is a 4^{th} year algebra course]*

MATH 136: SHANE BAUMAN

❝ Well, if you take some drugs, you might be able to see things in multiple dimensions.

MATH 247: NICO SPRONK

❝ Goodbye Sonic, enjoy spinning around and crashing into stuff.

❝ My balls can see bits of A, and my balls can see bits of the complement. Or my balls can see bits of the complement and my balls can see bits of A… Ohh, that phrase didn't come out like I meant it.

MATH 249: JIM GEELEN

❝ What am I doing? That's stupid.

❝ I'm relying on coffee to keep me awake and it's not working. I'm back to my undergrad days.

PMATH 330: CHRIS SCHULZ

❝ If anybody in my class does truly believe the Earth is flat, then… really I'm just happy you're taking a logic course.

PMATH 333: MATTHEW KENNEDY

❝ Let's use the infinity norm, or as some people call it, "the stupid norm."

PMATH 351: KEVIN HARE

❝ *Student:* Aren't you assuming the thing that we're trying to prove on the second line?
Professor: So I'm being a bit lazy here.

PMATH 348: YU-RU LIU

❝ [All fields are unique factorisation domains] …but this is kind of a shitty example.

PMATH 433: RAHIM MOOSA

❝ $\mathbb{F}_0 = \mathbb{Q}$

❝ …and that's what part (1) literally says. When I say "literally," I of course mean figuratively. I think that's how people use the word "literally"—to mean "not literally." They say it to mean the exact opposite of "literally." Otherwise, you wouldn't *say* "literally." you only say it—okay, never mind.

PMATH 441: CHATCHAI NOYTAPTIM

❝ Do you guys understand what I've written in my notes? I don't…

PMATH 445: FAISAL AL-FAISAL

❝ You learn NOTHING about linear algebra in your linear algebra course.

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UW'S BASTION OF ERUDITE THOUGHT SINCE 1973

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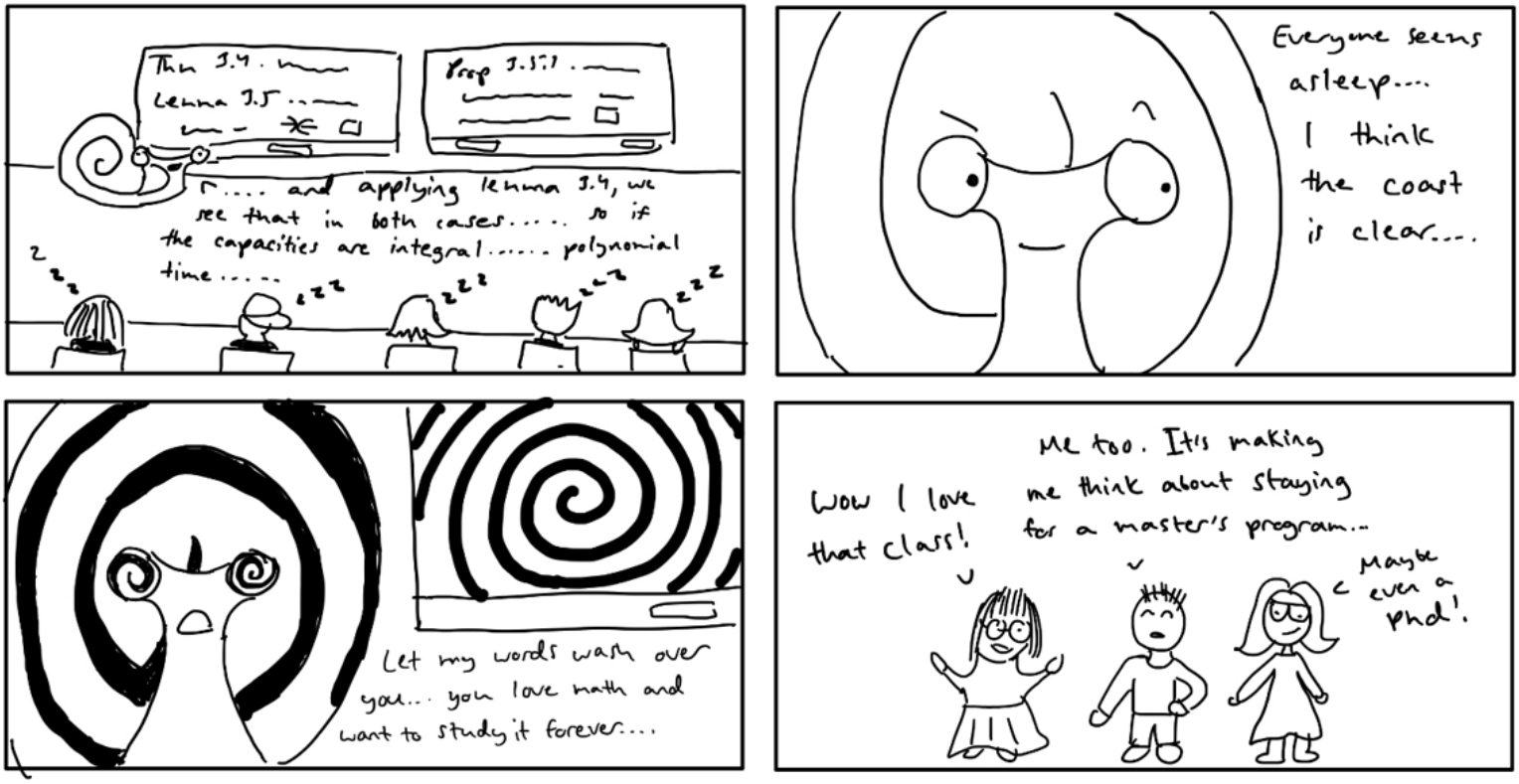


peacelovemath

NINETY THOUSAND LOST FFS

You and I in a dark room
Write so we can get our food
All the typos are deleted
Copy, layout, all completed
At the shop, bugs in the printer
No one seems to catch the error
As they wait for dawn to rise
Ninety thousand lost FFs go by

Ninety thousand lost FFs
All in boxes by the doorstop
Panic bells, it's red alert!
There's something gone that should be here!
Discord channels spring to life
Eyes on every single line
How could something go so wrong?
Ninety thousand lost FFs are gone!

MC three-thousand and thirty
Editors meet in a hurry
To worry, worry, super-scurry
At least the cover isn't blurry
How could this be fixed in time?
We'll need pizza as a bribe
Vivek Goel is on the line
As ninety thousand lost FFs go by

In the moonlit C&D
Ninety thousand troopers meet
Everyone's a copy fan
Everyone is **mathNEWS**-chan
With orders to identify
To scribble out and rectify
Then the issues go around
Ninety thousand lost FFs are found
As ninety thousand lost FFs are found

There's a nightmare I have had
Friday morning, empty stands
But I see them when I rise
Orange covers by my bedside
All the FFs are in place
Can hardly tell there was a mistake
But the editors don't know
They never found the missing O…

Nena (ft. Dick Smithers)

SLOW PRODUCTIVITY

I like to be a productive person. I feel like every day is a struggle against the risk of falling behind, and if I take my eye off it for just a second, I'll have lost too much momentum to ever catch back up. So maybe I don't *like* to be a productive person, but I don't have a choice.

Maybe I developed this view from the relentlessly competitive environment I've found at university, but I think it moreso reflects a fundamental misunderstanding of productivity.

WHAT IS "PRODUCTIVITY?"

This Christmas, I was gifted a book called "Slow Productivity," by Cal Newport. It's a good title, I like it quite a lot. It forces the question of how we actually perceive productivity, and what it means to be productive at all.

As I understand it, productivity is *supposed to be* a rough measure of accomplishment, over a specified period of time. But if I take the perspective of an objective outsider, I feel like sending twenty emails and doing a whole assignment isn't actually "productive" in comparison to, say, completing an undergraduate degree.

How productivity is viewed in our world today is flat and inconsiderate, not taking into account anything except *measurable* achievement. Your value as a worker is measured in emails sent, keystrokes hit, tickets completed, or papers reviewed. Your boss thinks of your "productivity" as your day-to-day accomplishment, with little care for the unmeasurable progress you have to make along the way, nevermind what you could be achieving over months, if only you were given the time.

SO WHY "SLOW"?

From an outsider's eyes, the time it takes to accomplish something will turn out to be a lot less important than the thing itself.

Do you care how long the author took to write your favourite book? Or how many corporate shenanigans it took for Steve Jobs to build Apple into an innovative superpower? Or even, should we say, the number of decades Martin Luther King Jr. worked before he instigated any major change in American civil rights? No, you don't, as long as you weren't in urgent need of it before it had been accomplished.

This means that accomplishment — the more accurate synonym for the flat, modern word "productivity" — should be assessed through a lens that filters out the time the whole thing takes. It makes sense, really. As long as you don't actually think you can accomplish dozens of big things in your lifetime, then you should stay grounded and aware of your ultimate goals without getting lost in the ups and downs of mere weeks. If you don't, you risk accomplishing nothing at all.

Yet, this doesn't quite answer the question "why slow?" I hope by now you're starting to connect the dots yourself. If the time shouldn't matter so much, then it becomes far more important to take a few steps back to get a better view than it is to make sure every single step is incrementally forward, at all costs. It's impossible to make progress on big goals if you're pressing through a battlefield of little ones along the way.

OKAY, THEN WHAT'S "SLOW PRODUCTIVITY"?

I would say it's the lost art of accomplishment without burnout. Actually, that's what Cal Newport would say, since it's the subtitle of his book. It's a good summary, but it's not actionable enough for me, so I'd like to make it a little more applicable to our busy daily lives. Forgive the clunky phrasing:

> *Slow productivity is the lost art of focusing more on mitigating distractions than increasing accomplishment.*

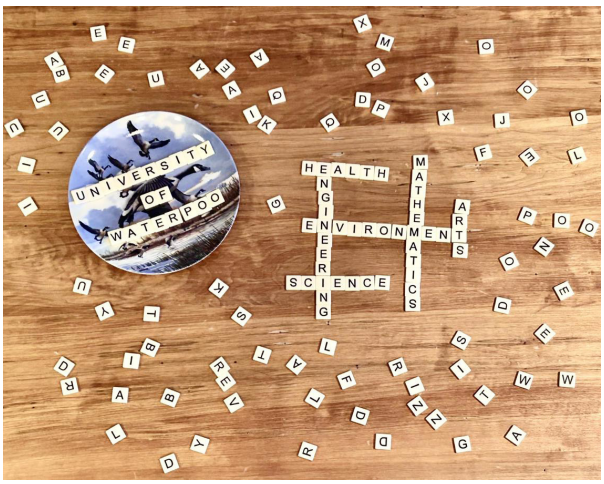
Most of us know how little we can get done when we're trying to do too much at once, and we even know a thing or two about how to not be in that situation in the first place. But we don't *value* it enough! Each day we still answer those emails and say yes to many little tasks, little bullets flying in to derail our days, then months, then years. Everyone seems to have agreed that bullets are small, so they must be harmless.

\/\/\/\

But the world is wrong. Distractions are bullets, and we'd better be dodging them like our life depends on it if we want to get across the battlefield, and accomplish something great.

no pun indented

BANANAGRAMS SHENANIGANS



DAAHRV

A REVIEW OF MY TRIP TO THE HYDROCUT

I arrived at the Hydrocut (trails to the west of the boardwalk). It was unplowed, causing my car to behave like I did not spend $80 to get my winter tires on. All of the parking spots were full, so I parked on what I hoped was grass beneath snow. ***3/10 for background anxiety.***

I started walking through the snow covered trails that stretched upon an empty field. Excluding me and my hiking partner *aphf* not a soul was there. The empty field with occasional bits of industrial waste poking out of the snow gave it a bit of a post-apocalyptic vibe, but in a good way. I stopped behind the only bush in the entire field to pee. A *mountain biker* immediately decided to appear. ***6/10, -1 for broken stream.***

The wind died down as we entered the forest. Unlike the rest of Waterloo, the moraine that this trail travelled through actually had elevation. Unfortunately the giant hills of gravel that composed the moraine also lended itself to an aggregate quarry and a dump that filled an old aggregate quarry, which surrounded the woods. I made a mental note not to drink the water flowing from the hill that contained the dump. The woods however were quite pretty. The trail wound gently up and down through the snow. There were was even a public art installation of a robot. ***8/10 for the very scarce experience of climbing up a hill in Waterloo Region.***

Suddenly as we crossed a ridge suddenly a brown and white blur swopped right past us. It was a bald eagle, I had never seen one so close before, it passed us once more and then went off into the distance. ***10/10 very cool.***

We decided to follow in the direction in which the bald eagle went. This involved taking the "Testing Positive" trail to the "Stinky Girl" trail. Who named these trails? I don't know. Those have to be the worst trail names I've ever heard. I do not want to be be thinking of Stinky Girls nor my positive COVID-19 test. Trails weren't bad though. We then arrived at the "Frankenstein" trail, which had a fun spooky themed sign. ***7/10 plz rename***.

Turn out the Frankenstein trail is shit, as mountain bikers do not know how to properly create trails. The trails bent in on themselves so compactly that you would walk meters away from trail sections that you would reach for another hour. It made this section of the hike feel like it took hours. Maybe it would be fun if you were moving triple the speed on like a bike or something but it is not fun to hike. If your trail makes me move closer to Doug Ford's position on bikes, you know you have made a grave mistake. ***7/10 my legs hurt please can I walk 5 meters in a straight line***.

The Frankenstein trail also contained a lot of weird stuff. A burnt out building that we could only assume was a fire safety training tower loomed in the distance creating an eerie feeling. There was a constant metal scrapping sound we weren't sure was coming from the dump, from the fire tower, or was a dog barking. We also ran into two bird carcasses, which *aphf* suggested could be from coyotes. The trail smelled strongly of gas, so strongly that we wondered if the trails actually were straight and we were hallucinating. We hadn't seen anyone else for an hour or so. ***2/10 why does it smell so funnyyyy?***

We crested a ridge. It was the same ridge we had crested 5 times already in this stupid Frankenstein trail. But this time, there was a beautiful sunset. The sky turned stunning shades of pink, orange, and red. ***8/10 pretty nice.***

Turns out after sunset it gets dark out (crazy). As we continued winding our way through the last bit of the Frankenstein trail we slowly began to realize this, then all of a sudden it was dark. Maybe it was a bad idea to leave at 4pm only one month removed from the winter solstice. All of a sudden the carcasses and possibility of coyotes gave new meaning.

We started to turn back, however the winding fucking trails we came down took forever to get through. It also completely messed with our sense of direction, causing us to briefly get lost a few times. We could no longer read any signs without the flashlight. We felt like we were completely alone out there. It seemed like there were shadows behind the trees. We started to lightly jog. ***0/10 fuck mountain bikers.***

We continued running through the woods to try to get back to safety. We attempted to play music to continue to move us forward. Unfortunately, the Spotify algorithm wanted only to further our pain. Eventually we ditched the trail for a service road running alongside the woods, saving us what could've felt like hours of twists and turns. As we climbed a hill, sweet, sweet, light finally engulfed us. Thank god for Costco and light pollution. Soon after we made it back to our car. It stood alone in the once-full parking lot. What kind of idiot would start their hike at 4pm? We silently stepped in our car and drove home, never to speak of this ordeal ever again. ***10/10 we're not coyote bait.***

Final score: ***Priceless, memories are forever/10.***

Lars Nootbaar

QUOTIDIEN

```
while (self.thoughts.indexof(you) > -1) {
    try {
        // TODO: fix
        self.forget(you);
    }
    catch (error)
    {
        cry(error);
    }
}
```

Lily Liu

SPEED REVIEWING WEB BROWSERS

...CAUSE THERE'S TOO MANY TO CHOOSE FROM

There's chatter down south that Google might sell the Chrome browser, stirring up uncertainty. It's a good idea to hedge your bets and pick a reliable backup browser. Purely by coincidence, I just happen to have a *completely unbiased* ranking of the best alternatives ready for you.

What's that? Not interested in paragraphs upon paragraphs of inane browser trivia? That's fine, I'm not offended. How about we speed things up:

Chrome: No introduction needed
+ Everyone uses it! They aren't aware of any others
– The data collecting is on another level
1/5

Edge: Microsoft's take on Chrome
+ Copilot, Copilot, Copilot
– Swap out Google's collecting for Microsoft's
3/5

Brave: Privacy-focused Chrome
+ Supreme AdBlock
– Supreme Crypto
4/5

Opera: Chrome but they focused on UI
+ It looks SOOOO good!
– Sacrifice even a base level of customizability for looks
3/5

Vivaldi: Opera but they stopped focusing on UI
+ Customization dream
– I'm too lazy to customize it
2/5

Arc: The Browser Company's Flagship Browser
+ Vertical tabs + UI
– Their own devs don't use it, they moved to Dot
2/5

Dot: The Browser Company's Flagship Browser **Redux** (Unreleased)
+ AI
– AI
?/5

Firefox: Not Chrome (but paid for by Chrome)
+ Adblock, Customizability, Privacy
– Some sites just refuse to work
4/5

Tor: Firefox for scrolling the dark web
+ Privacy to the Max
– Can only watch pirated content (this is only a negative to some)
3/5

Zen: The UI of Arc with the benefits of Firefox
+ The best one (*I'm completely unbiased,* but this is the one I use)
– No Netflix Ⓜ
10000/5 (I don't watch Netflix)

Based on these *completely unbiased* rankings, your best bet is Brave, Firefox, or Zen. But being realistic you'll read this, then immediately forget it and continue to use Chrome. But if the Chromaggedon does arrive, at least I can say I tried.

antsFile

THE GA E

THIS JUST IN: Every paper issue of **mathNEWS** issue 157.1 has been a licted with a ba ling curse. O cial sources report that nearly all instances of double "f," or double "f" followed by an "i," are nowhere to be seen. Thankfully, the release on the publication's high-tra ic website remained una ected.

Many readers are indi erent to the printing error, ready to brush it o as just another quirk in the history of the publication. Several collectors report attempting to acquire contraband copies of the not-yet-released issue. The editors, however, are spending every e ort to remedy the ga e.

"Our reputation could be badly a ected," one editor stated gru ly. "We cannot a ord to let this slide. We would look like bu oons, and our subscribers would think we're ripping them o ." The editor proceeded to down a ca eine-loaded drink in preparation for a di cult night of hand-drawing letters in hundreds of paper copies in the **mathNEWS** o ce. "This is my fifth co ee of the evening," they remarked. "I have no clue how we can do this e ciently. My mental health is su ering just thinking about it. We won't have this fixed in a ji y, that's for certain."

Some readers di er in their opinion and believe the incident to be a purposeful move by the editors. One reader wrote to us, saying, "**mathNEWS** is known to be largely flu anyway. I wouldn't put it past them to do this stu for publicity." However, most regard this theory as being i y at best. The editors, too, were quick to snu out any conspiracies, citing financial concerns as a su cient counter-argument.

An o cial statement from the sta reads, "The **mathNEWS** editors apologize for the scu ed release process. We would appreciate if any readers o erred to aid in patching the holes. In the meantime, we request that our writers avoid topics such as tari s, ri le shu les, or a ne transformations." Whether or not this will be e ective on **mathNEWS**' historically stubborn writer base remains to be seen.

hyperlynx

CALI, THEN WHAT?

OR HOW I LEARNED TO START WORRYING

The first time I found out about Waterloo was in grade 8, or so. Some tutor had mentioned it to my mother, and given my terminal onlineness, and reasonable academic history, I thought it was a decent path forward for my life, I suppose. She told me getting here was what I should aim for, and I had no real reason to disagree, so I kept that in the back of my mind for a while. I had bigger things in my mind, at the time, and I didn't even really know whether I wanted to go to university, so it didn't mean much for a while.

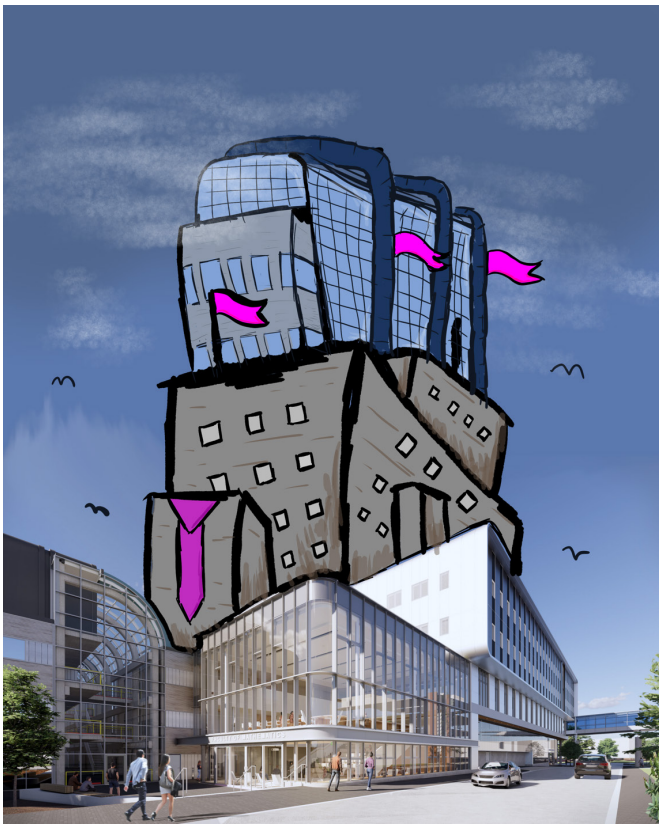
But then I was suddenly in grade 11. Where the hell did all the time go? I felt I wasn't good enough for all those ambitious plans. I wasn't even admitted to my city's good old Waterloo feeder high school, so doing something *better* than Waterloo must be totally out of the question. But maybe Waterloo itself wasn't, so that's the only thing I had left. Thus, I did what I had to do. I spent every hour I could getting better at school (not like I had much else to do during the pandemic), cried over subpar marks, and nervously scrolled the admissions megathread. But I still had a lot of energy in me. I played sports, volunteered, worked at a burger joint, all while sweating over my future fate. Eventually, that sweating got so intense that it became hard to do those other things. I had to hand off one of my most ambitious projects to other people, who were able to finish it, and get a ton of publicity, all the way up to the Canadian government, because I was too obsessed with the future, and not now. Eventually, I thought I didn't deserve getting in, and in some ways, I was probably right; it wouldn't be good for me. But one day, during a piano lesson, I checked my email, and there it was: the offer of admission. I was a little disappointed—I wanted to be an engineer, and they would only let me be a computer scientist. But given that computer science was a "more prestigious" program anyway, how could I resist? It would be stupid to turn it down, right? Waterloo wasn't a desire, it was a need. I NEEDED to have it satisfied to build the rest of my life atop. No, I wasn't giving into the fallacy that it would fix everything else; rather, it would *allow* everything else to be fixed. Everything needs a starting point. I would have a foundation from there, and after, nothing could go *too* wrong…

But where am I now? First year felt good: I was where I was supposed to be. But more goalposts forced themselves upon me. What did I want to do after? How could I make the absolute most of my degree, which I'll only get to take once? There were so many boxes to check, and they wouldn't be checked automatically. I needed good jobs, some huge company by third or fourth co-op, a few relationships, advanced courses, a big friend group; I couldn't be a loser. And, oh, of course, Cali or Bust. Someone warned a bunch of us a while ago that Cali or Bust is a great goal for people who don't have any ambitions or passions for their degree, that will become unsatisfying shortly after it's achieved, and probably just lead to depression and loneliness. I have ambitions… but they're hard, and require change, and I don't know what path to take. But Cali or Bust is right here, it's not too easy, but it's so direct. Perfect…

It's a great fantasy world to live in. When I'm in Waterloo, I degrade my health, lose sleep, get all stressed out over my degree, but it's a nice fairytale story that usually has a happy ending, and doesn't have many layers. Every so often, I go home, and remember what life really is—raw, often nonlinear, not very meaningful. But when I'm here, sometimes, I still have those images and feelings I got when I envisioned Waterloo as a high schooler. I'm riding on that high all the way to 2027. I'm not sure what I'll do when I'm out, and I've aged ten years in four because I ate and slept poorly and always was stressed and tense, and I'm too old to start working on those other ambitions… but I'm sure I'll find another tail to chase, so whatever.

epic_waterman

UNIVERSITY OF WATERLOO ANNOUNCES M6, AN ALL-NEW MATH BUILDING TO BE CONSTRUCTED ATOP M5



ARTIST'S RENDITION

Dick Smithers

PARALLEL-PLAY SAVE ME. SAVE ME PARALLEL-PLAY.

HOW YOU CAN IMPROVE YOUR LIFE USING TODDLER STRATEGIES

Hey! Does studying with friends (as opposed to alone) get you more engaged in your work? What about going to work at a coffee shop or library? You can thank small children for coming up with that one!

Well, kind of. The term "parallel play" has its roots in developmental psychology, specifically in sociologist Mildred Parten Newhall's "stages of play" theory. She first used the word to describe a mode of behavior where children would engage in similar types of play side-by-side, but not with each other. For instance, a child could be sitting on the floor assembling a puzzle as his sister plays with blocks behind him. You can probably already see how this translates into adult life. It can look like going over to your friend's house to do some online shopping on their bed while they play games. It can also look like FaceTiming with someone throughout the day while you both do unrelated things. If you don't think you've done parallel play before, chances are you just didn't notice that that's what it was.

There's also a similar construct to parallel play for doing work, which is called "body doubling." I think this one is considered a lot more normal to do, most people just don't know there's a word for it. Studying with a friend for different exams, or sitting together during prodnight to work on your own **mathNEWS** articles, are examples of body doubling. This is really good for focus, especially in people with ADHD. You can even sort of accomplish this with strangers—for instance, going to the library to study works for me, because there's other people studying in the same space!

To clarify, just in case, there is a huge difference between parallel play and ignoring your friends. Some people are just yappers or cuddlers at heart and probably won't enjoy hanging out like this.[1] Like with most things, parallel play is at its best when both parties want to engage in it. If done right, it's a great way to bond with someone because it emphasizes quality time together, and is in fact the exact opposite of ignoring someone.

For example, you know that tired joke about how girls resent their boyfriends for playing video games? I saw a post recently from a guy who said he started bringing his girlfriend food and setting her up in bed with blankets, phone, etc., before sitting down to game. The whole thing was framed as a "lifehack" because according to him, she would now eat and be happy instead of getting upset at him for gaming. Brother… your girl was never mad about you wanting to game, she was mad because she felt like you were ignoring her to do so. The reason she no longer feels like that is because, despite the fact that you're still doing your thing separately from her, you've shown that you want her presence there. She now feels taken care of, loved, and happy. :)

Therefore, for people who prefer solitary activities but also value time with friends/partners, parallel play can be the solution. It's also great for people who can get easily overstimulated or just are not super talkative. I was doing this shit before I even knew I was autistic—all I knew was that talking to anyone, even friends, was incredibly exhausting, so if anyone wanted to let me come over and just lie on their floor while they did other stuff, I was so down.

I love parallel play. I love body doubling. I can't lie, the kids cooked with this one.

mobpsychofan

1. No hate to my yappers and/or cuddlers, love you guys 🤘

N MORE HAIKUS AGAIN AGAIN

last issue I wrote for was 154.6

I'M BACK

It has been a year
since I last wrote for **mathNEWS**
well I'm here again

>1

1 haiku is e—
nough for pizza but N should
be greater than 1

A VERY SHORT WORKOUT

The fire alarm
went off at the gym today
welp, no exercise

???

heard **mathNEWS** writers
talk about penis music.
Is this issue cooked?

insert pen name here

TEKKEN 8

FROM SOMEONE WHO HASN'T PLAYED IT

They have a bear and he looks pretty cool, also like won Game Awards for some shit. I just really like bears and they got two of them.

Toasted

A TALE OF MIRTH, WOE, AND BALL

The rules of fair play do not apply in love and war.

John Lyly in 1578, forgetting about dodgeball

Constantine is not their real name. It is also not a fitting pseudonym. Constantine the name is a regal name, a name of high esteem. Constantine the person is a scourge. Nobody's tangle with Constantine is pleasant.

A dodgeball game consists of up to nine rounds, where the first team to take five (either by man advantage after five minutes or by complete elimination) wins. My tangle with Constantine occurred in the finals for the beginner intramural dodgeball league.

Playing against Constantine is a mental affair. Even winning feels like losing. The longer the game goes on, the more you notice every infraction that their team is getting away with. We had been getting penalised for these small infractions since the beginning of the season, and had learned to adapt around all of the particular weird rules of UWaterloo intramural dodgeball, but it was clear Constantine had not been called out once on any such infraction. After being hit with a throw in round seven (a rare occurrence for Constantine, who had caught everything we'd thrown their way since the beginning of the game), they threw a ball at one of our players in a fit of rage, a full five seconds after registering that they had been hit. Obviously this is not allowed, and yet the ref said nothing. When a member of our team leaned over the centerline to pick up a ball, Constantine grabbed onto it for dear life, pleading to the ref that the slight lean my teammate did was against the rules. The ref sided with Constantine. When my teammates sitting on the bench complained about how Constantine's team's eliminated players would step out of jail to pick up balls, something which is not allowed, the ref came and told my teammates to step back. Constantine tried for several minutes to convince the ref to reverse the outcome of one of the previous rounds to go in their favour, which eventually fell through, but not after it was given way more light of day than it deserved.

We were up 4–3, on match point against Constantine, but our mentality was strained. I will admit at this point we were fueled more by spite than by anything else. Our situation became dire when, in the opening volley of round eight, four of our eight players were eliminated. Despite being down by so much so early on, we managed to claw the round back, bringing it to a 2v2. Our team captain and another of our best players against Constantine and one of their strongest players. It was then that, in one of their signature violent throws, Constantine stepped a full foot over the line. Not on the line, but fully over the line. Even stepping on the line is an instant out (admittedly it is an odd rule, but one which has caught us off guard many many times). Our entire team started calling him on it.

Constantine was unfazed.

They tried to keep playing. The ref, Constantine's friend for 5+ years, who this entire game had been missing calls, tried to call them on it. Constantine said it was fine, and tried to keep playing. The person delivering the championship shirts tried to call them on it too, but Constantine just ignored her. For several minutes, whilst we were in uproar at this pretty blatant infraction, Constantine tried to gaslight everybody into accepting that they hadn't stepped over the line by simply continuing to play. After several minutes of this, the ref revealed he had had someone videoing the entire game, and the video clearly showed Constantine stepping over the line. Obviously. Everyone had seen it. Very begrudgingly, Constantine sulked to jail. 2v1. Our second player was quickly eliminated. 1v1. Our captain, mighty and noble, against one of their strongest players. After an intense minute, maybe because of the pressure, maybe because he was exhausted, their final player slipped and fell over. Our captain capitalised on this fumble, scoring a direct hit. Complete elimination, 5–3, that's a win for us. We exploded into cheers.

So we thought. As we cheered in a way you can only cheer after playing Constantine for an hour, Constantine walked over to the ref. "It doesn't count," Constantine complained. "That was a headshot, our guy isn't out, restart the round." Constantine made a restart the round gesture to the room. The ref just stood there dumbfounded, as it had obviously not been a headshot, but he didn't want to say anything unkind to his friend of 5+ years while they were in a state this agitated. In jail, Constantine had been one of the people furthest away from the play, one of the people with the worst view of the situation. As Constantine whined, their final player walked up, placed his hand firmly in the centre of Constantine's chest and pushed them to the ground. Constantine sprawled across the floor, as if the tension in their muscles had abated for the first time all game. "Good game," their final player said, as he shook our captain's hand.

Constantine had been defeated. I do not know what thoughts went through Constantine's head as they lay there on the floor looking up at the roof. I doubt there was much reflection, as despite the sweetness of victory, as we exited in our clean pristine intramural champs shirts, and as we saw the semi-competitive dodgeball finalists line up for their game, we saw Constantine walk back to the players line. Apparently Constantine had another team, and still had another game left in them.

*Not a N*rd & aphf*

QUANTUM COMPUTING, AN SNL SKETCH

CAST OF CHARACTERS

- Ada: an 8 year-old girl (my generation: Gilda Radner; student reader: your choice)
- Daddy: father of Ada (my generation: Dan Aykroyd; student reader: your choice)
- Mommy: mother of Ada
- Edwin: brother of Ada

3000 CE: A SUMMER MORNING IN A FAMILY HOME

Ada: It's my birthday! Thanks for the present Mommy and Daddy!
Ada: I wonder what's in this black box from Edwin?
Mommy: Let's wait for your brother before opening that one. He should be here shortly. He's feeding the cat, I think.
Ada (a little later): Oooh! A quantum computer kit! Thank you Edwin! Will you help me build it Daddy?
Daddy: You can do it Ada. You get started, and I'll help you if you get stuck. It'll probably work just fine.
Ada: Were these hard to build in the old days?
Daddy: I think so – they were a bit decoherent, and they were very noisy. But they didn't have these super-conducting wires. Or these qubit modules. (Pointing to pieces in the kit).
Ada: Was there a big scientific breakthrough?
Daddy: The main difficulty was getting through the "Kalai-Aaronson Barrier." Kalai said that any attempt to build a quantum computer would fail because of computational complexity infeasibility arguments. Aaronson said that quantum computers were theoretically possible, and until someone proves that they couldn't be physically realized, we should proceed with experimental work on them. So this chip runs "Kalai-checks" at each step to confirm that the computation it's doing is impossible, but then proceeds anyway — only seeming to give the theoretically predicted results.
Ada: Wow! That was a brilliant breakthrough!
Ada: Daddy, what happens if the "Kalai-checks" are taken out?
Daddy: That's the strange thing. If they're taken out, the quantum computer overheats, and eventually melts down. The engineers keep muttering something about "Maxwell's Demon."
Ada (1 hour later): Daddy, look my quantum computer is working!
Daddy: Very good! What're you going to do with it?
Ada: Well, you know how it always takes a couple of minutes for the real-time weather app on your old phone to model the weather for the day?
Daddy: Oh, I don't know, a couple of minutes isn't so bad for all that sorting and searching and number crunching.
Ada: Well, in CS class my teacher taught us about Grover's algorithm. If you let me plug in a module to do the searching on my quantum computer, I can hopefully get it to work in $\sqrt{2}$ minutes.
Daddy: Yeah, go for it!
Ada (1 hour later): Here Daddy, try this!
Daddy: All right, here we go (starting weather app). Oh, it seems to be done already. But it says there's a 99% chance of rain today, and it's sunny outside. I think you have a bug, dear.
Ada: I'll look into that. Daddy, can I factor some of those ancient RSA challenge numbers with my computer?
Daddy: Shor you can, dear. *[Editor's note: we think the joke here is that this is a reference to Peter Shor, a quantum computation researcher.]* If you don't have enough qubits, we'll walk down to the 7-Eleven and get some more. I think the qubit modules are next to the Big Gulp machine. We'll get a Gulp… if the ice machine is working.
Ada: Let's go! Want your umbrella?
Daddy: Nah. It'll be fine.
Ada: I'm taking mine!
Daddy (back at home, soaking wet): I seem to have really worked up a sweat. Let me know what the factors of RSA-2048 are when you have them.
Ada: I Shor will, Daddy.

15 YEARS LATER: ADA'S GRADUATION

Ada: Thanks Mom and Dad and Edwin for coming today, and for all your support. I hope I can honour that in my career.
Dad: Remember that quantum computer that Edwin got you when you were 8? I still think there's a bug in your Grover speed-up. My weather app said it was going to be sunny today, but look, it's raining out. (Points to a window looking out on a garden sprinkler).
Ada: Yes Dad, I'll fix that someday.
Dad: Have you applied for any jobs yet? International Boson Machines? Meta meta? Quantum-Nix? WatQuan?
Ada: Oh, I don't exactly know yet… Maybe I'll start up a weather modeling company.

aquick

WHAT IS YOUR FAVOURITE BRIDGE/TUNNEL ON CAMPUS

Here are the results from asking **mathNEWS** writers what their favourite bridge/tunnel on campus is:

- MC/DC (7)
- AL/SCH (4)
- MC/SLC (6)
- MC/QNC (6)
- MC/C2 (2)
- E3/E5
- EIT/ESC (mineshaft)
- MC/PHYS (service tunnel)
- 3rd floor of Eaton Centre, there's a UW office there
- NH/STC
- Outside

mathgeek

I LOVE TWO-FACTOR AUTHENTICATION

WAITER! WAITER! MORE FACTORS PLEASE!

There are, of course, times where I feel it is important to set the record straight, to sit down and explain my perspective as it contrasts with another writer's. Today is one of those times, as that is how I felt upon reading *__init__*'s 156.1 article *I Hate Two-Factor Authentication* a few months ago. Feel free to go back and read it, but I hope to discuss many of his concerns here.

Let me remind you of the purpose of multi-factor authentication (MFA), of which two-factor authentication is a part. MFA requires a form of identification beyond a password to log in to an account. Examples include one-time passwords (OTPs), passkeys, and backup codes. This gives extra proof to a website owner that you are an account's owner, not simply that you know its username-password combo. I hate to sound like one of those tiresome emails you get from IT, but this process is so important to keeping your digital information safe.

__init__ contends that Duo, the university's MFA provider, is nothing more than an annoying "little dance" students must do to access their accounts and adds on to the already "four or five" MFA apps he has installed. While I am certain that many Waterloo students are irritated by the supposedly too-frequent Duo prompts, I am reminded that this annoyance is far less of a headache than the possibility (or, as we shall soon see, the reality) of an unwanted user in one's data. Your university accounts are likely among the most important you maintain, containing personal and academic information that you probably don't want out in the open. Using MFA seems like a no-brainer. As for his multitude of installed MFA apps, I am not sure why so many reside on his phone. Despite my own enthusiasm for the practice I seem to make do with only two MFA-specific apps.[1]

Workflow disruptions also make up some of his critique, claiming it "breaks his entire flow" to use his phone as a second factor. With all due respect, this is a skill issue if I've ever heard one. Speaking from personal experience, I have come to see a second factor as simply an extension of the basic login process rather than something entirely separate. Copying an OTP from my phone is of little psychological difference to me than filling in a password, yet its effect in making data theft harder is comparatively massive. Granted, changing one's perspective like this (not to mention ignoring distractions) is easier said than done, but I seem to make do just fine. What's more, there are other MFA methods that don't use a phone, like passkeys or hardware keys. While not all websites allow these, they can be a less distracting alternative.

To *__init__*, MFA requirements are "inconsequential" and simply part of the cumulatively wasted time of a person's year. I could not disagree more vehemently. Despite the impression I may have given, I cannot claim to be the most security-minded person. It gives me great shame to admit that, up until a few years ago, I would use essentially the same few passwords across the Internet. Shocking, I know. Eventually, I would stop doing this and began to use randomized passwords, but many of my pre-existing accounts remained unchanged and therefore vulnerable. Security audits even showed that some of these credentials had been compromised in data breaches, but in my laziness I failed to do anything about it. One of these happened to be for my Reddit account and my lack of attention to it was finally exploited last summer. It has pretty much always been inactive, and the breach turned out to be unsuccessful in the end,[2] but it was still a scare that prompted me to action. I began to use a password manager,[3] changed the passwords to nearly all of my accounts, and activated MFA wherever I could. In this situation, MFA would have been more than consequential.

My eyes were at last opened. No longer would I scoff at emails imploring me to secure my accounts. No longer would I ignore recovery emails, recovery codes, recovery whatevers. No longer would I accept my own annoyance at having to yet again enter an OTP. There was finally a reason for it all. It only took getting hacked myself to learn it.

I do have some caveats to my zealotry. *__init__* brings attention to the important problem of the digital divide. His article highlights a Philadelphia librarian's plea to prevent the forcible activation of MFA on some 150 million Google accounts. Her advocacy centered on the poor and the elderly, who may not have the capacity to use MFA and who are as such often locked out of their accounts. Google's seeming oversight shows an astonishing level of hubris (though perhaps that is what I should expect from tech companies these days). Google now does seem to allow access without a second factor, though they discourage this by prompting accounts without MFA at a maddening frequency, another measure that can confuse users into locking themselves out.

It's also still possible to be locked out of one's own account, even for the technologically literate. *__init__*'s experience in losing access to an MFA-protected account from a previous co-op is one such example of this, and one to which I cannot claim to have an answer.

I understand the frustration with having to use your phone for certain MFA methods. I certainly understand it whenever mine is dead or otherwise inaccessible. However, there are often other options that are both convenient and secure. Personal annoyance at MFA is a paltry excuse for not using it. If you can do so reliably, you absolutely should.

verdanik

1. Of course, I can not claim to know his specific situation, so any anecdote I could give is of limited value.
2. During this episode, hackers were able to access my account (unprotected by MFA, mind you) by using a password that had been leaked in a previous data breach. They subsequently changed the email address and password associated with the account, meaning the only recourse would likely have been Reddit support. I was able to recover this account quickly only because the inbox of the email address they had provided was accessible without a password, as

bizarre as that sounds. As such, I was able to retrieve the confirmation messages from the account's new fake email address to change it back to the old one.

3. Use a password manager, folks. Mine can actually handle OTPs so I don't have to use my phone. I'm sure many other programs can do the same.

I HATE TWO-FACTOR AUTHENTICATION (🎃 SPOOKY HALLOWEEN HORROR EDITION🎃)

DUG UP THIS OLD ARTICLE FROM THE SCRAP PILE (NOVEMBER)

It's the first week of my co-op, and I'm locked out of my GitLab account. The issue is stupid but pretty simple: they forgot to delete the account from the last time I worked there, they changed 2FA providers since then, and now my employer's IT support needs to go through GitLab support to reset my account. It's the type of annoying delay that I imagine exists commonly in the real world, but that I'm still caught off guard by, like when the apartment building you're trying to enter is for real adults, not students, and doesn't have people constantly leaving and entering, so you have to awkwardly wait for your host to let you in.

There isn't much on my mind other than my GitLab issue at work, so I start writing a half-hearted rant on two-factor authentication, hoping I might think of something more interesting to abandon this topic in favour of later on. It's hard to type when my hands are this cold. I pause to rub my hands together, breaking the silence to inquire about the articles around me.

Summaries and snippets are shared all around, except for one. That one's a secret. The few details I'm given don't reassure me that something isn't wrong.

The silence returns. The wind picks up, and I'm starting to shiver slightly. I force myself to type more words, my hands becoming stiffer. I try as hard as I can to care about two-factor authentication, a subject I didn't care that much about before and especially don't care about now.

It's not two-factor authentication I'm mad about, really. It's the dullness of having to sit around at work without having anything to do, but still having to sort of pretend you're working. Clicking through the mandatory health and safety training because that's work, right? But the slides that I've read a million times by now fail to occupy my thoughts, leaving space for everything else I have to worry about. This isn't important. I know what's important right now, and it's not this.

I steal a glance to my left, unable to make out anything on the screen but a lengthy subtitle being made even longer. I wonder what this means. The forbidden link on my computer is tantalizing, but it's protected by the strongest authentication factor I know: the unwritten rules of mutual respect. I peel my eyes back to my screen and push more buttons on my keyboard, down to what feels like one word per minute.

Hours drag on. At some point I've moved inside, where it's even quieter and the number of corners to pull someone aside and ask them what's going on remains roughly the same.

The dullness of being blocked at work has one reassurance to offer me: there's a set end time. When the clock hits five, I get to go home. Even when I'm blankly scrolling through the same company wiki page over and over, because I've run out of unimportant emails to read and things on my phone to check, I can still look at the clock and know about how long I have left before it's socially acceptable to leave.

I'm not particularly proud of the article in front of me, and don't really feel like showing it to anyone, but I'm done with it. I'm still here, even though I've wanted to leave for hours, because maybe if I pick the right time to leave it'll give me the chance to have the private chat I've been agonizingly waiting for. Someone directs a question at me, but I don't have the energy to answer. I try to act as normal as possible while dismissing it. I don't know when the right time would be. Ten minutes from now? Twenty?

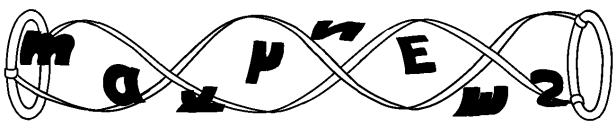
❦

"Is your GitLab issue at work fixed yet?"

It's the first question you ask me about myself. You asked me the same thing the last time I saw you a couple weeks ago. The issue was fixed two months ago. I'd almost forgotten it even happened. At one point some prof I've never heard of had sent me an email offering me advice, and I'd ignored it. I stopped caring about two-factor authentication before that article was even published.

The two-factor authentication demons haven't forgotten about me, though. They read my half-assed, disparaging article, and they're not happy. As the bus pulls onto the highway, I realize I'm still stuck behind that wall of broken two-factor authentication, clinging to the moments when it still felt like you cared about me, the last moments when everything felt fine.

an eagle in your mind



AN UNPROMPTED GLAZING OF TWITCH.TV/LYTHERO

MY FAVOURITE STREAMER

In a social media landscape where you can't run away from clips and drama regarding streamers with millions of subscribers, sometimes all I would like to watch is a streamer who would never get invited to the streamer awards. That is Lythero to me.

Lythero is a Twitch streamer who streams games. I first got into his content on YouTube around 2014 with his "Lobby Shenanigans" series where he would play the 2011 video game "Marvel vs. Capcom 3" (MvC3), a game where popular Marvel characters like Iron Man, Captain America, and Wolverine fight with popular Capcom characters like Ryu, Chun-Li and Dante. The videos consisted of him playing lobby matches with his friends and making jokes with them. I found them hilarious back then, and they're still pretty funny now. Even more than funny, I found all the characters in MvC3 super stylish and cool, especially because I didn't know a lot of them! Lythero's main team was Dante from the Devil May Cry series, Viewtiful Joe from the Viewtiful Joe series and Phoenix Wright from the Ace Attorney series, and seeing them (and by extension, Lythero) perform really technical and cool combos was sometimes even more engrossing than his humor with his friends. I eventually started playing the series where Dante, Viewtiful Joe and Phoenix Wright originate and I LOVE their games and I can't thank Lythero enough for being my first exposure to them.

Lythero also made YouTube videos about the "Super Smash Brothers" game series, which I was much more familiar with at the time. At the time I learned of Lythero's content, "Super Smash Brothers for Wii U and 3DS" (colloquially known by the Super Smash Brothers community as Smash 4) had come out and Lythero made montages of him absolutely stomping on opponents online in his "Grandstanding For Glory" series. My favorite parts were when he would play the character Ganondorf and use his downward aerial attacks to take the "stomping" on opponents to a whole new level.

As time passed, Lythero moved away from uploading videos on YouTube and started streaming on Twitch. When this was happening I was still in middle school (I think?) and didn't even know what Twitch was. I ended up downloading the app, and ever since 2016 I've been a follower in his chat. While he continues to play fighting games to this day, his content has expanded past simply playing MvC3 and Smash 4: he'll hop on new trends, like playing Lethal Company, but he'll also play some childhood favourites of his, like the 2000 game "Skies of Arcadia." Honestly, he could play almost any game with his friends and I'd be down to watch him play it. I think he's THAT enjoyable to watch.

He's not really a super popular streamer, so I guess he is referred to as a "comfort streamer?" Either way, he's the reason I downloaded Twitch and he's the reason I still have it. Safe to say, I'm a big fan.

Neo-Jeo

SUDOKU 3

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

Sudoku 3

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

Sudoku 2 Solved

*Ignis_*

HOW TO MAKE FRIENDS

(FOR WATERLOO STUDENTS)

1. **Be accessible.** Only talk about things that everybody can relate to and understand. Excellent examples include co-op jobs, classes, the weather, public transit. Remain inoffensive, agreeable and as general as possible.
2. **Do not display vulnerability.** Nobody wants to be friends with someone who has visible weakness or internal struggles.
3. **Always show strength**, this goes hand in hand with the last point. Boast your own success frequently, if possible try to one-up others. You are the most exciting and compelling person in the room, make sure others know it.
4. **Reduce availability.** Who wants to be friends with someone that's always available? You don't want to look desperate. A good rule of thumb is to try to flake on 66% of invites to things.
5. **It's about you.** How can someone be friends with you if they don't know everything about you? Again, balance this with point 1, don't talk about anything really important. There is no shortage of banality to talk about: your commute, things you ate, your last experience with customer service.
6. **Display dominance.** Go out and be assertive, make sure the retail employees and waitresses of the world know who's boss. Use your tone of voice and posture to be intimidating and imposing.
7. **Smell bad.** Showering is a lot of effort, show the world you don't care. You aren't vain and you shouldn't need to conform, people should like you for exactly what you are.
8. **Take things and don't give them back.** You want to be wealthy and desirable and nothing screams "broke" more than someone who is anal about debts. If you borrow money or an item, just keep it, if pressed on it just make the other person feel small for caring about it. This segues into the next item:
9. **Belittle others.** Establish relationship dynamics where your friends always feel starved of praise from you so they keep coming back and work even harder for your approval.
10. **Judge.** Abnormality is bad. You know best and your lifestyle is the epitome of good taste and class. Let others know when they deviate.
11. **Excessively clear your throat.**

mant

MAKE "BAD" ART

I like making things. Crochet, knitting, writing, friendship bracelets, painting, etc. I do all of these things with varying frequencies and varying levels of skill.

I want to make things without worrying so much about them being "good."

First of all, "good" is incredibly subjective, of course. I will always see flaws in the things I make that others will never notice. And even if they do notice, they probably won't care! (Easier said than done to believe this.)

Second of all, prioritizing "good" holds me back. I can't be good at every new thing I start, and even if I didn't just start, I might not be "good" to my standards (yet or ever). But if I'm enjoying it, I should do it! (Also definitely easier said than done.)

I tend to feel this most often when I want to share the things that I've made with other people. Again, all of this feels incredibly obvious when I write it down like this. Sharing can be a vulnerable thing.

Writing this is causing me to reflect on the fact that I don't worry nearly as much when sharing things if I think it's something I'm "good" at. This doesn't surprise me, because all of this is based on how I feel about myself and my abilities, but it's just another instance of the idea of "good" creeping in unnecessarily. I want to be just as happy sharing my bad (in my opinion) writing as I am when sharing my good (in my opinion) crochet.

normalparameters

Side note: I started a friendship-bracelet-style keychain with "Make 'Bad' Art" on it, and I ran out of string halfway through the final letter. I think the universe is trying to tell me something.

Side side note: My friend offered to read over this article and I felt my default like "oh I don't want people to read this while I'm right here and I can see their reaction to it and it's just awkward." But like that's part of the point. So there's some more transparency for you all.

Give us a bigger office, and the rag lives.

SUPPOSEDLY A POSTER ON THE WALL IN THE mathNEWS OFFICE THAT I DON'T KNOW THE ORIGIN OF

MAGNETS ARE MAGIC

A TECHNICALLY TRUE AND IMPORTANT STATEMENT

Technically true: I think when people say that, they usually means it obeys the letter of the law, but not the spirit. In this case, it obeys the spirit of the law; it's just that this law is hundreds of years old. And by law I mean what people mean when they say magic.

What did the word magic mean to people who thought magic was real? Well, in the words I wrote down from the lecture I took on the matter:[1]

"A manipulative strategy to influence the course of nature by supernatural/'occult' means."

Which is not how I would have phrased it; "a manipulative strategy" makes it sound like a form of gaslighting. There is some nuance to it, but for this piece, I'm going to strip it down to: "purposeful actions via unseen means."

There has been a shift; I think people mostly think of magic as the unseen means themselves and not the craft around that. But the invisible part seems to have stayed the same. Back in the Dark Ages, people thought there was an invisible force you could use to cast love spells, see the future and affect things via an image of your target; and also one that would cause a compass to point north/south.

Compasses are thousands of years old, they knew they pointed north. So it's not so much a matter of "if they saw this, they would think it was magic," but rather that is a thing that actually happened. And in a sense they were right.

Now, they didn't know about electrons, neutrons and charges back then. Their explanation as to "why" was a bit off. But the magi of old did something clever about this. They tried to use magic spells and remembered what worked (and what didn't), they observed the world and came up with new explanations as they saw more. A process we would today call the Scientific Method.

Of course science didn't really exist back then. And when it did start being a thing, it was effectively a rebranding of a lot of things magicians had worked out. Now from there it started improving a lot, and magic got left behind, viewed as nothing more than an old superstition. And the things magic got right, like compasses and the tides, got claimed by science.

In the current day, that actually makes a lot of sense, but if we stretch our view back, I think it is important to remember a funny line I got off the internet: We stand not on the shoulders of giants, but on a tower of tiny dwarfs.

We know what we know today because of centuries of very smart people adding to our collective knowledge. We feel very smart (and I think we are) but we are also receiving knowledge built up and passed down over centuries by people just as smart as us. This is not a life-changing revelation, but I found the perspective on just how much work has been done to create today rather humbling.

And that is why I think "Magnets are Magic" is important, because, in explaining it, we reveal the work of centuries.

Glec

Humans are my favourite type of animal.

1. CLAS 327 Magic & Astrology; and before you ask, it is a history course about the cultural role of magic, not about the practice of it.

A CONFESSION I MUST MAKE

For, software development lords, I hath sinned, my impulsive hands unable to free itself from its arbitrary bounds, my feeble and addled mind unable to comprehend the new; as I find myself working with the the Pythonic language, whose cult standards dictate writing in snake_case; I, having wretched memories of the JavaScript Pantheon, unable to tear myself from traditions once mine, keep finding my variables written in dreary camelCase.

I have sinned so dearly! Yet my weak will barely notices the mistake. Oh **dramatically puts hand over head in a fainting-like manner**, Editors of the confession booth, however may I repent? To wash off this most cardinal of sins?

[Confession Booth Note: There exists a single path to the light, our child. Thou must forsake such foul snakelike tongues; cast them back whence they came, and return, freed, to thy truest home: JavaScript.]

andoiii

RIP MC-DC BRIDGE

I can't believe the MC-DC bridge is gone. They couldn't wait until the summer?! Now I have to walk outside in the snow and freezing cold, which I hate! Which idiot started construction in the winter in Canada?! I'm not mad; I'm just disappointed, but I'm also mad. Also, they couldn't wait one more term until after I graduated?! I walked through the bridge for the last time last year, and I didn't even know it. Maybe we should have a funeral service for the bridge.

insert pen name here

PS: I know about the alternate routes, but it's about the principle!

PPS: The routes I know about to help a fellow student:

DC — C2 — MC

DC — EIT — ESC — B2 — QNC — MC

WHERE YOU SHOULD TAKE BAE FOR VALENTINE'S DAY

You've been wanting to show that special someone how much they mean to you on the Day of Love™, but you're not sure what to do. You don't want to do something 12 839 895 others are already doing, or run into everyone you've ever known from this mortal life either. Stumped? I got you. Here's six ideas for things to do with your Bae this Valentine's Day:

The Bauer Kitchen: Great date night spot that also doubles as a good place to take Mom and Dad when they're in town. Cute, classy, and in Uptown Waterloo so it's a little adventure on the ION, the sexiest method of transportation, too.

Kinkaku Izakaya: If that Cali co-op money hit your bank account and you're looking to ball out on Baby Boo, take her to AYCE Sushi. Granted, last time I came here the AC was so intense that I caught a cold, but that was in the summer and the sushi was so good I stand by the recommendation anyways. 8.5/10 sushi, 0/10 air conditioning, 10/10 vibes.

Princess Cinemas: Netflix and Chill? Nah, Princess Cinemas and Chill. This cute little theatre boasts films sure not to be found on your go-to illegal torrenting site or "borrowed" Netflix subscription from your friend's sister's boyfriend's second cousin. You'll have your choice between the more vintage Original Cinema and modern Twin Cinemas, with several showings at each.

DIY Bakery Tasting Tour: Ever walked by the bakery in T&T or Waterloo Central Supermarket and wondered what some of those things taste like? Well now's your chance! Buy every pastry you've ever laid your eyes on and sit down to eat them with that special someone. Fun taste-testing game especially if you rank them all.

Cocktail Night: Grab your ice, shaker, and beverage of choice and cosplay as mixologists for the night. If you want to make this competitive, do multiple rounds where you have a theme or certain element that you must incorporate to the drink. If you're doing this, decide the rounds beforehand so that both parties can come prepared.

Costco Hot Dogs: Unironically would slap as a date. Grab your girl, grab your cart, and make this a Valentine's Day to remember by taking her for the best hot dogs she'll ever eat in her life. She'll associate that cafeteria with you every time she walks by, even if you break up. Win-win.

That's it my little love bugs! Enjoy your date night, or your League of Legends game.

bunnyluvr

SOME PLAZA RESTAURANT REVIEWS, IN HAIKU FORM

SUPER CHICKEN

somehow have thwarted
food poisoning despite the
chicken being pink.

FRESH BURRITO

each time i go here,
the portion size gets smaller.
i want chipotle.

HOU KEE CHINESE BISTRO

scrumptious one-hit wonder.
only con is having to
explain its pig feet.

LAZEEZ

classic reddit punch-
line. guaranteed tummy
troubles post-consumption.

CHUNGCHUN RICE HOTDOG

mr panino's
inferior successor.
yummy rice dog though.

CAMPUS PIZZA

boxes are too small
for the slices and the sage
wisdom on the backs.

SHAWERMA PLUS

hot take incoming
jawad student special is best
plaza sh'warma wrap.

D SPOT DESSERTS

decadent delish
desserts worth every dollar—
really hits d spot.

silly little guy

WANT TO MAKE A GAME? JOIN THE GDC W25 GAME JAM!

LIKE, ANY GAME

Like video games, card games, board games or any other kind? Want to meet other cool people interested in games? Want to learn more about game development from amateurs and professionals alike?

Join the UW Game Development Club's Winter '25 Game Jam! **Jammers will be given a theme and 72 hours — from Thursday, February 6th to Sunday, February 9th - to make a game**. In a team or solo, you will design, develop, refine and polish a game from start to finish. For anyone of any skill level or skill set, this is an excellent chance to grow your talents, connect with peers and industry leaders, and get a completed project to put on your resume.

Anyone can participate, no matter your experience level or skills. We've had complete beginners come in and complete a game over the weekend — no expertise required! Our environment is super welcoming, and we have tons of experienced jammers who are more than willing to share their knowledge. Plus, if you ever wanted to get some experience, now is a great time to do it!

We welcome jammers with a bunch of different types of qualifications — programming, art, writing, music, audio, game design, or any combination of these things are all wanted. Any type of game-related submission is accepted too — from video games, to card games, board games, TTRPGs, concept art, design documents, and more. No programming required!

Plus, this is a great way to meet fellow game devs — not just fellow students interested in the hobby, but professional developers who are coming to give presentations and share advice. The exact schedule is TBD, so please follow our Instagram account @uwgamedev or join our Discord (found on the UW student hub) for more information closer to the date.

Most of it will be at QNC, except for Thursday's kickoff. Don't worry if you can't make it physically for some of these times, they're just when the rooms will be open. You're encouraged to work from wherever you are during the 72 hours of the jam. And if you're busy, that's also not a problem — you don't need to work the entire length of the event. Do what you can, from where you can. Even unfinished projects are valuable for your growth as a game dev. You can register at the form linked in the QR code below (or tap this link if your copy does that: https://forms.gle/h3xii4Fg4vTk7WAn9).

UW Game Dev Club

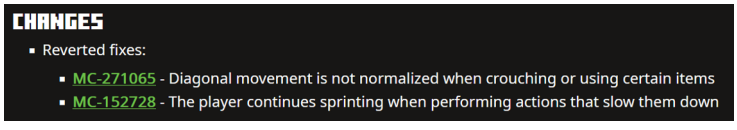
FOLLOW-UP TO "MOJANG FRUSTRATES ME"

Some significant things ended up happening after I wrote the article last issue about Minecraft development and movement mechanics!

The first thing is that a petition on the official feedback page, spearheaded by one of the people in the parkour community, reached over seventeen thousand votes, which is by far the most that any post has ever gotten. Surely Mojang couldn't ignore it. On the day of the next snapshot, we waited with bated breath…

Well, nothing. Not even a single word. To be expected, but disappointing. All we could do was hope for some information the following week. So as the days crawled by, and more and more YouTubers made content covering the change, we hoped. Personally though, I didn't think they would say anything, just like the first week.

Well, I woke up half an hour ago (as of writing this) and saw this:



WE FUCKING WIN THESE.

On a more serious note, I hope this scenario is a lesson for Mojang in the future to more carefully consider any changes to the game. And on our side, the players' side, let this be a demonstration of a small community's power to effect meaningful change.

hyperlynx

DAVID HERJAVEC'S DUNGEON

6:30 pm.

Monday evening

All my friends are frolicking at **mathNEWS** prod night.

But not I.

Here I am, sitting sat at AL 208, stuck in David Herjavec's dungeon.

David Herjavec teaches only these three hour lectures. He says it is because it is the only time block that students don't sleep through.

David Herjavec stares at the floor the entire lecture. Maybe he is looking for the rats that scamper across the dungeon floor. You can raise your hand to ask for your jailors' attention—maybe to ask for some more stale bread, maybe to ask about branch cuts. David Herjavec pays no heed.

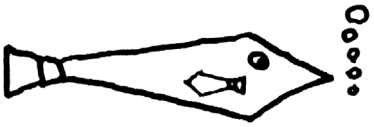
David Herjavec likes to mumble to himself. When he is answering a question (a rare occurrence), he can mumble for ten minutes straight. Maybe the rest of the class can decipher these mumbles, but to me all I hear is dragging iron. The dragging iron of dungeon chains on the cobblestone floor.

Sometimes David Herjavec laughs. He laughs so hard he wheezes. He has to prop himself up against the whiteboard. As a 71-year-old man, this sort of exertion poses a significant risk to his health. Many people consider peals of laughter joyful but I do not. I see these peals for what they really are. Bars. Bars behind which I am trapped. Bars of David Herjavec's dungeon.

At the end of class David Herjavec teases us. "We leave Rocky (from Rocky and Bullwinkle) fallen halfway down the Empire State Building. We'll see if he has made a mess of the pavement when we return next class." Maybe someday I too would be as lucky as Rocky—lucky enough to hurl myself from the Empire State building and make a mess of the pavement—but at the bottom would be David Herjavec. He would catch me in his 71-year-old arms. He would catch me in his 71-year-old arms and return me promptly—promptly to David Herjavec's dungeon.

aphf

All characters appearing in this work are fictitious. Any resemblance to real persons, living or dead, is purely coincidental.



HOW WELL DO YOU KNOW THE EAST CAMPUS BUILDINGS?

FILL IN THE BLANKS WITH THE CORRECT BUILDING CODE

EC__ - formerly BlackBerry 16, now where you can find the director of UW Food Services, as well as the Centre for Extended Learning

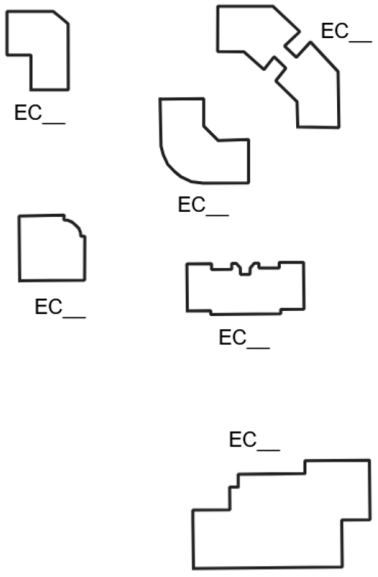
EC__ - formerly BlackBerry 1, now home to the Games Institute, Human Resources, and whatever the Office of Advancement is...

EC__ - formerly BlackBerry 2, now contains the Vision and Image Processing Research Lab, an AI company for road inspections, and maybe something else? (idk)

EC__ - actually an Arts building, home to the University of Waterloo Art Gallery, multiple Art Studios, and the Central Stores

EC__ - formerly BlackBerry 4, now containing the remainder of all administration (communications, marketing, finance, etc.) and a singular Tim Hortons to feed them.

EC__ - formerly BlackBerry 3, now home to general IST (top-level nerds), "Procurement & Contract", and the parts of the Registrar that got kicked out of Needles Hall.



ECH - East Campus Hall
EC1 - East Campus 1
EC2 - East Campus 2
EC3 - East Campus 3
EC4 - East Campus 4
EC5 - East Campus 5

Whole Number Haver

and no, I might not trust the BlackBerry numbers if I were you…

EPISODE 70: FERMAT'S LITTLE THEOREM

MathSoc Cartoons presents Episode 70 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? Sign up to be a reviewer at https://forms.gle/hFYr1R7z4tisim3aA!

Want to see the next comic when it's released? Follow @mathsoccartoons on Instagram and Facebook!

As always, feedback, suggestions, and fan art can be left on the MathSoc Cartoons channel in the MathSoc Discord server or sent to cartoons@mathsoc.uwaterloo.ca.

MathSoc Cartoons

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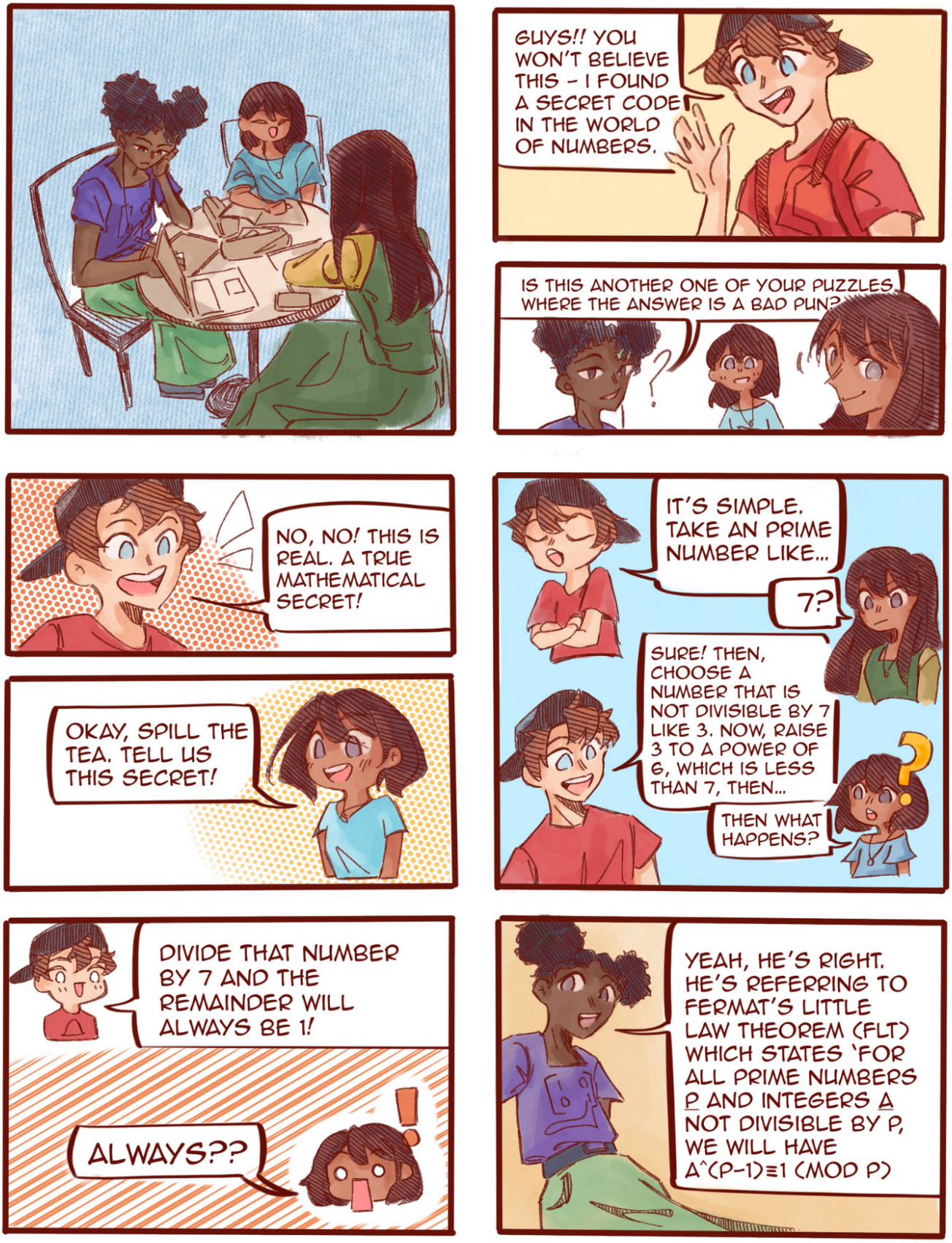
Math 135: Fermat's Little Theorem

Story by Zunairah, Art by Jasmine



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Math 135: Fermat's Little Theorem

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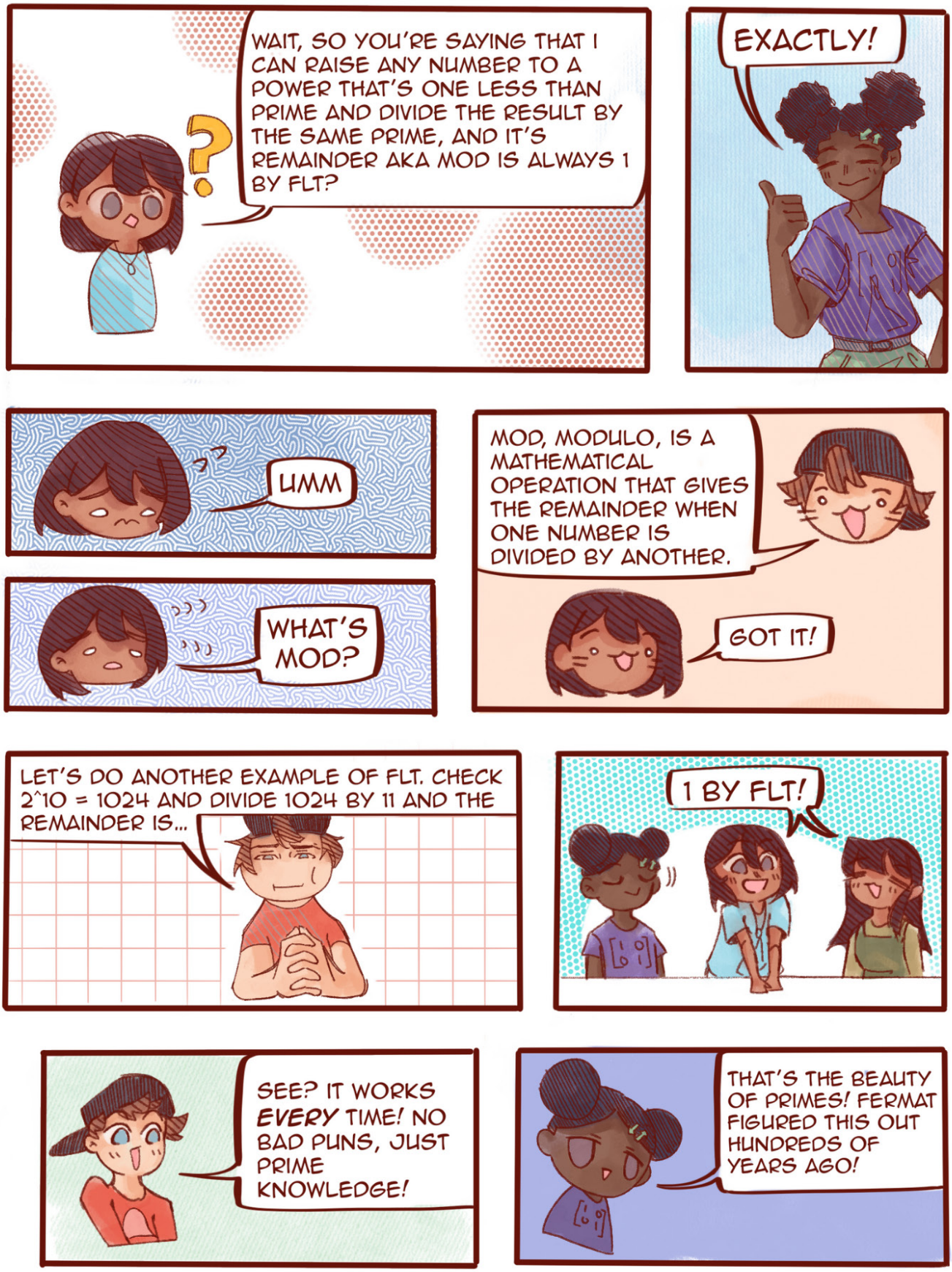
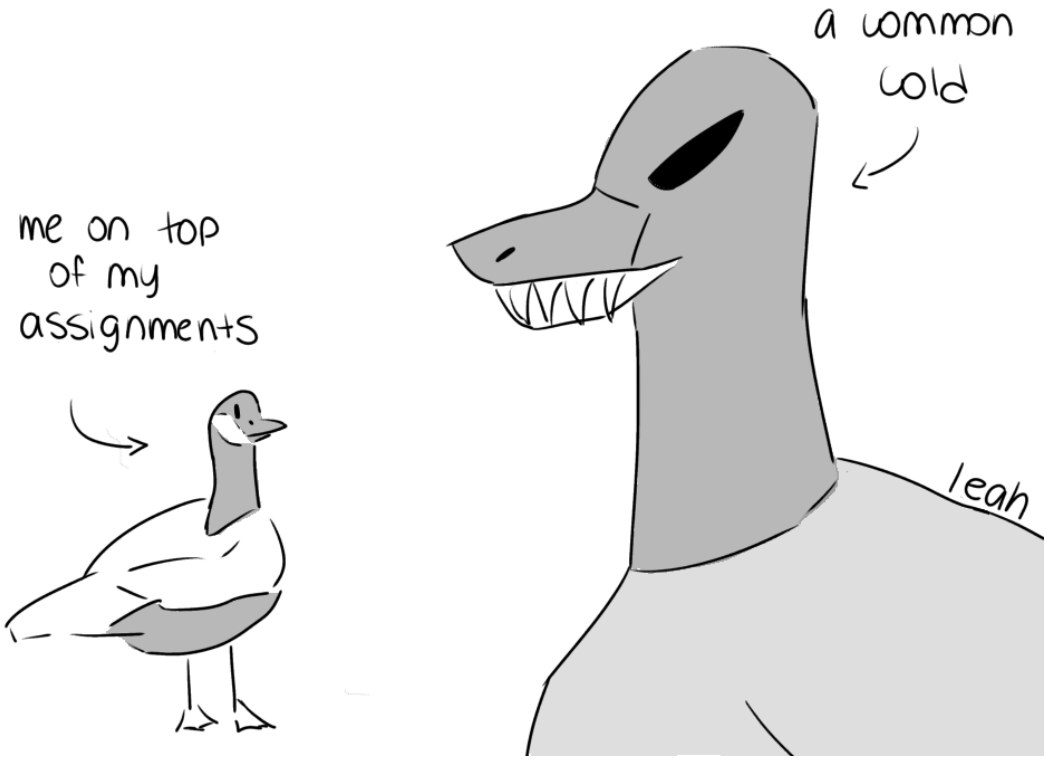


A FRIEND'S LIFE

Ignis_



BURST OF PRODUCTIVITY

HOW I HACKED MYSELF FOR SOMETHING STUPID

I am a conlanger.

Or so I'd like to say. The thing is I've never actually finished a language. For at some point, I've either gotten sick of or simply stopped every single one. I've disowned the vast majority of the ones I've started, although part of me still thinks that's for the best.

However, this does mean that every language I've ever made is unfinished, which is a bit dissatisfying. So in the new year I decided to do a small continuous effort in order to force myself to make more work overall. Tortoise and hare style.

Now, I have stopped. It's very hard to keep up something like that day after day. But, wow, did I get far by my standards. It's truly pathetic but the scrappy little Google Sheets document is the most complete conlang I've ever made and I did it in less than 3 weeks.

…

I hate myself (within reason).

別

MY FAVOURITE THINGS

THESE ARE SOME OF MY FAVOURITE THINGS.

Top Ten Jazz.

1. Chick Corea — "Got a Match?"
2. Miles Davis — "Bitches Brew"
3. João Gilberto — "Girl from Ipanema" *[Editor's note: BRAZIL MENTIONED 😹😹]*
4. John Coltrane — "Equinox"
5. Wayne Shorter — "Footprints"
6. Pat Metheny — "Bright Size Life"
7. Monk — "Bolivar Blues"
8. Charlie Parker — "Confirmation"
9. Chick Corea — "Windows"
10. Billy Strayhorn — "Lush Life"

Ikeman

I think I'm almost too quotable, I need to tone it down.

PROF. BLAKE MADILL

WIN A PRIZE WITH YOUR RIZZ

To participate,

Send Jeffery, @grogles on Discord, the best pick up line. Whoever he says is the best will win the rizzler competition prize.

Good luck rizzing my boi.

The prize will be in the next **mathNEWS** :)

Jeffery's Zaddy

COMPLETELY BLANK ARTICLE NOTHING TO SEE HERE MOVE ALONG

1. ST
2. ffŝ ffš ffř ffò ffŧ ffl· ffļ ffl̓ ffĺ ffķ ffĵ ffĩ ffį ffĩ ffì ffĩ ffî ffĩ ffĥ ffħ ffè ffã ffā ffà ffã ffă ffþ ffk ffj ffh ffb ffl ffi
3. fĩ fî fĩ fĥ fħ fŝ fš fř fò fŧ fl· fļ fè fã fā fà fã fă fþ fl̓ fk fj fh fĺ fķ fĵ fĩ fį fb fĩ fì ff

terminal

OOPS + I AM BORED

In the last **mathNEWS**, I mentioned "PMATH 111." By that, I meant PHYS 111.

I can't think of anything else to write tbh tho i feel like i should probably write some more stuff idk maybe not who knows.

easty

MANGA

Oh no, I've gotten sucked into manga. Somehow I managed to avoid the anime → manga pipeline, but I've still gotten myself stuck. I've actually spent so much already. *[quick calculation]* **[spit take]** AROUND $125!!?!??!?

I need help. I need to stop. But I can't.

別

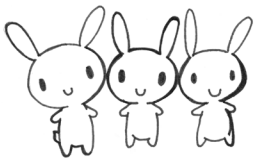
IDK NEW gridWORD

gridCOMMENT *157.2*

hey guys,

WWWHATS UP **gridWORD**ers and welcome back to another **gridWORD**!!!!!!!!! today we'll be PRANKING **gridWORD**ers by putting out a **gridWORD** that has one of the least creative themes since i became **gridMASTER**.

and today, as always, we will be doing a GIVEAWAY!!! to enter for a chance to win a $5 math cnd GIFT CARD, LIKE this video and leave a COMMENT in mathnews@gmail.com's inbox by february 10 6 pm with your pseudonym, **gridWORD** solution, and an answer to the following **gridQUESTION**: if you could be any sea creature, what would you be? don't forget to hit that SUBSCRIBE button and RING the little bell to be notified of the next **gridWORD**



and for today's shoutout, let's take a look at how you all answered last issue's **gridQUESTION**, "what was your favourite memory of 2024?":

- Lars Nootbaar and aphf: *The five-year anniversary of the BC shaped slice of cheese*
- nike: *holding multiple toads*
- grasstoucher69: *hiking through various mountains and canyons, and reminiscing about said mountains and canyons.*

i think we should encourage more grasstouching here at the university of waterloo. grasstoucher69 you have WON the FSHOUTOUT FRIDAY please pick up your prize at MC 3030

that's it for this **gridWORD** and i'll see you all in two weeks!! *[cue outro music]*

spaghettiinhalers

ACROSS

1. Exploits
5. "Ender's Game" genre
10. Tropicana option
14. Brownish purple
15. Pomo language
16. Carbon compound
17. Some miniature dogs
19. Aquatic plant
20. With aloofness*
21. Half a dozen
23. Mythical monster
24. River dams
25. Tackle box item*
27. Dark time for poets
28. Shrek, e.g.
31. Muss one's hair
32. Border
34. Christmas
36. Refine, as metal
37. Instagram like, or how one might type the circled letters*
40. Rock drill
43. Communicate silently
44. Q-Tip
48. Sasquatch, for one
50. Memo
52. ___-Wan Kenobi
53. Fishy behaviour in a group
55. Get around
57. Sample
58. Mole
59. Walk
61. Lyrical poems
63. Beggar
66. Sound on Old MacDonald's farm
67. Pasta shape
68. Gambling game
69. Astronaut's insignia
70. Revs
71. De novo

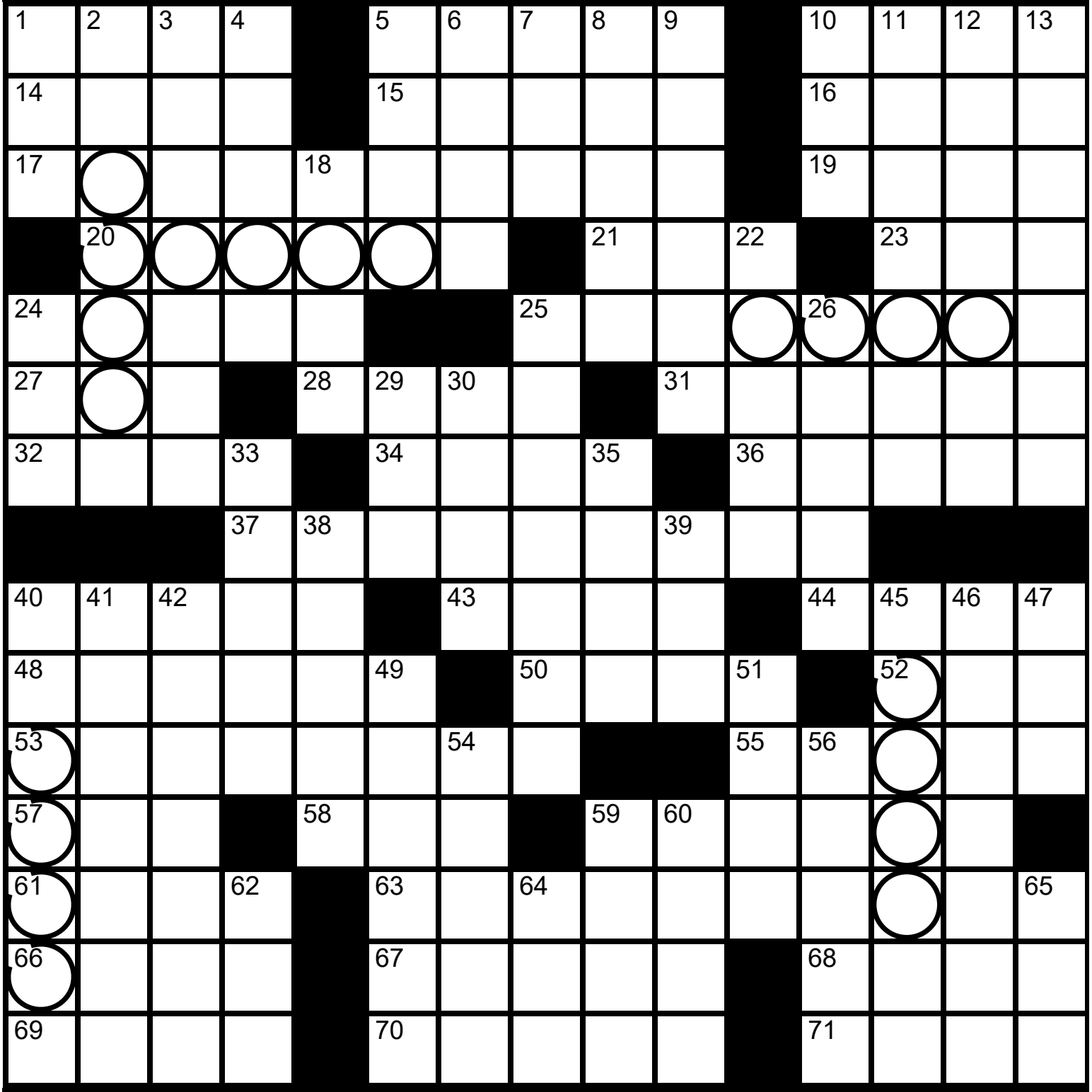
DOWN

1. Pkg. deliverer
2. Follow*
3. Reverberating
4. Spanish gentleman
5. Jewish house of prayer
6. Like a bug in a rug, maybe?
7. Canadian Broflovski
8. Mideast language
9. Be stubborn
10. Podded plant
11. Release
12. Emergency medical manoeuvre
13. Blouse opening
18. And
22. Language with click consonants
24. Itty-bitty
25. Hunch
26. Arches
29. Wildebeest
30. Steals from
33. Swelling
35. Danish toy company
38. Certain exams
39. Grocery store on Westmount Rd near UW, maybe?
40. Oboe's cousin*
41. Reptilian suborder
42. Looks into again, as a case
45. Made from sheep*
46. Chisholm Trail town
47. Auction action
49. Crustacean claw
51. Bring home
54. African antelope
56. Potato spirit
59. Pump, e.g.
60. Fancy marbles
62. Cousin of reggae
64. Former B99 network
65. Lineup

Drop your gridWORD solutions off at MC 3030. And yes, we do award points for creativity.

A PERPETUALLY BORED mathNEWS EDITOR

GRIDXGRID



Want to write for mathNEWS? Come to the next production night! New writers are always welcome!

Check the lookAHEAD for the next date!

A mathNEWS EDITOR WHO NEEDS NEW FRIENDS

lookAHEAD

SUN FEB 2	MON FEB 3	TUE FEB 4	WED FEB 5	THU FEB 6	FRI FEB 7	SAT FEB 8
Groundhog Day	Monty Hall Problem Day	Course selection period ends		AMATH Prof Talk *4:00 PM, MC 4040* Co-op cycle 1 rankings available UW Game Jam begins		Iron Ring Ceremony

SUN FEB 9	MON FEB 10	TUE FEB 11	WED FEB 12	THU FEB 13	FRI FEB 14	SAT FEB 15
Manifest a New Bridge Between Two Disconnected Buildings Day UW Game Jam ends	**mathNEWS** 157.3 production night *6:30 PM, PHY 145*		International February Appreciation Day	International Day of Mourning for the Two Missing Days of February	Valentine's Day **mathNEWS** 157.3 releases with zero printing errors, due to the sheer amount of love in the air	Reading week begins Discount Chocolate Day

LAST ISSUE'S gridSOLUTION

1 W	2 R	3 A	4 P	■	5 S	6 T	7 E	8 L	9 A	■	10 D	11 E	12 V	13 A
14 H	E	R	A	■	15 T	H	R	O	B	■	16 O	T	I	S
17 A	P	O	T	18 H	E	O	S	I	S	■	19 D	U	C	K
20 L	A	S	H	E	R	■	21 E	N	E	22 R	G	I	E	S
23 E	Y	E	■	24 A	N	25 C	■	■	26 N	E	E	■	■	■
■	■	■	27 S	L	A	U	28 G	29 H	T	E	R	30 I	31 N	32 G
33 F	34 I	35 S	T	S	■	36 S	N	A	I	L	■	37 L	E	A
38 O	N	L	Y	■	39 L	H	A	S	A	■	40 F	I	R	M
41 O	D	E	■	42 T	O	A	S	T	■	43 M	L	A	D	Y
44 D	O	W	45 N	B	Y	T	H	E	46 B	A	Y	■	■	■
■	■	■	47 U	S	A	■	■	48 D	E	N	■	49 S	50 K	51 A
52 O	53 P	54 E	N	P	L	55 A	56 N	■	57 E	G	58 G	N	O	G
59 T	O	R	C	■	60 E	L	E	61 C	T	O	R	A	T	E
62 T	O	R	I	■	63 S	T	O	O	L	■	64 I	K	O	N
65 O	R	S	O	■	66 T	O	N	N	E	■	67 N	E	S	T

WOULD YOU LIKE mathNEWS DELIVERED TO YOUR OFFICE?

Are you someone who has an office on any[1] part of University campus? Are you a reader of **mathNEWS**?[2] Would you like **mathNEWS** delivered directly to your office? We can make that a reality! The "sign up to have **mathNEWS** delivered to you" **blackBOX** at the end of each term's last issue is *not a joke!*

Sign up now by sending an email to mathnews@gmail.com!

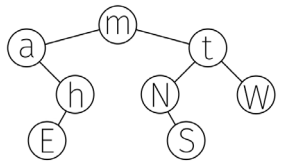
the **mathNEWS** *editors*

1. We're pretty sure any campus is eligible. Architecture definitely appears to be.
2. If not, please let us know at mathnews@gmail.com how you've managed to consume this article.

AMC PRESENTS AN EXCITING TALK FROM A NEW PROFESSOR!

Prof. Mohamed Hibat Allah is giving a talk on Feb 6th at 4:00 PM at MC 4040 to the Applied Math Club.

More details on the Discord server and puremath.club to come. Light refreshments will be provided to club members.[1]

VP AMath of the Applied Math, Pure Math, and Combinatorics and Optimization Club

1. Our membership fee is $2 a term.