

math NEWS

Volume 130, Issue 2

Friday, January 29th, 2016



lookAHEAD

mathNEWS

January 29	<i>mathNEWS</i> puts Issue 2 in the tea infuser
February 8	Issue 3 steeps for several minutes
February 12	Issue 3 is topped with whipped cream and served

MathSoc

January 29	By-election voting ends
------------	-------------------------

University

Jan 28 – Feb 24	Employer Interviews
February 8	Last day to start a 12-week work term
February 11	Final Examination Schedule released

Miscellaneous

February 1 – 7	Doppelganger Week
February 5	National Wear Red Day (U.S.)
February 7	Super Bowl 50
February 8	Halftime-Show-Review Day
February 8	Chinese New Year
February 9	Yom Kippur Katan
February 13	International Purple Hijab Day

Article of the Issue

The Article of the Issue is *Simple Things*. It is difficult to use only the most ten-hundred words in a thing. We know that feel, brother.

letter before letter twenty and letter twenty are in two letter after letter ten, letter after letter ten in last letter, one then four then four, come by the number news office after for the present (not real money on a card to buy things) for writing the best word thing of the week. By after, I mean way after, when we get the present. It will happen soon, I am sure. Though soon does not mean same thing for every people. Sorry.

The Editors

ISSN 0705—0410

Founded 1973

mathNEWS is normally a fortnightly publication funded by and responsible to the undergraduate math students of the University of Waterloo, as represented by the Mathematics Society of the University of Waterloo, hereafter referred to as MathSoc. *mathNEWS* is editorially independent of MathSoc. Content is the responsibility of the *mathNEWS* editors; however, any opinions expressed herein are those of the authors and not necessarily those of MathSoc or *mathNEWS*. Current and back issues of *mathNEWS* will eventually be available electronically via the World Wide Web at <http://www.mathNEWS.uwaterloo.ca/>. [I said so humourously; your inference is not my implication.—ConvolutED] Any normal person would have interpreted that as a request for change! What do you think, everyone? ...Anyone? Send your correspondence to: *mathNEWS*, MC3030, University of Waterloo, 200 University Ave. W., Waterloo, Ontario, Canada, N2L 3G1 or to mathNEWS@gmail.com on the Internet. This work is licensed under the Creative Commons Attribution-Noncommercial-No Derivative Works 2.5 Canada License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc-nd/2.5/ca/> or send a letter to Creative Commons, 559 Nathan Abbott Way, Stanford, California 94305, USA. Terms may be renegotiated by contacting the editor(s).

Amy Li (Jasmine), Elizabeth Liu (Pu'erh), Katherine Tu (English Breakfast), Jose-Miguel Velasco (Chai)

mastHEAD

The big news sweeping across campus this week is the Sever Ties referendum that took place on Monday, Tuesday, and Wednesday; naturally, we at *mathNEWS* think that there's probably plenty of stuff worth holding a referendum for, and so we thought it would be fitting to ask our writers what those things might be (because crowd-sourcing ideas/funds/anything is *easier* than coming up with them ourselves all the rage these days).

Also worth mentioning, we may have (read: definitely did) lose the original set of *mastHEAD* answers shortly after the conclusion of this week's production night. As a result, this week's responses are fewer in number than usual. Our apologies go out to anyone who gave a response that wasn't subsequently published; that's on us, and we take full responsibility for it.

Anyway, without further ado, let's see how our writers answered this week's *mastHEAD* question: "What would you hold a referendum for?"

HatOfChocolate ("UWaterloo's official phone OS: Android vs iOS"); Dusk Eagle ("Should RCH be converted into a giant three-storey pool?"); Diminutive Rex ("If we should actually make some changes to the snow day policy."); Dank ("I would hold a referendum to sever ties with the University of Waterloo. Editing *mathNEWS* would be so much more fun if we didn't have all those annoying 'classes' and 'assignments'!"); !able ("Be it resolved that *mathNEWS* replace production night FREE PIZZA with ONE (1) FREE INSTANT CUP NOODLE (per writer, per production night) and that *mathNEWS* obtain three (3) electric kettles with auto-shut-off function for the purpose of preparing the instant cup noodles."); AltGr ("Banning dihydrogen monoxide."); Scythe Marshall ("Requiring mandatory transparency in governance and finance of any organization."); The Depressimist ("A referendum in which we choose how the human race dies: a nuclear holocaust, or an environmental cataclysm. It's going to end by our own incompetence; I'd simply like the ability to choose which of our mistakes becomes our damnation."); TheUndecided("I would hold a referendum to decide whether or not we should re-design Canadian money"); Zethar("Anything, really. In the end it's a distraction for the general public while the important administrative decisions are being made behind closed doors."); ConvolutED ("PHP: colossal mess or tiny mess?"); IceNine("Is *mastHEAD* question a tradition worth saving?"); waldo@<3LE-GASP.ca("Should Federation Hall be returned to students?");

Pizza Freeloader Kid, Editor-in-Training("I'd hold a referendum for change— the other option would be switching to bills exclusively.").



VPO Sez

Hiya cats,

- BY-ELECTION VOTING ENDS TODAY! So please vote at mathsoc.uwaterloo.ca.
- Candy is back!
- A new microwave for the Comfy has arrived.
- Casio calculators will soon be restocked.
- Novelties are also being restocked, with a new order of Cheat Sheet t-shirts in femme sizes placed!
- Volunteer and office training has been taking place. If you did not reply to your acceptance email, please do so.
- Dan Wolczuk and I are planning another presentation, this time a panel on overcoming failure and achieving success. Stay tuned for more details!

Katherine Tu
Vice President, Operations

Teaching Awards

Nominations for the DTA are due on Friday, February 5, 2016.
For further information, visit: <https://uwaterloo.ca/cte/awards/dta>.

Nominations for the AETS are due on Friday, February 12, 2016. For further information, visit: <https://uwaterloo.ca/cte/chakma>.

Maggie
Centre for Teaching Excellence

**((Not Yet (But Almost Certainly))
Actual) Games Sez**

Games Nights are Thursdays this term! Join us in the Math C&D from 6:30 PM (or whenever you show up) until late at night (or whenever you leave) for an evening of games.

Your (soon-to-be) Games Director,
a crafty player

Hey clubs! Want your Sez in *mathNEWS*? Submit them to us!

Math Teachers & Tutors Needed Internationally

UGANDA: Secondary School

Do you excel in physics, math, chemistry and/or biology? Can you explain one or several of these sciences to others? If so, then we need you! You do not need to have teaching experience or credentials.

We need you to teach students that suffered through the war waged by Joseph Kony's Lord's Resistance Army (LRA).

The first goal is to see that these youths can pass the National Examination so that they can get a scholarship to Makerere. The second goal is to hopefully ignite a passion for math and the sciences.

If you have years of experience teaching math, we would like you to mentor the teachers.

TANZANIA: Igniting a Passion for Math and/or Science (STEM)

75% of Tanzanians are farmers. Their educational system has not prepared them to do anything else.

All over Africa, you will see a lot of rote learning. They "get" that science, math and technology are key in the global economy.

They have watched China and India surge forward and they are asking for your help in the following ways:

1. Directly engage youth through demonstrations, hands on learning, and TV (they are broadcasting to wider audience).
2. Ignite the spark by sharing new innovations and fascinating products with science teachers.
3. From Boring to Big Bang, help teachers develop creative methods that are going to engage students.

HONDURAS: STEM

This children and youth program also realizes the importance of science and math. Knowledge of Spanish would be helpful. Come awaken their interest!

TANZANIA: School for the Deaf

The director of the deaf school has asked for math teachers to work with his students "because you do not need language to follow what is going on in math."

PERU: Tutoring Math

In Peru, families leave the high and dry Altiplano because they can not make a living and come to the cities looking for work. There is none. So the kids shine shoes to sustain the family.

This tutoring program was started to show the street youths another route: that education offers a brighter future.

You do not need to know Spanish, though that is certainly helpful. Much of the math can be explained in numbers not language. We need you!

Interested?

If so, then please read NGOabroad website <http://www.ngoabroad.com/> and send BRIEFLY answered Questionnaire and resume to: info@NGOabroad.com

This is a volunteer opportunity. Applications are accepted on a rolling basis. Students and experienced teachers and mathematicians both welcome.

Ann McLaughlin
Director, NGOabroad

N News Briefs

- "‘Putin is corrupt’ says US Treasury". In other breaking news, water is wet and humans have mastered controlling fire.
- "Reusable Bezos rocket revisits space" revitalizes re-vanchism reaching record rage on residents of rotating radius-refined reality.
- "Lanky bird's killer kick quantified". Yeah, that's not an article title from The Onion. Within the same Science and Environment page is also "Penguin diary: Charting a year in the life" and "Storks shun migration for junk food". Maybe science really is for the birds.
- "Women rowers conquer Pacific ocean". I'm pretty sure there's an international treaty against annexation of ocean territory.
- "SA mayor defends virgin scholarships". No fucking comment.

IceNine

New Crossings with Bad Signs

Finally, there are wonderful crossings across Ring Road where cars have to stop and students can now safely cross the road. However, the signs for cars are not the greatest.

They are really small. They could be bigger so that they could be seen from slightly further away. Also, because they're small, when they get covered with dirt and snow, they'll be hard to see. They are reflective at night but as cars come around the corner, their headlights don't hit them at the first crosswalk location which means drivers can't see them. (*Sigh*). They are also at ground level, so not easily seen by drivers. This is also bad for students because bad drivers not seeing the signs leads to students who don't look both ways before crossing being flattened.

I wish they'd either put up proper yield signs (which is what the little signs actually tell drivers) or put up proper stop signs. The current half-measures could cause problems.

Stubbs

Who's Afraid of the FASS?

Is it you? Find out February 4th, 5th and 6th at the Humanities Theatre!

Come see an awesome show full of awesome humour, put on by awesome people! FASS is the University of Waterloo's premier theatre company put on by Faculty, Alumni, Students and Staff (and well, anyone who wants to be a part really). FASS is Waterloo-centric, silly, nerdy, musical and FUN!

There are four shows, all taking place at the Humanities Theatre in Hagey Hall. Showtimes are:

Thursday, February 4, 2016 at 8:00 PM

Friday, February 5, 2016 at 7:00 PM and 10:30 PM*

Saturday, February 6, 2016 at 6:00 PM

* The Friday late show (marked with an asterisk) is an "audience participation show", which means that you (the audience) gets to hurl abuse, wit and puns at the actors throughout the course of the show (not actual physical stuff, though, or we'll kick you out). There may also be more hip-thrusting and swear words than a normal show, so prepare for that.

Tickets are cheaper if you get them in advance (tomorrow is the last day to get advanced tickets!). Tickets are \$10 in advance, or \$12 at the door. The Thursday show is slightly less (\$7 in advance, \$9 at the door). If you're a first-year student, that's even better, because we have \$2 tickets for the Thursday show! \$2! I wish I was in first year again...

Your very own GingerbrED will be making multiple appearances as a tree-hugging witch, the red-headed clown spawn of Satan, an overly dramatic actor in an epic tango, and a mathy vampire (featuring the math-nerdiest song I have ever had the pleasure of singing).

See you there!
El Jengibre

grtapp.ca

You use bus, this is fact. You use car? You still use bus sometime.

Everybody need check bus schedules or be late. To find time of bus stopping, you need paper or digital schedule, or use text message service.

Alternative is available. Excellent website grtapp.ca provide information of all buses which will be at stop. It show buses and routes of buses, and arrival time of buses. All you need is stop number, and site take care of rest, even showing nearby bus stops. Website grtapp.ca best alternative if you, like me poor Russian Canadian, have no smartphone.

There is issue: require Internet to use. School give all free Internet and many places in glorious socialist Canada also give.

Hope this helps you Comrade,
Soviet Canadian

Calculator Policy Has Changed

If you were away on co-op last semester you may not be aware that the calculator policy has changed.

It is extremely likely that your calculator is no longer approved. The only approved calculators are:

- TI 30X II (Either the 'S' (Solar) or 'B' (Battery) version of this model are acceptable).
- Casio fx-300MS
- Sharp EL 531X

The reason given for this change was: to improve the ease of enforcing approved calculators. *[Editor's note: Also to prevent and catch cheating, which it has.]* The administration believed that by distributing calculators during frosh week, this avoids much of the inconvenience.

Every upper year student I have questioned on this change has expressed displeasure at the issue of having to buy a new calculator on the verge of graduating. Unfortunately, the students' displeasure does not change the fact that they need to buy a new calculator for their last term.

Beyond Meta

Clubs Community Centre: Grandly Open!

WatSFic is proud to let you know that the Clubs Community Centre – and more importantly (to us), Clubs Library, is grandly open in the SLC once more! There was cheese, grapes, and cookies in a shindig worthy of Kaylee Frye to mark the occasion.

Are you a Waterloo student who loves reading? At the Clubs Library, you can check out any book in our extensive collection. We have anything from Game of Thrones to Cats in Space, from Dungeon Master Guides to Chicks in Chainmail (except you can't check that one out because I still have it). A number of other clubs have their collections available to you as well.

The library is in SLC 2139, so right by the Campus Response Team offices on the second floor, overlooking the main eating area. It's open from 10:00 AM to 3:00 PM every weekday, and it also has some comfortable chairs for sitting, and a few desks for studying.

Happy reading, Waterloo!

Heather Stonehouse
WatSFic Secretary

**Submit your articles in the
BLACK BOX outside the
MC Comfy or email them to
mathNEWS@gmail.com!**

PSA: Free Food Info Sessions Now Food-Free

This semester, CECA has not fulfilled their obligation to provide free catered food to shameless freeloaders like me. So far, of the three co-op info sessions I tried to crash, I managed to obtain food at exactly zero of them.

First was the Google session. I guess the company finally realized that scores of students here worship them as gods or something so they know they only need to provide enough food for 30% of the attendees. I stood in line for 15 excruciating minutes in the cold, before the CECA lady told me that they ran out of food and swag. Well, that's when I ran out of reasons to be there.

Next, I tried to crash the Capital One info session which ended before I got there, not even an hour after they started. Whatever. This has happened before. I'm not complaining too much.

And today, I tried to crash the Airbnb info session. The CECA lady told me they have a cap on the room capacity now and that after swiping n watcards (where n is the capacity of the room) for insurance purposes they are not allowed to allow more people in, even if there is space in the room after some students leave. Now this is just ridiculous. I swear CECA is conspiring to prevent me from getting free food.

Anyway, this is a public service announcement to let all the freeloaders know: the CECA free food gold mine might be drying up soon. But hopefully not.

foodcat (aka Tubbs)

N Reasons to Become an Orientation Leader

Join the family of Math Orientation 2016!!!

- You are a smart, nice, and slightly awkward person.
- Math Orientation is filled with smart, nice and slightly awkward people.
- We made bitly for you! <http://bit.ly/mathleader2016>.
- You get to build a strong, trusting and mutually empowering relationship with your first years and fellow team leaders...then dunk them with buckets of water!
- A legit and noble reason to tell your parents why you dyed your hair pink.
- Witness the first time in 5 years where we will not have a rain day on Waterloo Park Day (we'll do an anti-rain dance the night before!)
- Leadership opportunities! Interpersonal skills! Team work experiences!
- No matter who you are, we will help you find a suitable role from our wide variety of positions.
- WE NEED YOU!!!

FOC 'n' Roll ACDC

Simple Things

I like using big words. My set of words I use is very big. It makes me sad when I have to use the same word that says things about something more than once in a group of words. The book that says what words are the same as other words is my friend. So I decided to use only the ten-hundred most used words to write news thing about using only the ten-hundred most used words to write a news thing.

I'm a person who writes things, but I can't call myself the actual word for someone who writes things, because that's not a word that is used enough. In the group of words above this group of words, I couldn't use the word for a group of words that end with a little round thing. I couldn't use the word for a group of those groups of words in the last group of words that ended with a little round thing, because it isn't used enough. I guess that last group of words ending with a little round thing was hard for you to read. A little part of me died inside when I wrote it.

I'm kind of surprised I could write that last group of words just the way I wanted to.

It's interesting that even though I'm using words that are easier to know, it becomes harder to know what I'm saying. Groups of words that people use to speak are weird some times.

Thanks,

letter before letter twenty and letter twenty are in two letter
after letter ten, letter after letter ten in last letter, one then
four then four

A Farewell to Arms

*With apologies to Ernest Hemingway
and the much lesser known George Peele*

I rode along an empty road,
And through the bright red lights;
The city's dead and no more owed
The chance to reach new heights.

I'm going home; the last to stay,
My partner did stay too,
But she was caught, and they did slay,
Fresh food they did accrue.

The horde grew fast and ravaged all,
Left nothing in its wake.
Close calls I've had, but death I'll stall
'til time makes a mistake.

It's harder now; to stay alive,
I need to sound alarm;
Not guns, they did of me deprive:
That zombie got my arm.

Scythe Marshall

"Math-Ish" Movie Reviews

Why "Good Will Hunting" Is Not As 'Good' As It's Made Out To Be (And Yes, That Was A Damn Good Pun)

Did I just state that "Good Will Hunting" was not a very good movie? Well... not quite. However, I did state that it is thoroughly undeserving of its 97% critic score and 94% user score on Rotten Tomatoes, as well as its 8.3 rating on IMDB (and in consequence, its Oscar for "Best Screenplay" in 1998). There are a few good reasons why "Good Will Hunting" is as hyped up as it is, but all too often its many faults are ignored. not the least of which is its lack of mathematical content.

All jokes aside though, there are two major flaws with "Good Will Hunting". The first lies with the character of Will Hunting (Matt Damon) itself. For a movie based on the pursuit and understanding of the human psyche, the character whose struggles and subsequent development are most highlighted is just too absurd to be realistic. Had Will been left purely as an untapped Mathematical genius, all would have been well and good. However, for some reason the writers saw it necessary to make Will not only an expert in algebraic graph theory, but also one in organic chemistry, history, literature AND psychology. How is it possible for someone to be that proficient at so many different facets of academia while working multiple jobs and retaining a very respectable social life? Hello? Have the writ-

ers ever met a college student? We attempt and fail at this on a daily basis, we should know that Will Hunting's exploits are simply humanly impossible. Unfortunately, the movie loses a lot of its credit once its main character has been debunked as such. The second problem with the movie comes from the ratio between its pacing and its length. The movie suffers from the lack of a discernable pace. Coming in at a little over two hours, this lack of pace means that the viewer gets lost wading through the countless confrontations between the likes of Will, Gerald (Stellan Skarsgård) and Sean (Robin Williams) and thus misses out on the essence and heart of the plot.

Despite everything above, the movie is not all bad. Between the stellar writing and cutting analytic dialogue, jarring performances from Robin Williams, Stellan Skarsgård and Matt Damon, picturesque cinematography and complex plot, "Good Will Hunting" is a movie certainly worth watching. Just not one worth all the hype it has received. Watch it, just don't expect it to blow your mind.

Rating: 8/10

StrangeNovemberChild

A Wrong Showing of Finding the Less Heavy Round Money Piece in Four Checks or Less

(Written in the Ten Hundred Words)

We will again use the way of showing that because something works for one step, it will work for all steps.

We know that if you have two money pieces, it will only take one check to find out which money piece is the light one, so the first case is shown.

We must now show that if you only need four checks to check over 'k' money pieces, you only need four checks for one more than 'k' money pieces.

If you only need four checks to check the 'k' money pieces, then you can use the four checks to check 'k' of the money pieces in your group that is one bigger than 'k'. If you don't find the light money piece with those four checks, it must be the last money piece that you didn't check. This means you only need four checks to find the light money piece in a group that is one

bigger than 'k'. This means the idea is true!

This is pretty simply shown to be wrong by trying to find the light money piece in a group of ten hundred money pieces with just four checks. Where did we go wrong? Find out in the next **numberNEWS!**

Where did our wrong showing in the last **numberNEWS** go wrong?

The very first case, three, is bigger than two, but you can't make three by adding two numbers that are two or bigger together. This means the showing that it works for one step means it works for all steps went wrong! If it weren't for three, then maybe all numbers really would be even.

And Now For Something Completely Different

I personally like Hawaiian pizza, but I'd say my favourite is what stores may call "Super" or "Canadian". In other words: pepperoni, green pepper, mushrooms, onions, and sometimes ground beef.

cowabunga

Little One Who Runs The Land Meh

A lot of people have strong opinions on Hawaiian pizza.

I don't.

Yours,
(s,t ∈ {2k,k ∈ Z}, 144

A Little Bayesian Math

Imagine that there's a new online or mobile game which suddenly got super popular and everyone is playing. You pick up the game, and idly play it in your spare time. However, as you play it, you think you've found a strategy which is real good, maybe broken good. You try it out in random PvP.

Let's make a few simplifying assumptions: there are only two outcomes you are about — winning and losing, and that the probability of winning a game against any random opponent is p . For all the students who are having flashbacks to STAT 230/240, this sounds like a Bernoulli process with win rate p , so we shall model our situation as thus.

Let's say that you played 10 games and won 9 of those games. A second-year student would say something like, "A collection of Bernoulli trials can be summarized by a Binomial distribution. I want to know if my winning probability, p , is greater than 0.5, so I recall my STAT 231/241 and construct a 95% confidence interval testing that hypothesis. I get (0.714058, 1.08594), therefore I conclude that my strategy is better than random chance, probably."

But wait a minute. There are two problems with that analysis — first of all, probabilities can't be greater than one, and second of all, that doesn't tell you how well this strategy will do in general. The first is easy to resolve: using a more carefully constructed interval (in the example, the Clopper-Pearson), one can find a better estimate of (0.691503, 0.997471), which still supports the hypothesis.

The second issue is more difficult to resolve. It's the nagging of "I'm pretty sure that p is greater than 0.5, but I don't have much evidence to pinpoint exactly how much. This is where Bayesian statistics comes into play.

One may recall from STAT 230/240 this thing called Bayes' Theorem, with a very opaque formula reading something like $P[A|B]P[B] = P[B|A]P[A]$. All of the theory which is to follow comes from that simple formula, but it's about to get a lot worse (right).

$$p(\theta|x) = \frac{p(x|\theta)p(\theta)}{\int_{\forall \theta'} p(x|\theta')p(\theta') d\theta'}$$

The fundamental difference between frequentist and Bayesian inference is the treatment of the parameters; that is, in one we assume that we simply can't observe the true value, but one exists and doesn't change, while in the other we take a more meta approach of "let's assume the parameter is also on a distribution, so we can stats while we stats".

The posterior distribution $p(\theta|x)$ is the probability distribution of the parameter of interest, θ , given the observations of x . $p(\theta|x)$ has the wonderful formula of:

Which, given the example of you winning 9 out of 10 games, gives us $p(p = x | \text{went } 9-1) = 110 \times 9(1-x)$ (checking the correctness of the calculation shall be left as an exercise to the reader). This function gives us the probability that the probability of the strategy winning is a specified number; for example, we can use the function to calculate that with probability about 0.5, the probability that you win using the strategy is better than 0.852.

We can also use this to calculate interesting properties about our estimated win rate. For example, we can use the function to calculate the expected amount of matches that you are to have before you lose another one. For this, all we have to do is to take the geometric distribution, and instead of having a known "fixed" probability of success, we condition it on our function, and we get $p(\text{lose your first game after } k \text{ more trials}) = 220 / ((k+10)(k+11)(k+12))$.

There are many possibilities to take from here. One could hypothetically report this to the developers of the game for the purpose of game balance. Or you can keep it to yourself and dominate everything while giving an evil laugh. It's up to you, although one should keep in mind that all models are wrong, but some might be useful.

Zethar

The True Meaning of Christmas

What if Santa and Satan were siblings? Together, they could have realized that Heaven wasn't quite the... well... heaven that it was cracked up to be.

So, together, they hatched a plot. Santa reported his sister's 'treachery', and God cast her out...

...to somewhere she could work undetected. She was to make a weapon that could challenge God Himself. She prepared her forge, she prepared her materials, and she prepared to work — but she was missing one thing.

The fuel.

Santa, meanwhile, had been honoured for turning in his sister, and given Christmas as his reward. He made sure all the good little girls and boys got lovely toys, and the naughty ones, well, the traditional gift was a lump of coal. In the balance of time, these lumps of coal found their way to where they were most needed.

Every year, the accumulated misdeeds of a billion innocent children are being cleverly harnessed into helping stoke the forges of Hell. Someday, in a thousand thousand Christmases, the process will be complete. Satan will abandon her anvil and don her battle claws in preparation for...

...Boxing Day.

Diminutive Rex

Math Undergraduate Office Terrorizes Students

It has recently come to my attention that some office staff in the MUO have been telling blatant lies to students who don't know any better, and are expecting to get away with it by being the worst kind of bureaucrat cesspool scum. They were trying to prevent students from taking courses that they want, by keeping the completed override forms hostage until after the add deadline (which means the poor student would have to get another override to add the course late, possibly going through the weeks-long petition process, not to mention it will prevent them from accessing the course material until more than 2 weeks after the course started). Moreover, they are terrorizing said student from going to the Registrar's Office to get the form processed with empty threats of tattling to the Associate Dean. After I went with the student to clarify the lies and obtain a copy of the completed override form for the student's records, they tried to blackmail the student into giving out my personal information (for what possible legitimate purpose?).

People like this are vile, and their lies need to be exposed! So, here are some clarifications, pass these principles on to other students, the truth shall be revealed. [Note: These principles mainly apply to general math, C&O and PMATH courses, and probably not to CS courses. For details on a specific course, contact people who have taken that course in a previous year. You can generally find them by asking around the 3rd floor MC around the club rooms of relevant majors.]

1. You can override into practically any course. Some profs will require you to complete an assignment to prove that you won't just totally fail, but in general, if you have the will, there's a way.
2. You can override into an advanced course just like any other course. Your prof just needs to give permission for all those things that you need overrides for (ex, course requisites, time conflicts). Proof: Induction over the past n years since they last changed the regulations in writing. There is nothing on the university website that prohibits anyone from overriding into an advanced section course as long as they meet the requirements and the relevant parties (ie, profs) have given them permission. Whoever tells you otherwise is lying scum.
3. You can take 6 courses a term if you have 80% average. I think it's cumulative major average but I might be wrong. You may be able to convince the associate dean to let you take more than 6 if you have taken 6 in the past term and have a 80% CAV. You don't need special permission to take 6. Oh, and you don't need to pay extra tuition on any course beyond a full course load, so for all you freeloaders out there, I'm looking at you.
4. Going to see the prof in person to get an override is usually much more fruitful than sending them emails. Profs won't always respond kindly to emails but if they see your cute face in person how can they say no?
5. If the MUO is so incompetent as to not process your override form (or get back to you with legitimate reasons of rejection) within a reasonable time, say 2 business days, then you have the right to process it with the Registrar's Office. Nowhere on the university website does it say otherwise. In fact, if they go to the dean and tattle on you, you march right up to the dean's desk and tell them that it's of vital importance that you are enrolled in the class, and these incompetent peons are making a farce out of the MUO.

bluecat

The Making of Epic Names

Something that exists widely throughout our civilization, and definitely does NOT exist within the pages of this periodical, is fiction. Works of fiction include many facets that attract the attention of fellow humans — fantastic environments, horrifying monsters, beautiful elves, horrifying elves, beautifying elves, thinly veiled references to starving authors...you get the idea. An aspect of fiction that I did not put on this list, but would consider equally important, is epic names. Making a fictional name that sounds "right" is more difficult than one may think, no matter the subject matter and medium. Some successful and less-than-successful examples here (in my opinion):

Solid Snake == badass

Tim the Enchanter == hilarious, but wouldn't fit most settings

Artemis Entreri == pretty cool

Nyarlathep the Crawling Chaos == ...come again?

Princess Leia Organa == very cool

I won't pretend I am in any way qualified to tell good names from bad, but should anyone here attempt to write fiction, I can provide a few quick tips:

1. Make sure you can pronounce the name you have written
2. Ten syllables seems like a good cap for full name and title (Batman manages with just two), but try not to use more than six per word.
3. If you're going to write a name in a foreign language, don't make it punny if it doesn't make sense. If you're trying to be serious and you want a dude with a Japanese name, make it an actual Japanese name and not just "rice cakes".
4. Don't follow any of the above if you are transcribing a Dwarf Fortress game.

That's all I've got for now. Tune in next **mathNEWS** for *The Making of an Epic Name, Part II...Wrath of Khan*

cowabunga

Submit your articles in the BLACK BOX outside the MC Comfy or email them to mathNEWS@gmail.com! ... Pretty please?

Saving Your Electives for 4th Year

Electives are a special part of a math or CS education. They are so important that all CS students have a ‘breadth and depth’ requirement on their degree mandating a spread of electives across various disciplines. This requirement used to be avoidable by taking a minor but that option has since been removed – and for good reason. Math and computers intersect other disciplines all the time but not bidirectionally. You might need to do math to solve a real world problem but you do not need a real world problem to do math. Electives serve to keep students’ minds open and not fall into the trap of being nothing more than a problem-solving tool. A well-rounded individual does much better in the real world — you will just have to trust me on that one.

Electives are normally seen as an opportunity for easy grades in introductory courses. That is a perfectly reasonable decision for not failing out, maintaining a nice GPA, or keeping up a scholarship, but if your grades do not carry that much weight then an easy course is probably not the best choice. Every course you take is money out of your pocket and the value is the knowledge and skills you gain. In no way am I saying that introductory courses are bad, in fact they can be some of the most informational, guiding your future learning or providing strong basics for areas of life. Take ECON 101/102 for example: the basics behind micro and macroeconomics are enough to save you from a lot of the small financial misconceptions that guide popular opinion and protect you from bad employment

contracts that you do not realize are bad. Did you know that a guaranteed raise of 1% per year is actually a pay cut in Canada? If not, I highly recommend ECON 102. Specific courses aside, the real value of an easy elective is after third year, when your required courses become truly difficult, involve randomly assigned group work, or both. There are also other more compelling reasons than ease to save your electives.

After an extended stint at UW, you may suddenly find a topic that piques your interest. Quite a few people I know fell into this category and ended up taking additional terms to study. Those additional terms would not have been necessary because they took a pile of forgotten electives in their first two years and either the workload became too heavy to study their degree and interests or they simply could not fit everything into 40 courses. Maybe you will discover that you can study your core math courses in Paris, Stockholm, and Madrid. Those are full UW credits with available tourist trips during your stay and subsidized accommodation. There are many more options that I guarantee nobody you know has heard of; and neither have I. So go out and explore what is available, discover something interesting and fun, and avoid squandering your winters in the dark corners of the MC when you could be on a Mediterranean beach every day after class.

OMWout

MC Vending Machines

In the west hallway of the third floor of MC, beside a below-average computer lab, sit all of the vending machines that used to be found within the Comfy before being cast out during the renovation last summer. Back then, there were a lot of questions about whether the University would allow those vending machines to be moved out of the Comfy. After all, the noise they generated whenever someone used them was usually more than enough to disrupt all of the people attempting to fall asleep in there. Eventually though, MathSoc made an agreement to bring in the most uncomfortable chairs for sleeping they could find, and the University agreed to move the vending machines into the hallway.

Unfortunately, when the University moved the vending machines out into the hallway, they seemed to forget the one last crucial step of plugging in the vending machines in the new locations. For weeks and weeks, the vending machines sat there, their contents unrefrigerated. Now, having pop and candy sit in a warm machine for a few weeks doesn’t really bother me; they probably sat in a warehouse for weeks before even being shipped. However, one of the machines contained rows of milk bottles, sitting there warm. For weeks.

Occasionally I would walk by those machines to find them still off, and the milk still there. Until eventually, I walked by those machines and found them finally turned on, with the milk still there.

Now, it’s entirely possible that the milk was replaced at the

same time the machines were plugged in. It’s also entirely possible that whoever went to the half-hearted effort of moving the machines without plugging them back in also only spent enough effort to plug the machines in without replacing their contents. I have a bit too much experience with this University to trust them with basic competence, so I avoided that vending machine without question.

For the next several weeks, I purchased all of my junk food from the C&D, until one day I spotted a new vending machine in this hallway. “Eat Well... Live Well”, it said. I can’t say no to living well! So, I looked at what was inside the machine.

Immediately I spotted a can of Arizona Ginseng and Honey Green Tea. For reference, 250mL of this contains 18g of sugar. How is this possibly a healthy choice?

But then I noticed that the can was smaller than a normal Arizona can – 458mL, instead of 680mL. Fine, it should be cheaper as a result, right? Well, a regular sized can of Arizona has the price printed right on it – 99¢. So how much does this vending machine charge for a smaller can? \$2.95! Paying three times the price for less sugary beverage: #uwdoesthat.

In summary, these machines (might) sell weeks-old spoiled milk, and if you manage to avoid buying literal food poisoning, you might instead pay triple the price for less product. 3/10 would not recommend..

Dusk Eagle

Words Of Encouragement From A Former UW Mathie

Hello, Mathies of the current generation! I was on campus tonight for a FASS rehearsal and had a few minutes to sit down and fondly read some **mathNEWS**. An article written (by someone who happens to be a fellow FASSie) from the perspective of no longer being a student inspired me to try my hand at writing for **mathNEWS** once more.

I would like to offer a few words of encouragement to those of you who are like I was. I'm going to give you some of my university life story to be relatable and for context. Then I will tell you a bit about my post-university life and how things have worked out pretty well after all. Hopefully this can be encouraging to those who need it.

I was you for almost three and a half years ending six years ago. I was wandering down a path which I thought was leading toward a BMath degree (spoiler alert: it wasn't). Coming out of high school I was super excited to go into math at UW. My dad is a Waterloo Engineering graduate and I was proud to be going to the same school. I was excited by the prospect of getting an actual math degree in which you major in a type of math where at other universities you get a science or arts degree with a major in math. Throughout Orientation Week I still thought I was really good at math. Don't get me wrong, I am pretty good at math and was really close to the top of the class in high school. However, it came as a shock to me to find out how far from the top I really was. I may have been a big fish in the small pond of high school, but I was a pretty small fish in the big pond of University of Waterloo Math. I even had an awesome first term. After that, I started to struggle, but I was still doing well enough to keep going, and I still wanted to keep going. I had my eyes on the prize of a BMath. I even made it through (most of) second year and declared my major in Applied Math. By the time I was in my would-be 3A term, I was struggling a lot and failing classes right left and centre. I was able to stick it out for one final term after which I hit the too many failures line and was forced to withdraw.

It was during that last term that I figured out that my problem was motivation. People would ask me what I was taking at school and after I answered, "math," they would ask what I was planning to use it for. The problem was that I never did have a definite answer to that question. I figured I would get the degree, do some co-op along the way, and then get a job doing something with math or go try to become a teacher. It turns out that these were not the reasons I was looking for; they weren't motivation enough for me to do my homework. Without doing my homework I didn't learn the material and so I failed courses. Combine a lack of motivation with its resulting failures and it kind of turned into something of a depressing time.

I knew I still wanted to use math and solve problems for my career, but I had come to view math as a tool I wanted to use instead of study. There is a subtle difference between those, and it took me three years to figure out which one resonated more with me. Shortly after dropping out, my dad gave me the suggestion to consider going to college for engineering technology. It turns out that was pretty good advice. Six years later I have a diploma in Mechanical Engineering Technology, and have been working for almost a year and a half at a job in my field! Apparently having a more clearly defined career goal, and a better understanding of why I was in the program I was in, together worked well as motivation. That and I love learning about how things work.

If any part of my story seems at all similar to how you feel (or have felt) at times, I want you to know that in some way or another things will work out. I want you to know that being a UW Mathie is worth it. I may not have graduated, but I have never once regretted the time I spent attending UW. I made some special friends from class and also in FASS. Recently, while on my honeymoon, I visited a friend in California who is now working on his PhD at Caltech. Also, the level of mathematical training that I received helped me to excel in many of my college courses. These of course are not the only good things that came from my experiences at university.

I want you to know that it is true that sticking it out and completing the degree is the correct path for some people (and quite possibly the correct path for you). However, you don't have to be afraid to give it some critical thought and pause to re-evaluate to determine if it really is the correct path for you.

The most important thing that I want to convey is that even though figuring out what in the world you want to do with the rest of your life can get pretty overwhelming if you are not sure about it, there is nothing wrong with needing to take a step backward or to the side on your path if it means finding the correct path for you to move forward on.

Now, I don't want to be held responsible for telling anyone to drop out of university or anything like that. I'm just assuming that I am not the only person who started down the university path before discovering that my path actually led somewhere else and I would like to let anyone else on a similar path know that you are not alone. If you have a plan and know what you want to use a math degree for, then all the power to you and I wish you success. If you are not so sure, then I wish you success too, and comfort in knowing that I've been there too.

CODE: now-the-RicketyEng <>

**Submit your articles, *profQUOTES*, &c. to mathNEWS@gmail.com
or the **BLACK BOX** near the MC Comfy Lounge.**

profQUOTES

"I'm going to do the distributed systems and networks course in the next 50 minutes."

Buhr, CS343

"Because double-DES doesn't work, what do you do? More: triple-DES."

Jao, CO487

"There's no entry on your marks sheet for 'number of jokes laughed at'."

Buss, CS365

"[Schneier's] business model is this: if you pay him, he'll tell you the results. If you don't pay him, he'll tell everyone the results."

Jao, CO487

"If you have your laptop open [in class] to play World of Warcraft you're definitely doing it wrong."

Buss, CS365

"If you have a textbook, students complain about how much it costs. If you don't have a textbook, students complain about not having a textbook."

Jao, CO487

"If 5 years from now, you end up on a deserted island, this is the prof that you're going to remember."

Cook, CO 255

Student: "Are you assuming an attacker won't cheat?"
Prof: "As long as it's not academic cheating, it's fine."

Jao, CO487

"You're at a buffet with those iPads. You order some inequalities, but when they get here you can't eat them."

Cook, CO 255

"If you're doing what some dead guy did two hundred years ago, you're probably on the right track."

Jao, CO487

"For every inequality I get wrong, can you suggest I get a punishment?"

Gauthier-Shalom, CO456

"Maybe your adversary is the federal government south of the border."

Jao, CO487

"I'm not using any inequalities here for safety reasons."

Gauthier-Shalom, CO456

"You know Piazza's business model... Well, there isn't one."

Jao, CO487

Prof: "Once we get a bunch of inequalities, what do we do?"
Student: "Cry?"

Prof: "Good answer. Not the one I was looking for."

Gauthier-Shalom, CO456

"Most intelligent people don't try to do bad stuff."

Jao, CO487

"Let's try to prove this and see what happens."

Gauthier-Shalom, CO456

"...if you happen to be hanging around the NSA one of these days."

Jao, CO487

"I was going to provide a proof sketch. This was a bad idea, right before evaluations. Um... want more candy?"

Gauthier-Shalom, CO456

"I have one of these, you can come to my house and see it! That's a lie; please do not come to my house."

Jao, CO487

"Who hasn't written [an evaluation]? I only have a few candies left. [...] This should not be construed as a bribe."

Gauthier-Shalom, CO456

"We want you to learn by shooting yourself in the foot."

Lhoták, CS444

"If you like math and want to become famous without the painful process of pure maths, statistics is something that you should consider."

Han, STAT241

"You need to write a bunch of bad compilers before you write a good compiler."

Lhoták, CS444

"Will it be used in practice? Probably not, but you can still get a paper out of it."

Hengartner, CS458

"The '(precisely defined)' is not precisely defined. That's why it's in parentheses."

Lhoták, CS444

"If they have another standard, I don't know what they'd call it. Super-mega-high-secure something something?"

Jao, CO487

"So wait, do you have a name?"

Lhoták, CS444

"If your group hasn't started yet, this is a good time to get started."

Lhoták, CS444

"In ancient history, which means World War II..."

Jao, CO487

How to Write Your Own Reference Letter for Grad School

"If you haven't got anything done, you're not dead yet."
Lhoták, CS444

"You should memorise [the Y combinator]. Not because I'm going to ask you what it is, but because it's good life knowledge."
Lushman, CS442

"The Nobel Prize is the Turing Award of peace. And science. And medicine."
Lushman, CS442

"Believe it or not, I want to spend a couple of moments talking about the semicolon."
Lushman, CS442

"Nobody likes assignment."
Lushman, CS442

"This is so important that it was discovered twice. Independently. By two different people."
Lushman, CS442

"If you believe the real-valued case, then you have to believe this. Now you're regretting believing the real-valued case, aren't you?"
Marcoux, PMATH352

"Once in a while you should prove a theorem. This is the once."
Marcoux, PMATH352

"And if we have a bit of intestinal fortitude, we can multiply those out."
Marcoux, PMATH352

"Late at night when the TV shows aren't good and you want to change the orientation of your curve..."
Marcoux, PMATH352

"I told you you've seen this before - it's addition."
Marcoux, PMATH352

"I went 4 minutes over so I'll take 4 minutes off the exam."
Marcoux, PMATH352

"I'm an AND gate, amongst many other things."
Mosca, CO 481/CS 467/PHYS 467

"[On textbooks.] If you're just going to give away money... give it to me!"
Willard, PMATH432

Student: "Why is this notation unclear?"
Prof: "It's probably because it's a German textbook."
Willard, PMATH432

'Tis the season for those looking at post-post-secondary education. Deadlines are rapidly approaching to have all of your supporting documents for your grad school applications submitted, including your most important piece of evidence of your worth as a graduate student: your reference letters. If you've waited until the last moment to ask, or just have a lazy reference, then you may be asked to write your own reference letter, which will then be approved and sent off by your reference. I know that it's midterm season, you probably have a cold and you're just really, really done with school at this point, so this whole "do it yourself" thing may seem like a huge pain in the ass, but really, it's a pretty fantastic opportunity. You'll be able to write a better letter for yourself than your reference ever could for you, and you should be a practiced pro by now. You've spent so much time bragging about yourself on the rest of your grad school application — what's a little more self-serving egotism? Here are a few tips to help your letter go more smoothly:

- **Avoid mediocrity:** In all of my research into graduate school references, one thing that I saw over and over again is that a mediocre reference letter can actually be detrimental when it comes to admissions. A mediocre reference letter basically says "I can't think of anything particularly great to say about this person". Sure, you're smart and capable, but so are all of the other applicants, so you want to make yourself shine.
- **Be specific:** You want to show you made such an impression on your reference that they remember you clearly. A great way to do that is to mention specific examples of when you did things very well, or went above and beyond to get the job done. Chances are your reference noticed this awesomeness while you were under their supervision, but they may have forgotten since, so this gives you a unique opportunity to make that awesome thing known, you awesome thing, you! It's also worth mentioning that, when asking for a reference to write you a letter, you should mention some of these specific awesome things to help the person remember you more clearly (and, if adequately awesome, this should incentivize them to agree to your request for a letter). They can also include these specific details if they end up writing the letter themselves.
- **Be specific to your field:** Tailor your letter for the program that you're applying to. If you plan on pursuing a research-based program, mention any and all research skills, and even lab work if it's relevant. If you're applying for a professional program like medical school, you can highlight your dedication and ability to work hard. I was applying for a program that highly values professional experience and well-roundedness, so you better believe that I highlighted the hell out of that. Most programs place a high value on communication and being able to speak about and present your ideas, so you may want to consider highlighting some of those areas.

Good luck on your applications!

El Jengibre

N=21 Hilarious Job Titles

The first round of Jobmine is over! And while you're waiting for the continuous round/job interviews, enjoy this list of hilarious job titles (and my thoughts) that I mined from the dark depths of Jobmine. (There are nearly 1600 CS/SE jobs alone!)

1. **ADAPTIVE FLESH SIMULATION**
"HI. I. AM. NOT. A. REAL. PERSON. I. AM. MORE. QUALIFIED. THAN. ANYONE. ELSE. YOU. MUST. HIRE. ME."
2. **ARTDIRECTABLE MICRO APPEARANCE MODELING FOR FABRIC**
Isn't hiring based on height a violation of some employment law?
3. **Boys Inclusion Councilor (1 on 1)**
WHY IS THIS 1 ON 1. 1 ON 1 ISN'T INCLUSION.
4. **Cisco Canada Women Entrepreneurs' Circle**
You are now a line. But because you're a circle, you are 2D!
5. **City of Calgary**
The next evolution of your mom jokes?
6. **Drama**
Getting paid to cause office drama! I'm in! Unlike co-worker XYZ, which, by the way, have you heard what they did last weekend?
7. **EFFICIENT SPARSE MATRIX ASSEMBLY**
"I'm so efficiently sparse that you can't tell when I'm at my desk!"
8. **Golf Shop Attendant**
"And when you have no customers, your side project can be automating the stock taking."
9. **Intern II – Power Production**
AKA running in a hamster wheel so the data centers can boast about being powered by renewable energy.

10. **IT Department**
You are the entire IT department. "Have you tried turning it off and on again" will haunt you for the rest of your life.
11. **Particle simulations & high-voltage test TR16-2-19**
I'm so good at tests, I am a test!
12. **PREDICTING RENDER QUEUE METRICS**
M8BaaS: Magic 8 Ball as a Service
13. **QA Heat Stress Technician**
This is in a Bakery—"Daily Flour Tailing Review!", so you know it's going to be a piece of cake!
14. **Recreation Assistant (Township of Tiny)**
The town is tiny enough that they only need an assistant.
15. **Research Assistant 2**
What happened to research assistant 1?
16. **Return on Investment (ROI) Tool**
"My first result: hiring me already gave you the best ROI possible."
17. **PIE Storage Engineering**
Mmmm.... Pie....
18. **Superhero In-Training (Engineering)**
Be the Robin to Batman, except the theme is like slowed down to 20 BPM and Batman has a pocket protector and asthma.
19. **Tree Farm Assistant**
You'll have a great opportunity for personal growth this term!
20. **Various opportunities**
Could be literally anything. (Except uWaterloo Department of Mysteries)
21. **WIDE COLOR GAMUT RENDERING**
And in Europe, it'd be Supersized Colour Gamut Rendering.

HatOfChocolate

Hawaiian Pizza is Poetry in Action

How wondrous is thee?
Ah, let me count the ways
When all have come to see,
All of thine wondrous rays.
I love the pineapple sweet,
I love the ham so tart.
And when we finally meet,
No one shall make us part.

Please let me see thy light
I yearn for that first bite.
Zig towards me
Zag into me
And all shall become right.

Yours in poetic justice,
Shay Blair.

N Thoughts You Have After the First Payday of Your Co-op Term

- OMG PAYDAY YAAAAAAASSSSS!!!!
- Yeah, so, I'm kinda rich now.
- Not being broke is so awesome.
- Let's go out, I can afford it now.
- Sure, I'd love to go to the mall!
- #loaded
- Look at all this stuff I can actually buy!
- \$
- Wait, where did all my money go?
- When's the next payday?

TheUndecided

Hey readers! Want your *N Things* in *mathNEWS*? Submit them!

The Dilemma: The Quest for a Roommate

Weeks ago, the hunt for roommates began. If you're like me, the few friends you'd actually consider living with all have insane requirements you're not down for.

You have the **Big Spender**: wants to live steps away from campus while simultaneously having an en-suite bathroom, in-house pool table, gym and a million other luxuries they will never use and would leave me spending a months salary on rent.

Then there's **Campus-Obsessed Recluse**: wants to be on campus 24/7 and "re-live" the glory days of being in residence. They live for those mandatory quiet hours and they never want to leave their two mile safety zone and face the terrors of the outside world, like a social life.

The **"Spontaneous" One** (a.k.a. the "Pulls everything together in the last three seconds person"): This person usually doesn't have a place to stay until the first day of class (which for them might be three weeks in); when asked a month in advance where they were going to live, they preach that "rent gets super cheap right before school starts" to cover up for the fact that they haven't started looking; odds are when classes start they'll couch surf their way through the term.

And then of course, the one friend you'd actually be ok living with is off stream. So here I am, living with complete strangers. They seem normal; only time will tell...

GUNIT

N Reasons Why You Should Stop Asking Me Why I'm Wearing Nail Polish

- The chances of me having a legitimate reason, like "raising the awareness of gender discrimination against baby trans elephants," is zero.
- The real question is, why are you carrying a chin-up bar? (xkcd.com/954) If you understood the reference without this ink-url, you win the right to feel warm and fuzzy on the inside for the rest of the day. You're welcome.
- I'm probably just going to be snarky and not give you straight answer. I think of not-so-clever things to say as a means of procrastination.
- I like it when my nails look pretty when I'm doing things with my hands that involves me having to look at my nails.
- Nothing about nail polish is inherently girly. It is an illusion of society. It contains arsenic, which is pretty metal(loid).
- It went with the beautiful purple dress shirt that I wore yesterday, and to be honest, that's reason enough.

Pizza Freeloader Kid

N Reasons Hawaiian Pizza is Secretly a Start-Up Company

- **It was invented in a kind of shitty location.** Who hasn't heard about how Google started in somebody's basement somewhere? Hawaiian pizza is from Chatham, Ontario, whose dubious claims to fame include spawning me – so you know it's a bit odd, at least.
- **It's innovative.** Pineapple? On pizza? There wasn't another idea like that until Ship Your Enemies Glitter.
- **It's incredibly popular in a random foreign country.** Did you know that Hawaiian pizza accounts for 15% of pizza sales in Australia? I mean, it's not Japan, but it is quirky and full of bizarre animals, so it's still cool enough.
- **If you think about it, it has a bizarre name.** It's a Canadian pizza, featuring a fruit from Brazil, and it's named after an American State. Now that's an agile paradigm shift.
- **It's got a 'culture of success'.** Hawaii is rated number one for quality of life by CNBC! That's a co-opted culture of success, and that's good enough for me.
- **It has wide brand recognition.** The Hawaiian pizza Wikipedia article is visited thousands of times every day, and has been translated into multiple foreign languages. This doesn't really mean anything in the real world, but it sounds pretty good.
- **Doesn't make much money, but has a huge impact.** Hawaiian pizza is never going to be on the gourmet menu, but it's known worldwide... Although this really doesn't bring any benefit to any of its creators. It's probably a good resume-builder, though!

Diminutive Rex

4D Friendship

From one perspective, people are just weird four-dimensional worms snaking through time. We extend from the day we're born until the day we die. It doesn't matter where you are on your four dimensional path through life; your past stretches behind you, and your future lies ahead of you.

When you're in university, your path gets all tangled up with your friends'. Five years ago, you probably hadn't met any of the people you spend most of your time with. Twenty years ago you might not all even have started existing yet. And five or ten years from now, you probably won't all be as close as you are now.

But right now, your paths are all smooshed together. No matter where you go in the future, your fourth dimensional wormselves will still be back here, together. Just like how right now there are people out there that you're going to like a lot that you haven't met yet, no matter where you go in your future your friends are still going to have been there for you.

And I think that's pretty great.

Diminutive Rex

Here's What's (Physically) Wrong With Canadian Money

No, I'm not going to talk about the economy and the value of Canadian money in international markets, or some other boring adult shit like that. I just have a few problems with the physical appearance of Canadian money. In my current co-op job, I spend a lot of time handling cash, which has given me plenty of opportunities to notice flaws. Canadian money is actually pretty sweet, but there are definitely a few things I would change if I were in charge of designing it.

Let's start with the bills. Each different value of bill has a different colour. Which is pretty cool—our money is way better looking than American money—but if you arrange Canadian bills in order of decreasing value, the colour order is brown, red, green, purple, blue. Which looks like some kind of accident, or perhaps a picture of a rainbow coloured by a 4 year old. The order that would make the most sense would be red, brown, green, blue, purple, because brown is the closest of these colours to orange or yellow, and thus, the order would follow that of the rainbow. This would also mean the highest value of bill would be coloured red, which makes sense considering it is the main colour of our flag. Naturally, we should place a higher value on that colour. [Side note: This colour order would also mean that Wilfrid Laurier, whose face graces our five dollar bill, would be on a purple bill, which matches one of the school colours of the university named after him. But no one outside of Waterloo would give a shit about that, so whatever.].

Moving on to coins, the biggest issue is the size. Individually, the size of each coin is fine. In particular, it is very convenient that each coin is the same size as the American coin with the same value, since Canadians often have American coins mixed in with their Canadian coins, and use the two types interchangeably. The problem with Canadian coins is the relative size of the dime when compared to the nickel. Every other Canadian coin increases in diameter as it increases in value. But for some reason, the ten cent coin is smaller than the five cent coin. Who the fuck thought that would be a good idea? Were they high? It would be different if the sizing of increasing values was inconsistent to begin with, but that's not the case. Every other coin can manage to follow a simple pattern, but the nickel and dime have to go ruin things for everyone. When you consider the pictures on the coins, it's pretty clear that the dime is just a shit disturber in general. While every other coin has a picture of an animal on its tail side, the dime has a picture of a boat. Is it really so hard to think of one more animal to put on a coin? Did we really have to use a boat? Seriously?

Anyway, Canadian money is pretty cool, but my obsessive compulsive side has a problem with its inability to follow simple patterns. That's all.

TheUndecided

Roommate Disagreements

It's an all too familiar story: you are sharing living arrangements with someone and their lack of respect for the space has come to a boiling point. It could be a dish left in the sink one day too many, midnight guitar practice, frequent noisy partying, clutter in shared living space, or even something as innocuous as them taking the last straw. You've tried passive-aggressive post-it notes, you've tried to be patient, you've even tried talking to them. Alas, none of these methods have worked.

The time for civil disagreements has passed. While on the surface, it may seem like this is about cleanliness, it is a matter of honour—serious business that can only be settled with a duel. Now that you have decided to settle the matter via single combat, you have several decisions you need to make.

It is important to be circumspect in your duels as all aspects of dueling are illegal in Canada and subject to two years in prison. This is not counting the additional crimes of violence, unlicensed firearms, and attempted murder that often accompany duels. So be careful not to get caught.

First you need to decide how you will inform your opponent. Will you send them a note on fine printed paper signed with blood? A Facebook message in all caps? Will you issue your challenge in person by throwing down a gauntlet in their face?

Once you have decided how to issue your challenge, you need to decide what sort of weapon you are going to use. Traditionally the weapons of choice are swords and pistols. Personally, I recommend using pistols over swords as pistols are a better measure of who is favoured by fate. If you still think that pistols require too much skill and want to put your duel into the hands of Lady Luck, you could also duel with hand grenades.

You also need to decide on a time and place. Unless you have a time machine that can take you to a time where dueling was legal, your location should be secluded so no one tries to stop your duel. For this we recommend not going for the classic time of high noon and would advise for a midnight duel instead.

The only thing left to do is pick your seconds. Finally your preparations for the duel are complete and you can knock yourself out.

There are some people who would suggest that the risks incurred by dueling aren't worth the minor grievances that come with sharing a living space with someone. These people, like Prince Zuko, have no honour.

Beyond Meta

Follow us on Facebook (*mathNEWS*), Twitter (*mathNEWS*) or in person (MC 3030)!

The Fork as An Emergent Property of Induction

The fork is such a common utensil that we often take it for granted. Although sometimes seeming to be the unexciting utensil in actuality the fork has a quite fascinating and convoluted history:

It all began at the dawn of human history, when the genius inventor known only as “Grug” made the discovery that eating giant mammoths was significantly easier with the use of a sharp rock. This concept was quickly refined into the ‘wunk’—or, as we know it today—the knife.

The wunk remained relatively unchanged for many centuries until 370 BC when the idea of induction began to spread among greek philosophers. Excited by the concept, innovative minds began to apply induction to all sorts of things. The one we are concerned with, however, is none other than the infamous ‘toque’.

The toque was going to be the next glorious improvement to the knife—two blades should be twice as good as one, right? Unfortunately, things didn’t work out that way and the toque quickly fell out of popularity and became so infamous that the word toque became synonymous with anything silly or absurd

looking. Incidentally, the iconic Canadian hat got stuck with this name after insistent mocking by Americans, but that’s a story for another time.

The renaissance with its upswing in learning and invention was a very fruitful time in the evolution of cutlery. Through the discovery of several previously unknown diaries by Leonardo da Vinci, it has recently come to light he was actually the mastermind behind the invention of the fabled three! After unearthing the ancient greek designs for the toque he realized the great potential of adding an additional tine and removing the bladed edges, making a utensil perfectly adapted for precise stabbing and well as scooping. The tri-pronged utility brought by the threek was a great leap in cutlery design and one can see the threek in several niche uses even today.

After the threek became popular, it was only a matter of time before the final evolution. No one knows just who finally added the extra tine at last create that most glorious of utensils, the fork, but we are all forever grateful to them for giving us all the most fabulous dining experience each and every day.

aPlayerofGames

Pineapples: The Fruit that Eats You!

Recently you may have had the opportunity to eat a heavenly slice of Hawaiian pizza. This opportunity might have come to you from an employer info session, writing for **mathNEWS** or maybe even spending your own money on a slice! Regardless of how you obtained your valuable slice, you likely haven’t learned enough about pineapple to truly appreciate the flavours and history inherent in that fruit. It might seem inexcusable that elementary school teachers have neglected this vital study topic, but here at **mathNEWS** we take our readers’ educations seriously. So grab your slice (or full pie) of Hawaiian pizza and settle in to learn about Ananas comosus.

First of all, pineapples grow on trees. If you don’t believe me, look it up. And before you start worrying about pineapples dropping on your head, fear not! Pineapple trees generally grow only slightly over a metre and are topped by the fruit. While it might seem counterintuitive, a single pineapple is actually multiple fruit. The plant produces multiple flowers that become pollinated and merge together to form one pineapple. It can take almost two years for the first fruit to be produced, but the time is generally decreased to only 15 months for each successive fruit. Nowadays, the common practice for growing new pineapples is to twist off the top and let new roots grow out from the base of the stem. Originally, pineapples were spread naturally through seeds, found at the outer edge of the flesh or just inside the hard shell. Due to the industrial farming practices, many pineapples are mostly sterile and either produce deformed seeds or none at all.

The pineapple originated in South America and was brought northward and cultivated by the Maya and Aztecs. When Co-

lumbus ‘discovered’ the Americas, he brought some of the fruit back to Europe where it was painstaking cultivated and grown in special hothouses. Both importing and growing this fruit proved to be expensive, leading to the establishment of pineapples as a status symbol. People were able to rent a pineapple to use as a centrepiece for a party, and afterwards it would be returned to be sold to a more wealthy individual. Many houses in Europe had furniture adorned with pineapple carvings, placed alongside paintings and sculptures featuring this fabulous fruit. There is even a building built in the shape of a pineapple in Scotland (Dunmore Pineapple). The widespread propagation of the pineapple was due in no small part to its taste!

The pineapple has been adopted into many dishes around the world. To begin with, that distinctive taste that accompanies eating raw pineapple is due to bromelain, a mix of proteolytic enzymes. This means that as you eat the fruit, it is actually slowly digesting you too! When these enzymes reach your stomach, they are destroyed by stomach acid. The enzymes also denature when the pineapples are heated up, so that’s why Hawaiian pizza doesn’t tickle your taste buds like raw pineapple would. Pineapples are used as meat tenderizers (since the bromelain works on that meat too), garnishes and essential components of a variety of dishes. There are curries, desserts and most importantly pizza toppings!

This article has attempted to provide a elementary education on pineapples, which can be extended with individual study through the internet. I hope this article leaves behind a full appreciation for this marvelous fruit, and a slight craving for Hawaiian pizza.

Hadrön

The Shadow over Chatham

When I was younger, so much younger than today, the Government of Canada launched an investigation into the town of Chatham, Ontario. What they found led to disowning the town, expelling it from Canada, and putting it into a legal limbo, belonging to no country. Nobody would accept this place, no other country would accept it. Not since the Americans expelled Rochester from the United States did something like this happen. A state of emergency was declared, and now, no citizen from Chatham can enter the rest of Canada without being screened and perhaps quarantined.

The secret I have repressed since then is that the investigation began because of information I found in that sleepy town. I was training to be a doctor at the time. After hearing of a mysterious plague that had come over the town, I decided put my medical expertise to use and go help the people of Chatham. Little did I know what horrors I would find there.

I started my journey by taking a Greyhound bus into the town. As I looked out the window, I saw only dilapidated and crumbling buildings. The town looked as though it was barely held together. One building, what looked like it used a corner store at one time, had a caved in roof. The streets were empty, many of the windows that lined them were boarded up, and their buildings abandoned.

The people there looked sick. There were definite signs that something was wrong. Almost everybody I met had a yellowish tinge to their skin, their eyes bulging out from their heads. I hadn't seen such bad jaundice since I went to the American town of Springfield. Their skin seemed waxy, shining as though it were wet, like somebody that has soaked too long in a bathtub. Everybody there also had a smell that surrounded them; it was the most foul odor I have ever encountered. They all walked with a strange gait, shambling like zombies, but it seemed worse than that. Being the naive young man that I was at the time, I wondered whether the illness could be causing nerve damage in the extremities.

Wandering through the town, I managed to find an inn. There, I met a young man unaffected by the disease. I discovered from speaking with him that he was a traveler. Working his way through Ontario, he had stopped here for the night. I asked him what he knew about the town, if he'd heard anything about the illness; he had not. Since it had become late, I paid for a room and went to bed.

I was awoken later that night by sounds in the hallway. It sounded like someone was banging on the door to one of the other rooms. I jumped out of bed, quietly, and slowly made my way to the door. Peering through the keyhole, I watched two men kick down the door to a room just down the hall. I watched as they dragged a screaming man out, silencing him with a gag. It was the traveler I had spoken with.

I set out in my coat, slowly creeping after them. I followed them from the hotel into the foggy streets. A deep mist had rolled

over the town from the River Thames, obstructing my view. I made my way through the town, following the kidnappers. If I could find where they were taking him, I could contact the proper authorities, and save the man. Occasionally, I would pass more townsfolk, standing adrift in the streets, their eyes questioning me and my purpose. I instinctively took on the distinctive gait of Chatham, so as not to raise suspicion. I eventually managed to follow the men to a tunnel leading underground.

I entered the tunnel, not knowing what I would find inside. As I wound my way through the underground, I felt disoriented. The tunnels all looked the same. They seemed to wind into each other. I felt a presence with me, playing with my senses. My sanity was slipping by simply being there, in Chatham.

I heard a sound and turned to see a shadow flash across my vision. The darkness was rising and it would consume all. That was the revelation I had in that place. I decided to face my fears, although I didn't know what the consequences of my actions would be, I moved towards what I thought was an illusion.

Soon, I started hearing chants echo throughout the caverns. I followed the sounds, headed towards their source, and found myself overlooking a strange ritual. The sickly people of the town were surrounding their bound and gagged captive. I could now hear the chanting rather clearly, though I could not understand any of it. It was done in a strange language, one whose sounds would be impossible for any normal person to produce. Using the letters of English alphabet, the best way to describe the chants would be these words:

Y'hagen Y'hagen Hawaiian fnarg. Nya'cratep Nya'cratep Hawaiian Hawaiian. Cr'ppy Cr'ppy.

Then, they descended on their captive, the traveler. With a knife they cut open his stomach and slowly removed his internal organs, forcing him to watch his own slow demise. They placed his body on a giant almost-triangular altar, upon which lay a pineapple. I immediately recognized its shape as that of a slice of Hawaiian Pizza. Nothing else that exists in this world looks like that. The people sacrificed him to their dark Old God, the Ancient One, the Pizza of Hawaiian.

The people there proceeded to consume his organs, eating them along with Hawaiian Pizza. I did not know which one was worse at the time, though now, I realize that eating Hawaiian Pizza was the greater crime. Feeling my senses leaving me, I looked away from their giant altar. Its very image seemed to drive me to madness. Each second I stared, I felt my mind move further into the beyond, closer to the Eldritch Revelation that had doomed these people.

Then, I heard a scream, and turned back.

Below me, one of the villagers was raving, chanting again in that strange language. Then his skin, already yellow, completed its transformation into cheese. Bits of bacon and ham bubbled up

out of him and he became the Hawaiian Pizza he worshipped, and had eaten not even five minutes before. The rest of the villagers ate him as well. Their hunger was undying, as they were. It was truly a horrible sight.

After that, I worked my way back through the tunnels, eventually escaping out into the town. I managed to get back to the hotel. In order to not raise any suspicion, I decided to stay the rest of the night. In the morning, I asked the man at the desk where the traveler had gone. He told me that the man had left earlier that morning. I knew the dark truth. Once I bought my Greyhound ticket out of there, I found an old man living in the town that looked normal. Since I had time, the bus would not arrive until the afternoon, I brought him to a bar and paid for his drinks. He quickly opened up about the town's dark history.

In the 1960s, a local man named Sam Panopoulos began doing arcane experiments, in order to summon an Ancient One. He believed that doing so would allow him to communicate across the Ethereal Plane and make himself immortal. In 1962 he succeeded, bringing Hawaiian Pizza into this dimension from the pocket universe it had been trapped in since the beginning of time. By unleashing it into this world, he allowed Hawaiian Pizza to spread itself throughout time, forward and backwards. It allowed Hawaiian Pizza to cause atrocities throughout human history; atrocities that never would have been committed if Hawaiian Pizza didn't demand human sacrifice.

Hawaiian Pizza does not belong in this universe and exists outside the laws of our reality. For example, pineapple, normally a fruit, changes its state and becomes a vegetable when put on Hawaiian Pizza. It twists the laws of our universe to bring about the end of reality itself.

The pizza had driven the town to ruin and turned the people into mindless husks, driven only by unending hunger. With every slice eaten, it transformed its victim into itself. That was Panopoulos' ultimate fate, his punishment for bringing forth an Ancient One and meddling in affairs normal humans cannot begin to understand. The giant slice I had seen, the altar, was his legacy: it used to be him. The illness that had come over the town was caused by its residents eating Hawaiian Pizza. They covered up the disappearances from the transformations and their sacrifices using the guise of an town-wide illness.

Fully understanding the situation, and all the worse for it, I left the man there. It was unlikely he would survive the night. I managed to escape the town on the Greyhound bus and immediately reported my finding to the Government. At first they were in disbelief that such horror could be going on right under their noses. After their investigation, they realized I was right and took steps to limit the evil influence of that town.

The Canadian Army launched an attack on the town. They infiltrated the tunnels, and destroyed all the idols the people had constructed to that dark presence. Several men on that mission went insane when they looked for too long at Hawaiian pizza,

an image no creature of this reality can begin to comprehend. The people of the outside world did not deserve to pay for the crimes committed by that one town. However, they were unsuccessful. While the scourge was weakened, it was not completely destroyed.

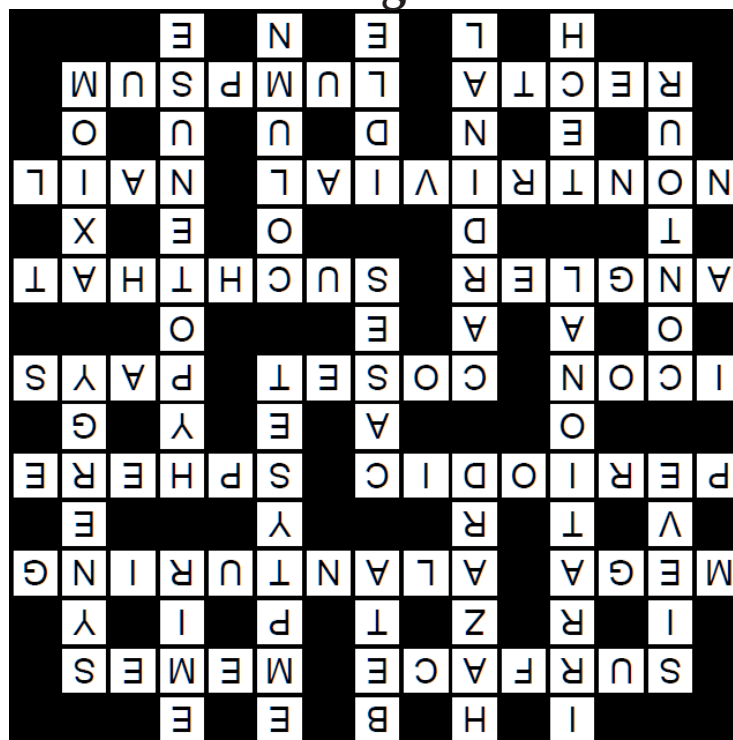
That is why I am telling you this story. Humanity must fight back against this monstrosity, even though our odds may seem slim. Dark gods can die. The Dead God is a title that exists for a reason. Having studied the work of H.P. Lovecraft (who reminded himself of the danger posed by this most horrifying discovery by reading his initials as Hawaiian Pizza), I am confident that humanity can rise up against the Ancient One known as Hawaiian Pizza and survive. We can work to contain its evil and protect ourselves until we can either destroy it or banish it back into the reality it came from. The Old Ones are a curious bunch: some seek to destroy humanity, others find it fascinating and seek lead it into a new age, and some simply don't care about our insignificant species.

No doubt some of them are watching over us now, knowledgeable about the threat of Hawaiian Pizza. Perhaps some are ready to wage battle against it.

I say, let them fight and let Hawaiian Pizza lose.

Howard Phillips Bear

Last Issue's *gridWORD*



Submit your *gridWORD* solution to the the BLACK BOX near the MC Comfy Lounge.

The Search for the Ancient Stone Pt. 2

The following passages were directly transcribed from the journals of Theodore Bear.

Day 22

The sun bore down on us, as we traveled through the desert in Egypt. The horizon seemed to melt into a haze, as heat rose up from the sand that stretched out before. As I rode my camel, I thought back to events in the Amazon. Deep inside, I felt torn between my co-op job and my supposed destiny. Could I really be the great saviour prophesized by the Oowatani people, destined to return the Ancient Stone of Nioj to its right place? If so, then how was I supposed to deliver it to the University of Waterloo's Department of Mysteries?

Still, I realize now that I must continue forward, though the dangers that come to those searching for the Ancient Stone will be perilous indeed. We head towards the Valley of the Kings, where there is apparently a clue that will lead me to Uber, the "Desert of the Sands", an ancient city long abandoned, but filled with secrets galore. I was promised that one of those secrets would be Ancient Stone of Nioj, but considering that source told me that I could find the Ancient Stone in the Amazon, I'm not too inclined to believe them. Still, it's my only lead on the treasure I seek.

Day 24

We arrived in the Valley of the Kings this morning. Searching for the tomb of Amenhotep VIII, we quickly ran into some trouble. A group of Swedish mercenaries attacked our party, driving us into an unknown tomb with their gunfire. The men all fought gallantly, and after a while trading gunfire throughout the ancient ruins, we managed to drive them off. I suspect they only did that so they could regroup, but I take my victories where I can.

We managed to capture one of the mercenaries as well, and after using some enhanced interrogation techniques (in which we explained why the Swedish Chef was the greatest thing ever to come out of that country) and threatening to feed him to the geese, he spilled the beans on the goal of his group.

It turns out they weren't hired to stop the expedition, but to kill me. They were targeting only me.

It was just as I expected; the evil conglomerate bent on salvaging the reputation of Hawaiian Pizza sent assassins in retaliation for my exposé on that evil food. However, I do not fear them, or their repercussions. They are merely another obstacle I must

overcome on my path towards the Ancient Stone. We will face the rest of them tomorrow, and hopefully, I can make sure they don't attack me for a while, giving me time to work on a plan to destroy those worshippers of the Pizza of Hawaiian.

Day 25

Those damned Swedes.

After I led my expedition on an offensive against them, they—as a last resort—blew up the entrance to the cave we were hiding in, trapping us in the darkness, and killing their captive comrade. We had just beaten them too, but it seemed they had no honour within them. The saying was true: "You can't trust the Dutch to not kidnap your children."

Thankfully, all Egyptian tombs have secret passages. We only need to find one here in order to get out. After that, we can finally discover the tomb we were looking for, and move forward on our search for the Ancient Stone.

Day 30

The lost city of Uber is incredible. The fact that it was abandoned so long ago boggles the mind. There... really wasn't anything wrong with it. It's not like it was some sort of Detroit.

Thankfully, after finding the clue, and taking a quick look at the Google Maps Satellite view of the area, it was easy to discover this long lost city. It's amazing that I was the first one to make this discovery, since an ancient city it turns out is quite easy to see from an aerial view.

Canals and aqueducts, having dried up long ago, stretched throughout the city. It would have been these canals that supplied the residents with the water they required. The buildings are crumbling though, so we need to be careful. One member of the expedition was killed when a piece of stone conveniently shaped like an anvil broke off from a canopy, and landed on his head. After that, we've started mapping out the city, trying to understand what each of the buildings were used for. Some were easy—if you've seen enough shady brothels that happen to be great spots for those in the criminal underworld to hang out, you can recognize one even if it's from a long dead civilization. If only all of them were that easy. There was this one building that looked pretty strange. It was made up of one large circular chamber that had openings to several smaller circular chambers, also connected together by secret passages. We are still working on it, but we may not be able to discover its secrets before we go.

Article of the Issue v130i1 Errata

In v130i1, we stated that Theodore Bear had won, but that their *n Things* article gave us layout problems. While it's true that I would rather step on a lego than to redo the things I needed to make *n Things* look half-way decent in print, Theodore Bear did not write that article, and indeed they won for their relatively

easy-to-format *N Things* article. So a lesson to you, footnote heathens: you will not please the Editorship by attempting to rebel with your capriciously-formatted works. We will wish ten thousand legos for you to step upon for your crimes.

The Editors

We will likely spend quite a few days here, before we will be forced to leave. I hear a swarm of locusts is heading towards us too. This will be a new experience for me, as apparently, swarms of locusts are pretty bad. But, sources have told me that after the swarm had passed over, you can eat the dead locusts that are everywhere. That means I get to try some new food.

Day 37

The locust swarm has finally ended, which means it's time to say what I think of locusts. It honestly was at first quite unpleasant hiding in the buildings as the swarm hovered around outside, but after a couple hours, you get used to it. Make sure no one opens the door though.

As for their taste, they're honestly not too bad. While the common phrase of describing food is, "tastes like chicken" that isn't true of locusts. They honestly have more a smoky, heartier taste, like a game meat that been cooked under a fire for two hours. The only thing that's hard to get past is the texture. They are quite crunchy, as you'd expect from an insect. The best way I describe the texture is like biting into a full head of lettuce.

While we haven't found any trace of the Ancient Stone itself here, I have managed to uncover the secret of Mak'Abu, which will no doubt lead me to the true resting place of the Ancient Stone of Nioj. I have also found some strange symbols that may relate to a secret conspiracy involving the artifact. Will these clues come into play later? I do not know. The only thing I do know is that I must continue on my journey.

Fairytale Fucking at the Theatre

A Review of Poona the Fuckdog....and other plays for children. Spoiler alert: NOT FOR CHILDREN!

Not too long ago, I had the pleasure of seeing KW Little Theatre's production of Poona the Fuckdog...and other plays for children. I'll be honest and say that I had NO idea what I was getting myself into and I had no real expectations about what I would see. Getting right to the point, the play was an enjoyably disjointed and disheartening romp about world issues amidst a hilariously childish backdrop.

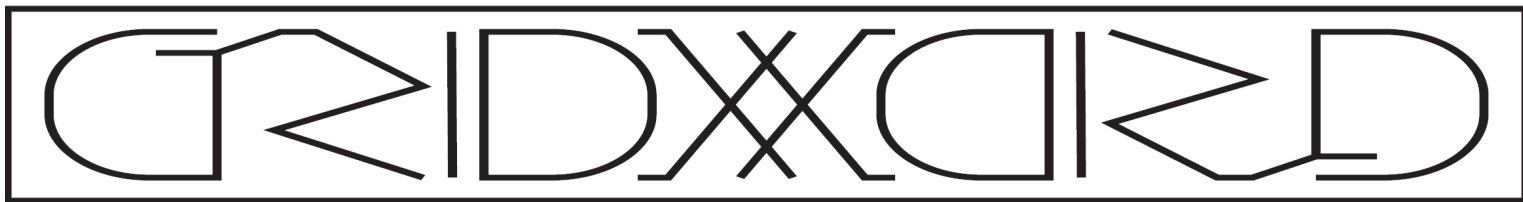
This play may be subtitled with "and other plays for children" but it is VERY distinctly NOT for children. In a review of Quick Change that I previously did in v122i3, I mentioned that THAT show was a tame outing into the realm of "18+". Right out of the gates here in Poona we have plenty of swearing, followed closely by serious world issues and a gratuitous plethora of (im) mature subject matter that definitely bathes – nay, LAVISHES – in the land of 18+ and does not hold back. The play tackles all of these subjects through the childish lens of a fairy tale as we follow the character Poona throughout her life. In many respects, the point comes across fairly effectively. Where this play falls flat is in the treatment of its characters.

The cast does a wonderful job with what they are given and there are quite a few outstanding performances that I will get into in a moment. They are, however, really given the short end of the stick regarding the script. My major critique of this play is that writer Jeff Goode does NOT do his characters justice, especially not his titular star (pun not intended... sorry Poona). Poona gets dragged through the proverbial doghouse and left to the wolves from suffering through instances of horrendous sexism, objectification, and downright abuse. I understand that she is in fact a "fuckdog", but the play does a poor job redeeming her or giving her some (if any) redeeming qualities by the end of it. It is hard to root for a character that does not give you much to root for. The overall story felt somewhat incoherent and not cohesive as you could not really tell where it would go (especially with the time travel) and what Poona was striving for in the end. By the time a happy ending came around, I wasn't happy so much

as I was baffled thinking "THAT'S NOT HOW TIME-TRAVEL WORKS!!!" and "That's IT?! Where's the REAL happy ending?!" followed by "IT'S OVER?! AT LEAST GIVE US A MINUTE TO SETTLE DAMMIT!" Overall, it felt too rushed and disingenuous. That said, Krystle Komaranski did a great job making Poona as lovable as she could along with the outright PERFECT snarky-shocked eye-flutter. Though, the real star of the show was the background Shrub played by Heather MacDonald. Now THERE is a character I wanted to root for (pun again NOT intended)! She deserved the time she got in the spotlight!

All the cast did a splendid job, from Nike Abott's superb facial expressions as the dominating mass media to Lance Johnson as the musical, ejaculating Fairy God Phallus. The most memorable performances of the night though for me, came from Greg Allen as the Computer and Amal al Salami as Suzi Suzi in a scene where the wonderful awfulness of the internet is discovered. I nearly keeled over onto the floor from a laughing "ZOMG DID THAT JUST HAPPEN" overdose kind of moment when the Computer's "mouse" came out to "play." Props to Amal for keeping a straight face through the whole scene! Speaking of props, the stage settings were an absolute joy to behold! I loved the visual gags brought on by the projector and I was blown away by the use of the stage as everyone travelled through time! I also enjoyed many of the costumes, even though I do agree with the public critique that they were not consistent in quality across the cast.

While the show had some significant flaws and left me wanting a stronger story, I laughed a lot and had a fantastic time among old and new friends! The Man Who Can Sell Anything may even be an additional factor to sell you on the show. The run of the show ends on February 6th with the last show starting at 8 pm, so there is plenty of time to catch a show between now and then! For more information and tickets, please visit kwltpoona.bpt.me and come to the show with all senses open.



gridCOMMENTS

Hey kitties,

Congratulations! We had such a hard time choosing our winner. Everything who submitted had perfect answers.

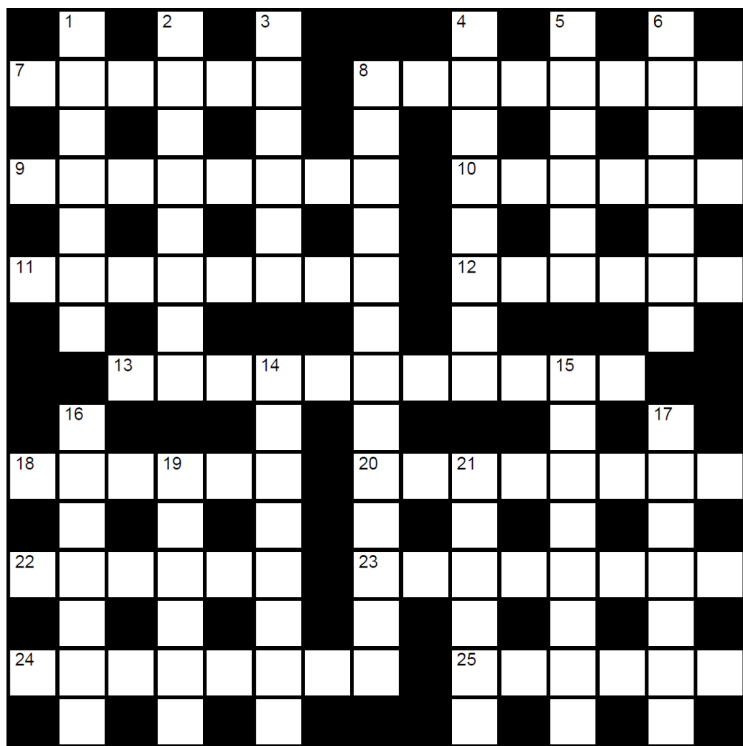
In fact, we received not a single *gridSOLUTION* from you. This makes our lives easier, so... Thanks, I guess?

Although this does leave us pondering the reason for this. Was it too hard? Did it contain too much math?—Just kidding! You can never have too much math. All right, cats, we'll just make this one easier. Maybe a little too easy. But that means someone might actually win a \$5 gift card to the C&D this time, right?

In case of a tie, in case of submissions, this week's *gridQUESTION* is: what's your excuse for not submitting a solution to last week's *gridWORD*?

bunniED

This Issue's Grid:



Doodle space

gridCLUES

Across

7. Has volume $\frac{4}{3}\pi r^3$
8. What you make in CS444
9. A procedure that produces a quotient and a remainder
10. Like hash and page
11. A type of probability
12. A function that is this has derivatives of all orders everywhere in its domain
13. Hopf, infinite-period, saddle-node, e.g.
18. Diamonds
20. Opposite of longitude
22. _____ up _____: get used to
23. A mapping from one vector space or module to another
24. Apparition
25. "Leave" in third-person plural

Down

1. Maximal or minimal
2. Caused by deficit in thiamine
3. This family produced four Catholic Popes
4. { }
5. Devil
6. 70
8. Forms like Jordan, Weyr, Frobenius, e.g.
14. Having a single mode
15. Computers are this after four years
16. Scabbards
17. _____ matrix: another word for the conjugate transpose of a matrix
19. For probability density, the first this is the mean
21. Layered

