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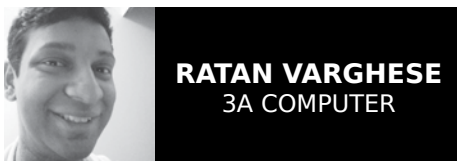
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An Update on the Boeing 737 MAX



Ken Fielding via Wikimedia Commons

WestJet's 1st Boeing 737-Max 8 Making it's 2nd visit to Vancouver



RATAN VARGHESE
3A COMPUTER

Boeing and regulators are soon to roll out a fix for the Boeing 737 MAX to prevent future fatal crashes.

In the past five months, there have been two eerily similar incidents involving the 737 MAX. On October 28, a 737 MAX operated by Lion Air crashed into the sea minutes after taking off from Jakarta, killing 189 people. The plane's "black box" was only recovered in January. More recently on March 10, another 737 MAX operated by Ethiopian Airlines flying from Addis Ababa to Nairobi crashed and killed 157. According to satellite data and data from the wreckage of the second plane, both flights had similar problems prior to crashing. The planes would veer up and down several times before finally entering a fatal nosedive. While the causes of the crashes still aren't fully understood, many of the relevant details have become widely known over the past weeks and months.

Not all 737s are MAXs. The first variants of the Boeing 737 flew in 1967, and over the decades new versions have been developed. While the 737 was a very successful plane, in 2010 Boeing was actually planning on creating a totally new aircraft to replace the 737. That changed in 2011, when Airbus announced a new variant of its A320: the A320neo. As demand for the A320neo began to rise, Boeing decided it needed a competitor as soon as possible and designing a new plane would take an entire decade. So they changed plans, opting to create yet another 737 variant. The

737 MAX program had begun.

One of the ground rules for the MAX design was that it had to be as similar as possible to the earlier 737 models. In particular, the piloting experience needed to be similar: otherwise longtime 737 pilots would need to be retrained before flying the MAX, increasing the cost for airlines to deploy the aircraft. However, competing with the A320neo required the MAX to have larger, more fuel-efficient engines than previous generations of the 737. This would cause the MAX to tip upwards far too often, which risks the plane going into a stall.

To correct this issue, Boeing developed the Maneuvering Characteristics Augmentation Algorithm (MCAS). One of its tasks would be to automatically pull the plane downward when the aircraft's Angle of Attack (AoA) sensors detected a significant tip upwards. The MCAS would operate silently in the background, keeping the plane at the expected angle, and pilots would be none the wiser. Boeing and aviation regulators both agreed that MCAS-specific training would not be necessary for pilots. Until the Lion Air crash, most pilots were left in the dark about MCAS.

The 737 MAX entered service in 2017, after just six years of development. Airlines ordered over four thousand of the planes, making it Boeing's fastest selling plane. However, not all the 4700 had the same features: Boeing and other aircraft manufacturers make lots of money selling optional customizations of their products. The customizations of a 737 MAX could cost as much as two million US dollars: about five percent of the aircraft's full cost. Many of these features are aesthetic, or for

passenger comfort. However some of these "optional features" are safety features. For example, the Japanese require aircraft to have an extra fire extinguisher in the cargo hold. Airlines not operating in Japan sometimes decide not to pay for this feature.

Manufacturers and airlines alike are pretty secretive about this: Boeing has not made a full list of 737 MAX customizations available to the public. However it has recently surfaced that some of the customizations not purchased by Lion Air or Ethiopian Airlines would have been helpful during the crash. One such feature is an indicator showing the reading from the Angle-of-Attack (AoA) sensors. Another is a "disagree light", which would be activated when the two AoA sensors are providing different readings.

With all these details, a more detailed scene of the crashes begins to emerge. First, the plane starts slightly dipping down, and pilots attempt to pull the plane up again. The plane dips down, and the pilots realize they are fighting an automated system for control. They try yanking the control column to put the machine under manual control. However a few minutes later, the MCAS reasserts control over the jet and it tips down again, perhaps because of a malfunctioning AoA sensor that the pilots had no way to detect.

Prior to the Lion Air crash, the doomed plane had MCAS-related difficulties on 4 flights. One of these non-fatal incidents was just two days prior to the crash. An extra third pilot would correct the problem by disconnecting the MCAS system. However, on March 28 that particular pilot was not onboard, and the remaining crew did not have enough time to debug the problem. They desperately yanked the control

column several times, with as much as 100 pounds of pressure. The MCAS kept tipping the nose down all the same, until the plane nosedived right into the sea.

After the crash, several countries around the world have grounded the Boeing 737 MAX. Indonesia's national airline, Garuda Indonesia, has taken the extra step of canceling its order of 49 additional 737 MAX jets due to low consumer confidence in the plane. Other airlines have not yet followed suit. Some have been keeping quiet on the topic, but WestJet has revealed its reasoning publicly: they are waiting for Boeing to create a solution and for regulators to approve it before making a decision. WestJet may have a long wait ahead of them: Canadian and European regulators are considering doing their own investigations into Boeing's fix, instead of simply trusting the American Federal Aviation Authority (FAA). The FAA has been criticized alongside Boeing, for allowing aircraft manufacturers to essentially self-certify their products' safety. Both Boeing and the FAA have been dealt several MAX-related lawsuits.

Boeing's tentative fix involves updating the MCAS system to use both available AoA sensors, rather than just the one. They would alter the MCAS to prevent it from tipping the nose too far down. The AoA disagree light will also become standard, although the AoA indicator will remain an optional purchase. Pilot training for the 737 MAX will also be improved.

Investigation of the crash is still ongoing: whether or not Boeing's fixes will be adequate remains unclear. It remains to be seen if thousands of the MAX will one day dominate our skies, or if the model will never fly again.

Letter From the Editor

That's a Wrap!



SAMRIDHI SHARMA
EDITOR-IN-CHIEF

"Is it spring yet?" I ask myself as I put on my winter jacket for yet another day and bury myself under its weight grudgingly. I mean, it is getting hotter, so I don't really know what is stopping me from being the daring person in shorts walking to class from the outside. Seriously, Josh, how are you not freezing to death? Oh well, maybe it's my tropical genes. Maybe I'm just too cowardly to make the switch. But seriously, I think I just don't trust the Canadian weather. I realize spring began officially on March 20th, and while it has gotten warmer, that hasn't changed even the slightest thing for me. I ate ice cream in the winter, I will continue to have it in the summer. So really, what has changed?

Anyway, this is the last issue of the term! Woohoo! My time as the Editor-in-Chief is almost up and I really enjoyed every minute of it. There are so many things I wish I had done differently, so many lessons I have learnt, and there are so many memories I will completely cherish. Here are a few of my favourite little anecdotes from this term.

The first few meetings of the term consisted of three people. Raeesa, Gabrielle, and I would sit in the *Iron Warrior* office exchanging stories about our lives, ranting about everything that is annoying in the world and just simply chatting. At one point Raeesa said something like, "Everyone asks us how we get any work done when all we do is talk," and really, I still don't know the answer. With how much fun the paper is to produce, and the amazing amount of help I received from Raeesa and Gabrielle on the paper, it really just made all the work a whole lot easier.

Raeesa has also been with the paper ever since first year and she is graduating this year. She calls the paper her baby, which I find super adorable. It is also her birthday as I write this, so happy birthday!

Clubs and Societies day was another fun time! Mridu and I went prize-shopping before the day and even created the spin-the-wheel. It was really calming to pick up coloured markers to draw again. I never thought I would be doing arts and crafts again but hey, *The Iron Warrior* really does encompass and demand (request) all the different skill sets. Honestly, even at the Clubs and Societies day, when I told people that writing is not all that you have to do at the newspaper, they just seemed confused, surprised and taken aback. Our spin-the-wheel was proof, right under your nose. You just had to look, Sherlock.

But anyway, after the Clubs and Societies day in SLC, fourteen people came to the next meeting, you guys. We had to borrow an extra chair from a classroom. My fear

of public speaking just lurked in the corner as the number of attendees grew by eleven. People pitched ideas about reviewing bubble tea, but it never happened. There was also a pitch for tips about keeping healthy for exam seasons. But the person whose idea it was ghosted us after that meeting and the others didn't feel even remotely qualified to write about this topic. So here I am, bidding all the articles that never really happened a goodbye. I hope they get discovered by someone else in the near future. For now they rest in the archived folder of my Gmail account.

Another, really interesting phenomenon that took the paper by a whirlwind was TV show-themed crosswords. I definitely saw more people attempting the crosswords because the topics were more relatable. It also ended up sparking so many conversations and I have never gotten more spoilers for *Grey's Anatomy* in my life. I only wish someone would make a *Friends* crossword next (nudging Kirsten through the power of my mind)! Wait, is this one *Friends*?

So, if you can't tell by how much you have read so far, being a part of the *Iron Warrior* has been really really special for me. It can be the same for anyone who chooses to be a part of this great group of people.

Most of our meetings consist of having conversations while eating baked goodies. We talk about a vast number of topics including news, the happenings of our lives, our courses and literally anything that comes to our minds. I like to think of them as more of a rant circle than a meeting. Yet, they yield great results in terms of content for the paper. In this issue, we have an update about a potato that has been sitting at Gabrielle's place for a couple months. Really, isn't that the kind of quality content that we expect from our paper? I am so proud of that little guy doing his own thing near a window – what a good boy!

As fun as the paper has been, I really wish I had done a few things differently in my time as the Editor-in-Chief. The first thing being holding more interactive meetings. After the eighth meeting, Ratan commented, "Hey, that was a good meeting!" For reference, we only have ten meetings. That got me thinking how I could have made the meetings better in the first place and quickly realized that while I do encourage ideas from the attendees, I don't really offer many ideas myself and that leads to some really awkward silences during the meetings. I realized that if I had brainstormed ideas on my own before the meetings, that would have sparked better conversations and even encouraged people to banter and throw in ideas of their own. If I could go back in time and tell my past self to do this, I would.

I also would have loved to exist in a timeline that does not involve me pulling all-nighters every two weeks before the

paper was due. So once the layout has been completed, the PDF of the newspaper needs to be sent in for publishing preferably before Tuesday morning. For the first two issues, clueless as I was about laying out the paper, I ended up not going to bed at all on Sunday or Monday nights, depending on the week's schedule. I wish I had made myself more familiar with the layout software well before the first issue came out. I also wish I had started laying out the issues in a timely manner. Nonetheless, I really did learn how to use the software really well and I have gotten much better at layout now. At least, I haven't had to pull any all-nighters for the last two issues. Who knows about this one, however?

You might be wondering, why I am telling you all this seemingly unrelated gibberish. Here is why. When I joined the *Iron Warrior*, I wasn't very certain if I would be able to fit it all in to my schedule. I also had doubts about being able to write well enough or even if I was fitting in with the group of people back then. I was in my second year back then and I had tried a variety of different clubs before I found the *Iron Warrior*. I quickly realized that the newspaper is a safe space, and everyone is welcome. I found the club that I most liked and I have stuck with it for almost two years now. I highly recommend anyone who has the same doubts as me to take the leap and just join a club. This has been the best decision I have made in my undergrad career so far and I promise you wouldn't regret it either. It is a really nice escape after class when everything seems way too stressful to go back to the club of your choice and not talk about academics for a bit. Chances are that you will find many like-minded people as yourself when you join a club that you really fit into and share the interest of that club.

I think my favourite part of the paper is how it allows everyone to take a good look within themselves and use skills that they might not have found useful before to make the paper even more interesting. Have you ever been frustrated because you have this really clear image of something you want to sketch in your head, but you can't because you don't think you can draw well enough? Well, guess what? The paper does not care how good or bad you are at drawing. We love publishing comics, regardless!

While my time as the Editor-in-Chief of the paper is almost up, I am far from saying goodbye to the paper. My feminist column has been such a great way for me to express myself and just rant about the injustices of the world and I hope to keep on continuing it. This has been a blast and I cannot thank all the people who contributed to the paper enough. And while I still have you, join a club, you all. You won't regret it! Reach out to me about the clubs you want to join, or ask me about the *Iron Warrior* at iwarrior@uwaterloo.ca.

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The Tragedy in Christchurch

Over 50 People Lost Their Lives to the Mass Shooting



**RAEESA
ASHIQUE**
4B ELECTRICAL

I am still heartbroken by the events of Friday, March 15, when shootings at two mosques in Christchurch, New Zealand killed fifty people and injured dozens more.

The New York Times published an article with profiles of the victims. When I read this list, I cried. The youngest victim, Mucad Ibrahim, was just three years old.

For anyone who is unaware: a mosque – or “masjid”, in Arabic – is not only a place of worship.

It is a space for the community. I have attended events at my masjid ranging from discussion groups to tea parties to ping pong tournaments. Particularly during Ramadan, the masjid unites the community: we gather in the evening to break our fasts and pray.

It is a space for education. When I was a child, I attended classes at the masjid to memorize the Quran and learn about the religion. As a teenager, I taught classes, passing on my knowledge to younger children.

It is a safe space, where a Muslim can always return to God and rediscover spirituality and purpose. When I am scared or lost or sad, I know I can go to the masjid to pray, and it will bring me inner peace.

The sickness, the anger, and the hatred that could possess someone to invade such a space is incomprehensible. To shoot down innocent people is despicable. But to shoot down innocent people during prayer, in their house of worship... I have no words.

May all of the victims rest in peace.

I am writing this article backwards, by starting with my personal response. Let me now give you the facts.

What happened

Fifty people were killed at two mosques – Masjid Al Noor and Linwood Masjid – in Christchurch, New Zealand. 28-year-old Australian Brenton Tarrant, who self-identifies as a white supremacist, indiscriminately opened fire on worshippers during the congregational prayer, livestreaming the attack on Facebook.

According to witnesses who spoke with TVNZ: “a gunman – dressed in black with a helmet carrying a machine gun – came into the back of the mosque and started firing into the people praying there.”

He methodically began in the men’s prayer room before proceeding to the women’s section. Witness Ramzan Ali said, “The mosque has segments, you know, he shot inside, went to another room, shot there. There is a ladies’ section, he went and shot them.”

After five minutes of shooting, he drove about five kilometres to another mosque in the suburb of Linwood, and opened fire on about 100 people who were praying inside.

New Zealand Police Commissioner Mike Bush said that a number of firearms were recovered from both mosques, and two IEDs (improvised explosive devices) were found in the suspect’s car and neutralized by the military.

Witness Farid Ahmed, who is wheelchair-bound and was in the parking lot during the shooting, spoke with Al Jazeera: “I was hearing shooting after shooting. After about ten minutes, I thought the shooter has left. I pushed myself to get inside the mosque and it was unbelievable. I saw in the main room...more than twenty people, some of them dead, some screaming...I saw on the floor hundreds of bullet shells.”

Before the shooting, Tarrant published an 87-page racist manifesto on Twitter, which he also emailed to the office of the prime

minister, written in a question-and-answer format. He called the document “The Great Replacement”, a phrase which originated in France and has been adopted by European anti-immigration extremists. His overall goal is to prevent Muslims and non-white people from taking over Western society.

The prime minister confirmed that her office received the document nine minutes before the attacks, and it was forwarded to security services within two minutes.

Tarrant was influenced by the ideas and methods of Anders Breivik, a far-right Norwegian terrorist who murdered 77 people in 2011. Breivik wrote a 1518-page manifesto which inspired copycat extremists such as Christopher Hasson, a lieutenant in the US coastguard, who was arrested last month for an alleged plot against black and liberal politicians and media figures.

The police commissioner confirmed that Tarrant was not known in advance to New Zealand or Australian security services.

This leads to a lot of difficult questions: Tarrant openly supported white supremacy and had reportedly been planning the attack for months, yet he was not on a police watch list; he easily obtained a gun license and bought a collection of military-style semiautomatic weapons.

Responses from politicians

Prime Minister Jacinda Ardern has been praised for her swift and appropriate action in wake of this tragedy. She labeled it as an act of terrorism and tweeted: “What has happened in Christchurch is an extraordinary act of unprecedented violence. It has no place in New Zealand. Many of those affected will be members of our own migrant communities – New Zealand is their home – they are us.”

Ardern also offered emotional and financial support, visiting the communities and promising to cover funeral costs of all fifty victims, and introduced a new gun control policy.

Australian Prime Minister Scott Morrison called Tarrant “an extremist, right-wing, violent terrorist.”

Other world leaders have expressed their condolences, including Donald Trump, Theresa May, the Queen, and the Pope.

Solidarity

New Zealand has shown support for the Muslim community in a beautiful and admirable way.

One week after the attacks, Friday prayer was held in Hagley Park opposite Al Noor Masjid. Hundreds of Muslims were joined by thousands of others, including the prime minister. In his sermon, survivor Imam Gamal Fouda said: “We are broken-hearted, but we are not broken...We are alive, we are together, we are determined to not let anyone divide us.”

Ardern also made an address, saying: “New Zealand mourns with you, we are one.” She then quoted the Prophet Muhammad: “the believers in their mutual kindness, compassion and sympathy are just like one body. When any part of the body suffers, the whole body feels pain.”

The Muslim call to prayer, or “adhan” in Arabic, was broadcast on national television, followed by two minutes of silence.

Non-Muslim women in Christchurch were seen wearing

a headscarf – “hijab” – in solidarity.

The role of the media

As most Muslims can attest, we are unfairly portrayed by the media.

Western news coverage of Muslims is often negative and highly stereotypical. Violent crimes committed by Muslims are emphasized, while violent crimes against Muslims are either downplayed or ignored. According to research from the University of Alabama, terrorist acts committed by Muslims receive 357% more news attention than terrorist acts committed by non-Muslims.

Even in this time of pain, Australian senator Fraser Anning suggested a link between Muslim immigration and violence. “The truth is that Islam is not like any other faith. ... It is the religious equivalent of fascism. And just because the followers of this savage belief were not the killers in this instance does not make them blameless.”

Ardern called the lawmaker’s comment “a disgrace”.

The rise of white supremacy

While US media and politicians talk incessantly about Islamic terrorism, white supremacist terrorism is far more prevalent. According to a recent study, two-thirds of terrorist attacks in the US are by the far-right. Research by the Southern Poverty Law Center shows that far-right violence is unambiguously linked to white supremacy.

The New York Times also released a report saying the US’s “domestic counterterrorism strategy has ignored the rising danger of far-right extremism”.

The pervasiveness of white supremacy within political parties is exacerbating the problem. This has been demonstrated

several times in recent years: white nationalists influenced the 2016 Brexit vote by spreading fear of immigrants. US President Donald Trump and other Republican politicians have also been linked to white supremacy.

To make matters worse: mass shootings in New Zealand are extremely rare. Their deadliest shooting in modern history was in 1990, when David Gray shot and killed thirteen people. An attack of this magnitude in a relatively non-violent country illustrates the far reach of these ideologies, also suggesting that the internet plays a key role in perpetuating this racism.

While sites such as 4chan and 8chan intentionally unite the white supremacists, even the social media giants make it possible for these ideas to spread. Tarrant live-streamed the attack on his own social media accounts and posted the manifesto on Twitter. Both were disseminated across various outlets, such as Facebook and YouTube, spreading his message while bypassing traditional news outlets.

Facebook said that it deleted 1.5 million copies of the video within the first 24 hours and was working to also remove “all edited versions of the video that do not show graphic content.”

This realizes an inherent problem with social media: the footage became propaganda, drawing attention to the statements in the manifesto.

Mr. Feldman from the Center for the Analysis of the Radical Right said that this situation leaves media outlets with an ethical dilemma: “The coverage will be wall-to-wall today, and tomorrow it will set someone else off.”



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Two NASA Astronauts to Participate in the First All-Female Spacewalk



AKANKSHA JOSHI
1B BIOMEDICAL

Friday, March 29 will be yet another historic day for spaceflight as the first ever all-female spacewalk is scheduled to take place on the International Space Station. American astronauts Anne McClain and Christina Koch will mark a momentous step forward as they step out of the International Space Station (ISS) to work on upgrades to the outside of the station in what will be a huge milestone for women in STEM.

The current six-member crew onboard the ISS constitutes Expedition 59, with Russian cosmonauts Aleksey Ovchinin and Oleg Kononenko, Canadian astronaut David Saint-Jacques, and NASA astronauts Nick Hague, Anne McClain, and Christina Koch. The purpose of Expedition 59 is to conduct experiments on Earth's atmospheric carbon cycle, the effects of aging and disease on tissue, as well as run tests on robots designed to perform routine chores onboard the Space Station. This expedition is the very first spaceflight for Saint-Jacques, McClain, and Koch, who are flight engineers onboard the ISS. Hague, Ovchinin, and Koch officially marked the beginning of the expedition after arriving at the station on March 14 (Pi Day) in the Soyuz rocket, having launched at (you guessed it) 3:14 PM from the Baikonur Cosmodrome in Kazakhstan. Having been operational for

twenty years, the space station is constantly in need of upgrades to its protective exterior, which is why spacewalks are an integral part of all expeditions to the ISS. McClain and Koch's spacewalk will be the second of three planned maintenance spacewalks as part of continuous upgrades to the orbital laboratory. The first will take place on March 22 and will be conducted by McClain and Hague as they begin work to upgrade the station's power system. The second, to be conducted by McClain and Koch on the 29th, will complete upgrades to power channels. The final spacewalk will be conducted by Hague and Saint-Jacques on April 8 to install hardware for a future science platform. All three are important spacewalks, no doubt, and are made even more momentous thanks to the two female spacewalkers.

Christina Koch grew up in Jacksonville, North Carolina, and attended North Carolina State University, graduating with a bachelor's degree in electrical engineering and physics, as well as a master's degree in electrical engineering. She graduated from the NASA Academy program at Goddard Space Flight Centre in 2001, and worked there as an electrical engineer focusing on instrument design. Some of her research has involved working as a field engineer at remote scientific research stations in the Arctic, the South Pole, and American Samoa. She was selected as a NASA astronaut in 2013, and completed candidate training in 2015. Anne McClain was born and raised in Spokane Washington, and graduated from the United States



via NASA/Wikimedia Commons

Anne McClain (left) and Christina Koch (right)

Military Academy with a bachelor's degree in mechanical engineering. She also holds a master's degree in aerospace engineering from the University of Bath, and a master's degree in international security from the University of Bristol. In addition to her already impressive CV, she has logged over 2,000 hours on various military helicopters as a test pilot. Along with Koch, McClain was selected to be a NASA astronaut in 2013, and completed her training in 2015.

This spacewalk will mark the perfect end to women's history month, and will

be the first of many milestones to be made for women in space. Canada will not be left out of the spacewalk either, as Canadian Space Agency flight controller Kristen Faccioli will be supporting the spacewalk from the ground in NASA's Johnson Space Centre. The lead flight director and the lead EVA flight controller are also supposed to be women. This goes to show that in today's world, more and more women are pursuing the STEM fields, and are making breakthroughs that will propel us towards the future of tomorrow. Good luck Anne and Christina!

The Magic of Magnetic Trains

DAVID JIMENEZ
1B CHEMICAL

The magnetic levitation train is a way of enhanced transportation which consists of two different magnetic systems, one for the levitation and the other for the movement. Bonsor wrote for *How Stuff Works* in 2011, "In Aichi, Japan, near Nagoya, a system built for the 2005 World's fair is still in operation". This feature makes the train easier to reach a higher speed because it does not have an opposing force usually known as friction acting on it.

Firstly, a repelling force is produced by magnets when they are collocated in a specific direction making the train levitate, meaning magnetic trains will never be in contact with the rail way, even if the train is moving. Magnets are constructed by neodymium, iron boron, samarium, alnico and ceramic which naturally come from the Earth.

This system is more efficient for the reason that the friction forces do not act on the train and thus do not diminish its velocity, that is to say the forces exerted on the train will be the levitation and pro-

pulsion force that enhance the proficiency of the train's movement. Nevertheless, only special magnets called superconducting magnets are able to support such huge amounts of levitation force. These magnets have two poles, north and south, and if they are facing each other with the same pole, a repelling force will be created between them. It is important to consider that magnets under the influence of the repelling force tend to be in constant movement, making it difficult to have a fixed system as magnetic trains have. In addition, magnetic trains are powered by both

electromagnets and electricity. The power system of magnetic trains consists of three important sources, the first one is a station that provides enough quantities of electric power, so that electromagnets can be able to create an electromagnetic field around the iron core. Hence, the train can have either electromagnetic suspension (EMS) or electrodynamic suspension (EDS).

EMS technology is based on the levitation principle in which magnets with identical poles repel and contrary poles attract each other. On the other hand, EDS principle consists of electromagnetic induction and it is focused on the speed that a magnetic train can support. According to McCurry's article in *The Guardian* in 2015, "In April 2015, a manned superconducting Maglev train broke two previous land speed records for rail vehicles. The train was clocked at 603 kilometers per hour or 375 miles per hour."

Electromagnets are a branch of magnets that are able to create a magnetic field when an electric current is passing through them. The propulsion system uses forces of attraction and repulsion so that the current produced on the coils can accelerate the train with the help of the superconducting magnets located in both the train and the railways. The propulsion coils mentioned before are also used for guiding the train with EDS principle, but the difference is that it depends on the train's displacement. As a result, the force exerted on the train will be directly proportional to the distance. In conclusion, magnetic trains are a great engineering invention that improve the transportation system in a city by using an effective technique with magnets. Although the implementation costs are elevated, the investment is worthy and reliable for its durability, mechanical design, and efficiency.



Yosemite via CC BY-SA 3.0

JR-Maglev, a Magnetic Train in Japan

Sad News For Canadians

Alex Trebek diagnosed with stage IV pancreatic cancer



KIRSTEN EHLERS
1B BIOMEDICAL

Beloved *Jeopardy!* host Alex Trebek announced March 6 that he had been diagnosed with stage 4 pancreatic cancer. In his announcement, he stayed true to his witty humour and said: “Truth told, I have to [keep hosting] because under the terms of my contract, I have to host ‘Jeopardy’ for three more years”.

The public announcement was due to his desire to maintain transparency and to avoid fans finding out from other sources in the media.

According to the American Cancer Society, pancreatic cancer has a five year survival rate. This is due to the fact that pancreatic cancer isn’t typically detected until the later stages. Three percent of cancer in the United States is classified as pancreatic cancer. Despite the unpleasant prognosis, Trebek has said that he plans to fight the cancer and win.

On March 14, Alex Trebek released a thank you video for all the fans who tweeted, emailed, and wrote him well wishes. Trebek has called himself a “lucky guy” for all the support he’s been given. One well wisher was the IBM computer Watson who sent him a get well card. Additionally, former *Jeopardy!* champions such as Ken Jennings have announced their support for Trebek by saying that “Alex is very aware of how much he means to millions of people, and how we will be pulling for him...I hope that’s a comfort”. Moreover, Brad Rutter, another champion, tweeted: “If anyone can beat this, [Trebek]

can”. Ken Jennings joked: “I hope some very good L.A. oncologists are getting ready to have their mispronunciations corrected.”

Canadians have expressed their support including Prime Minister Trudeau, Toronto Mayor John Tory, and former Ontario premier Bob Rae.

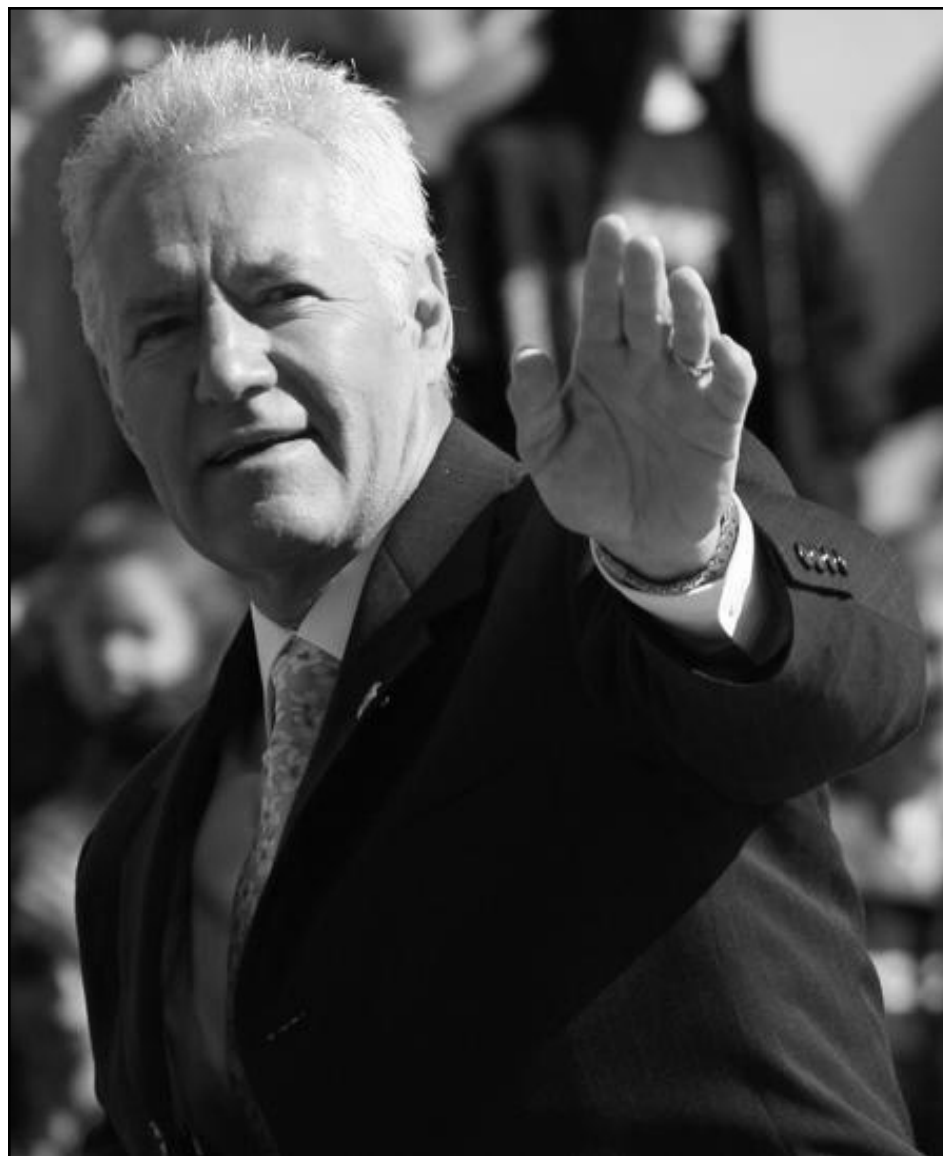
Stephen Colbert, another CBS television host, discussed the diagnosis on his show. He said that “everybody loves Alex Trebek”. He expressed that everyone wants Trebek to stay strong and fight the cancer.

Other well-wishers include celebrities such as Ken Jeong, *Wheel of Fortune* host Pat Sajak, and radio host Ken Carmen.

Trebek has experienced other health issues in previous years. In 2007, Trebek had a minor heart attack, after which he had a short break for just over a month. In 2017, Trebek had brain surgery after experiencing blood clots. The blood clots were a result of a subdural hematoma, a condition that arose after hitting his head earlier that year. At the beginning of 2018, he took a hiatus from *Jeopardy!* to recover from the brain surgery.

However, after announcing his cancer diagnosis, Trebek is back to work filming *Jeopardy!*’s next season

Trebek, undoubtedly has made a significant impact in Canadian Culture. Prior to *Jeopardy!*, Sudbury-born Trebek was a host of *Reach for the Top* on CBC news. Later, he became the host on *Classic Concentration*. He has hosted *Jeopardy!* since 1984. This long career as *Jeopardy!* host won him a Guinness World Record in 2014 for hosting the most game show episodes. The total was 6,829 at the time. He won the Lifetime Achievement Award at the Daytime Emmys® and five Daytime



Connormah via Wikimedia Commons

Alex Trebek in 2009

Emmy® Awards for Outstanding Game Show Host for *Jeopardy!*. In 2017, he was appointed to the Order of Canada

for his work in television, and dedication to the environment, education, and humanitarianism.

In the Wake of a Tragedy

Jacinda Ardern is a True Leader



RAEESA ASHIQUE
4B ELECTRICAL

Instead of writing an update on Donald Trump, let’s turn our attention to a more admirable figure. A woman who I can legitimately call a world leader, without disrespecting the term.

Prime Minister Jacinda Ardern was somewhat of a celebrity before the events of last week. She was featured on the cover of *Vogue*, she appeared on “The Late Show with Stephen Colbert”, and she was included in *Time* magazine’s list of 100 most influential people.

While she had already been viewed as a progressive leader, along with Canada’s Justin Trudeau and France’s Emmanuel Macron, her status has elevated since the mosque attacks in Christchurch. Her response, both with words and with actions, has been admirable.

She quickly labelled the attacks as “terrorism”. This is rare, as that term is generally used when Muslims are the perpetrators, not the victims. A white terrorist is more often referred to as “a lone wolf” or “mentally unstable”.

She also avoided rhetoric of hate or violence or war. Since 9/11, leaders have treated terrorist acts as declarations of war, and responded accordingly. Ardern acknowledged that the root cause is far-right ideology; she did not focus on the terrorist, which would give him notoriety.

The day after the attacks, she visited Christchurch, reaching out to the communi-

ty with empathy and compassion. She gave her condolences while wearing a headscarf, also pledging to cover the funeral costs of all fifty victims and offering financial support to families who lost someone on whom they were financially dependent.

These acts of emotional and financial support are admirable, especially in contrast with the negative rhetoric and racism often heard in the United States. However, even more impressive is the way she swiftly introduced policy. A true leader not only

speaks, but also acts.

Gun control

At a news conference following the shootings, Ardern said: “The mere fact... that this individual had acquired a gun licence and acquired weapons of that range, then obviously I think people will be seeking change, and I’m committing to that.” Attacker Brenton Tarrant had a gun licence, which he obtained in November 2017, and owned five guns.

On Thursday, March 22, less than one week after the attacks occurred, the government banned military-style semi-automatic weapons and began to rewrite gun laws. The ban also covers any parts or accessories that can convert less powerful firearms into military-style weapons, and high-capacity magazines.

“In short, every semiautomatic weapon used in the terrorist attack on Friday will be banned in this country.” These same weapons were used in mass-casualty shootings in the US, including Orlando, Las Vegas, and Parkland, Florida.

Mark Mitchell, who was a defense minister in the previous government and who supports the new policy, said, “There is a general recognition that we don’t need these military-style weapons in New Zealand, so it’s very easy to win cross-party support.”

Ardern mentioned that a program will be initiated to take existing weapons out of circulation; gun owners who do not comply will be fined.

Senator Bernie Sanders tweeted: “This is what real action to stop gun violence looks like.”



Governor-General of New Zealand via Wikimedia Commons

Jacinda Ardern (right) at the Swearing-in Ceremony in 2017

So You're Broke, Why Not Walmart?

Why is the store so darn cheap?



GABRIELLE KLEMT
3B GEOLOGICAL

Why is Walmart So Darn Cheap?

"Friends don't let friends shop at Walmart". The saying was written on a pin and caught my eye. I was in a store in my neighbourhood one afternoon shopping for Christmas presents for the very first time. I was in grade 7, I had \$40 in my pocket, and I was going to find great gifts for everyone I knew... I had a very limited budget but when I saw the pin I knew I needed to get it for my friend, who often talked a lot about shopping at Walmart.

For most of my life, Walmart was presented to me as the epitome of big box store American capitalism taking over the world. As a budding socialist, I accepted that and took Walmart to essentially be the root of all evil. I know now, of course, that Walmart is not the cause of the problem even if it is a symptom, and it has its place in society just like everything else. And you know what, as a student with very little money, Walmart can be pretty appealing.

That's what I really want to discuss: why is Walmart so much cheaper? How do they do it? Is it employees who work minimum wage? Is everything sourced from slave labour and unethical practices? Much as I like to hate on Walmart, I doubt this is the case. I mean, often I see food in Walmart sourced locally but offered at a better price than other grocery chains. How do they do it?

The "Wal-Mart Effect" is a term coined by Charles Fishman in his 2006 book by the same name. I didn't manage to read it before writing this article, but luckily Investopedia did. So, trust this synopsis or not, here's what Fishman has to say

about Walmart's competitive pricing. As a company with massive buying power, Walmart owns between 15-20% of the worldwide sales for many companies it sources from. This gives them a lot of leverage negotiating prices; essentially they are able to set the price they choose for products, and manufacturers are forced to make their products for less money to keep up. This can result in reduced quality, decreased wages, or moving production to "less expensive countries" for goods manufacturing. The Wal-Mart Effect also has the result of shutting down smaller stores nearby, but that isn't the focus here today.

So Walmart is able to sell toys and clothes and shoes and whatever else for cheap because they're pushing the cost back onto the manufacturers (and usually then onto the planet, which is also not the topic of this article). I know I said I would not be biased with this article, but try to find legitimate reasons for lower prices, but all my research seems to lead me to buying power. So, let's look at food then.

Walmart is not only the world's largest retailer, but it's also the world's largest grocer. Maybe in Canada President's Choice stores dominate, but if you go to almost any medium-sized town in the States, there is always a Walmart. To boot, Walmart has locations in 27 countries. Compare that to only eleven countries with Costco locations. How can they sell food cheaper? You can't manufacture food more cheaply the way you can manufacture a shirt more cheaply.

Honestly, Walmart has a pretty substantial sustainability platform. According to their website, they are funding research for fertilizer optimization. Their goal for the end of 2015 was to sell goods from 1 million small and medium-sized farmers in emerging markets – they already source



Mike Mozart via Flickr

The Beacon of Western Civilization

some produce locally like Leamington tomatoes and Ontario peaches – and they are committed to sustainably sourcing key food commodities like palm oil, beef, cage-free eggs, and seafood. And all this not to mention other sustainability initiatives for zero waste, renewable energy sources, and more.

Historically, half the problem with making more "sustainable" products was a larger price tag. According to David Graham Hyatt & Andrew Spicer, in an article for Quartz.com, Walmart had to ask itself what a sustainable product is, how it could be measured effectively and efficiently, and what value did it create for the company and customers. It did not want to raise prices for consumers, even if those consumers might desire more sustainable products, so it did its best to go back to suppliers and ask them to be more sustainable. So, they created a "sustainability scorecard" for suppliers which by all accounts has been influential.

It looks like they can sell food cheaper for the same reason it can sell clothes cheaper: market share = negotiating power, I guess. And is the food really that sustainable? Well, it's a balance trying to find, as Graham and Spicer say, "what counts as 'sustainable enough' for price-conscious consumers?"

Did I answer your questions or just confirm your biases? Or do you have more questions now? I hope to look into this more, because like most people these days, I'm concerned about where my food is coming from, what the supply chain looks like, and what the impact of buying something is. Even though I'm just one broke student, I still have power in how I spend money. In the end, we all have to make decisions about the things that we buy, and as university students, we're on the right path to being able to make decisions one day, rather than resorting to Walmart out of desperation for more affordable food.

History on Fire

A podcast worth paying for?



RATAN VARGHESE
3A COMPUTER

RA(TAN) LINES

"Whether you like history or not, if you care about bravery, wisdom, passion, larger-than-life characters, and some of the most emotionally-intense moments of the human experience, you have come to the right place. Daniele Bolleli is a university history professor, writer, and martial artist, and he shall be your your guide in a journey to the place where history and epic collide."

Much like Daniele Bolleli's "History on Fire" podcast, this article will squander that incredible, if wordy, opening. In the case of this article, the introductory paragraph is already clearly devoid of wisdom and bravery. The podcast meanwhile slams the listener with about ten minutes of advertising before any larger-than-life characters are introduced, with the possible exception of Bolleli himself.

As soon as Bolleli opens his mouth, it becomes clear that he has a thick Italian accent. He's quite self-conscious about this: as he puts it, the reward for contributing to his Patreon at the \$100 level is to have your name totally mangled at the start of each episode. Some might not appreciate it, some might find it sexy. I personally don't mind the man's voice so long as it's being used to explain the cult of Dionysus

instead of waxing poetically about hemp fanny packs and workout gear. To be fair, Bolleli has some of the most unusual sponsors in all of podcasting, so it might actually be worthwhile to listen to those ad reads at least once. I, and many others, have become inclined to skip them altogether. As we'll see in this article and possibly this issue's PCP, there have been consequences to the egregious adverts, and peoples' annoyance at them.

Well, that's everything immediately apparent from the first ten minutes of each episode. Without further ado, let's set podcasts on fire.

Bolleli was not the first history podcaster, nor is he the king of the genre. He knows this: hardly an episode passes without him gushing about how amazing Dan Carlin's "Hardcore History" is. They seem to be good friends who sometimes coordinate efforts, make podcasts together and gift each other swords. However, for all of Carlin's explanatory brilliance, he isn't a historian. Bolleli's professional status is not merely used as a marketing tool: he knows about all manner of strange incidents that Carlin lacks the knowledge to cover. The most recent episode covers one such topic: the life of the Zen monk Ikkyu Sojun, who had plenty of sex and alcohol but did not commit violence.

Which leads to another aspect of "History on Fire": it has a more experimental spirit than "Hardcore History". The appearance of a pacifist-focused episode after forty or so episodes of covering incredibly

violent stories is just one example. Bolleli had a series of three episodes comparing and contrasting two American mass murders (Sand Creek and My Lai), where he collaborated with another podcaster and an American veteran. Some episodes, such as the recent one about the Melian Dialogue, are quite conceptual: focused more on the feelings and ideals than on specific events and people.

Of course, like other history podcasts there is still a great deal of monologuing. What really sets Bolleli apart here is his dark sense of humor. Consider the point when Bolleli is explaining the different reasons that samurai practiced seppuku and says "Last but not least for the reasons for seppuku is my personal favorite. Okay I just heard the words that came out of my mouth and that really did not come out well. I think it's safe to say that by the time I'm picking favorites for the best reasons to disembowel oneself, I've probably spent too much time researching this stuff." There are usually a couple of such tangents per episode, seconds of levity among many minutes of exposition. He often makes Lord of the Rings, Game of Thrones and MMA references. References to Taoists texts and zen koans also sometimes pop up.

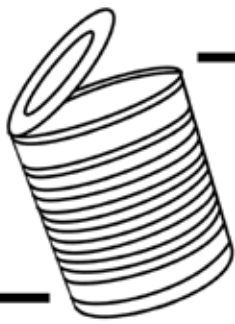
If there's one thing I don't like about Bolleli's speaking, it's the times when he needlessly reiterates. Let's go over that again: if there's one thing I don't like about Bolleli's speaking, it's the times when he needlessly reiterates. Sometimes it can be hard to keep track of all the names and de-

tails he's throwing around. However most of the time he's quite easy to follow.

At some point in the past, I was very fascinated by Bolleli. In an effort to support his work and find out what makes him tick, I bought his Taoist lecture series. Whether his words accurately described the ancient Chinese sages, I cannot say. What I do know is that it actually explains a lot about why Bolleli is the way he is, if anyone is interested.

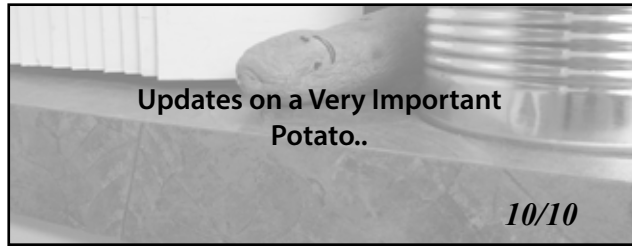
"History on Fire" episodes can last anywhere between 40 minutes to 3 hours. There have been fifteen or so episodes per year for a while, but big changes are on the horizon. At the end of the most recent episode, Bolleli revealed that he can't support the podcast's current rate of production. He's still a full-time teacher, which combined with the podcast led him to a 14-hour workday and a 7-day workweek. After years of ad reads and calls for Patreon support, Bolleli still didn't have the necessary funds to hire a proper assistant. So a podcast subscription service made him an offer: put all but two episodes per year behind our paywall, and we'll fund you.

Two free episodes per year probably doesn't seem like much for some people. However given that most of Bolleli's audience are accustomed to Dan Carlin's rate of production, that is probably not a problem in and of itself. The real question is whether the other 13 episodes of History on Fire are worth paying for, and what will happen to Bolleli and his podcast if the subscription firm crashes and burns.



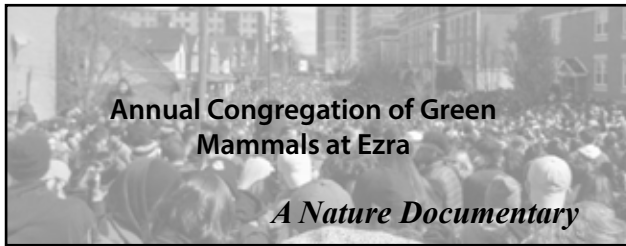
BUBBLE TEA

IS MICHEAL BUBBLE THE RIGHT WAY TO SAY IT? GUYS? DON'T JUDGE ME, OKAY?



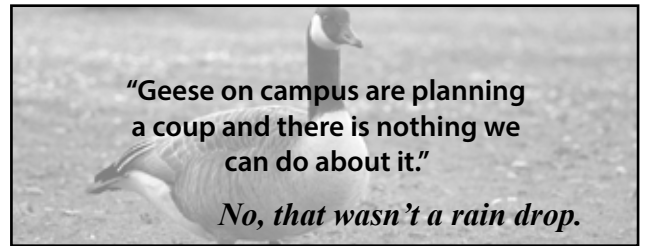
Updates on a Very Important Potato..

10/10



Annual Congregation of Green Mammals at Ezra

A Nature Documentary



"Geese on campus are planning a coup and there is nothing we can do about it."

No, that wasn't a rain drop.

BREAKING NEWS: Iron Warrior News outed as Fake News by Fox News, CBC News investigation

ION Construction ends in 2050, Students Ecstatic

A Sneak Preview of Planet Earth III

Ezra: An Ocean of Bodies



DAVID ATTENBOROUGH
3B TRON

Looking down from two miles above the surface of the Earth it's impossible not to be impressed by the sheer grandeur and splendour and power of the natural world.

Ten years ago, in a television series called Planet Earth, we revealed many of those wonders, but today much has changed.

We can now show life on our planet in entirely new ways.

Bring you closer to animals than ever before.

And reveal new wildlife dramas for the very first time.

But that's not all.

Our planet has changed too.

Never have those wildernesses been as fragile and as precious as they are today.

At this crucial time for the natural world, we will journey to every corner of the globe to explore the greatest treasures of our living planet and reveal the extreme lengths animals go to survive. We begin our journey in a secluded island called Waterloo, home to that elusive and enigmatic creature: the student.

The students of Waterloo are segregated into the Laurier and the UW clans, and regularly snub the other with memes, or by pretending the other clan is a fake clan and thus essentially doesn't exist at all.



Melanie Hehn

Today is St. Patrick's Day, and it is a day for both clans to Waterloo to come together for once in celebration and pagan rejoicing. A day where Laurier and UW can let loose side-by-side, put aside their differences, and get utterly smashed in public.

This is a male, and life here suits him pretty well. It hardly matters today whether he is Laurier or UW, the two are practically indistinguishable. He is currently chugging beer from a three-story funnel in a display meant to attract a mate.

The chanting of his fellow bros has been heard by a female, she turns, phone in hand, to capture the magnificent feat in action and posts it on her Instagram story

The Entire Population of Waterloo

before moving on. She is not the one, she is just out with the girls to have a good time and is still several drinks from making that kind of bad decision.

Luckily, a mate can't be far away. The entire population of students is located on the street known as Ezra; if he's going to get lucky, they're on this strip somewhere.

But wait, there are predators in this idyllic paradise too. And now, out from around a building strides a Waterloo Police officer in imposing battle gear, ticket book in hand. Students struggle to get out of the warpath of this stranger in their midst, bent on breaking up the greatest party of the year or at least making it a real bummer

with a ticket for drinking in public.

Hold on, what's that noise? Oh, gross, someone is really sick. The police officer's attention is caught and in the distraction, the students near-by disperse or move their drinks onto private property.

Having narrowly escaped persecution, they leave with an unforgettable experience of how hard life is on an island at the edge of the world.

Next time, we traverse the land to discover a spectacular but hostile world, where only the toughest animals can endure.

This is life in the dungeon of the world. Basement RCH.

Is the Carbon Tax Worth Your Life!?!

Wake up sheeple!



RAMBLE RAMBLER
3A MECHANICAL

There are two guarantees in life: death and taxes.

It's been a few months of the carbon tax and the provinces have seen a real serious impact. The \$10 per tonne carbon tax has nearly destroyed the Canadian economy. It's 2008 again with a terrible recession. Large Canadian employers such as Carbon Co. have fired all their Canadian employees under the grounds that the tax is too high to make a profit. Companies refuse to ship goods to Canada because the gas is too expensive for trucks. There are no jobs. There is no food in the stores. Even the little food in the stores are ridiculously expensive. The carbon tax has changed the price of a carrot \$20. Why? Because the gas for it is so expensive.

Canadians wouldn't even be able to flee the country to find better work unless they walked. Canadians can't afford to drive

anymore. The price at the pumps is too high. Canadians are selling their homes so that they can afford gas for their cars just so that they drive to work.

Moreover, Ottawa is basically asking Canadians to fork over \$100 per liter on false grounds. Everyone knows that climate change is a hoax. Look at this past winter: it was freezing!

It's not like recent summers have broken record temperatures and sea levels are rising at an alarming rate. The only evidence of that is actual measured data from National Centers for Environmental Information and NASA, respectively. What do those organizations know anyway? They just have scientists with years of education working for them. They probably have no expertise in the area. Even if climate change was real, it's not like carbon pollution has anything to do with it. There is absolutely no correlations between rising CO2 levels and rising temperatures.

Even if CO2 emissions were a problem, it's not like Canada is the only country doing it. Other countries have pollution

emissions too. Therefore, we have no obligation to reduce our carbon emissions



at all. Other countries will do all the work so we don't have to.

A carbon tax is a just a way for the government to line their pockets. The rebates given to Canadians during tax season must be coming from somewhere else because the money is definitely going to profit the Prime Minister.

If we let Ottawa continue this environmental crusade Canadians aren't going to be allowed to burn fluoroform fires in their backyards because the gas is apparently killing the planet. How can a gas kill a planet? It's just rock?

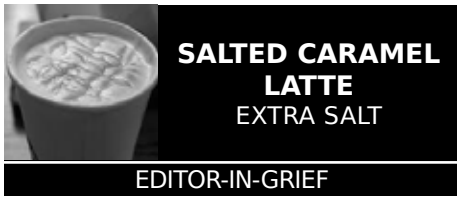
Who needs the planet anyway? SpaceX is doing great. Canadians should be able to not pay any tax. If carbon levels are too high, the only dangers would be a depleted ozone layer leading to harmful radiation and an increase in natural disasters. If that happens, humans will just leave. That's simple enough. It's way easier to colonize mars than it is to reduce carbon emissions.

Maybe Canadians will plant a few trees. That'll help, right?

It doesn't matter anyway. The tax isn't worth it.

Editor's Cut

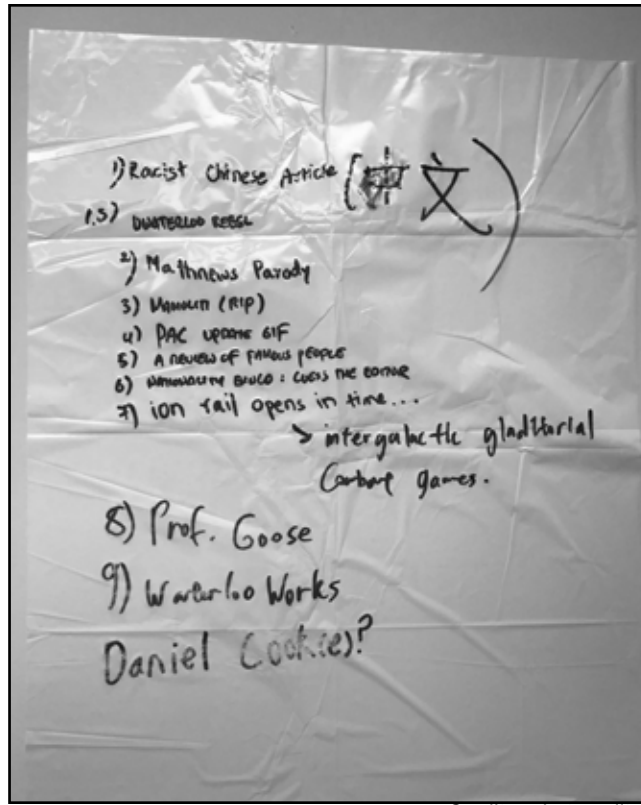
No Whiteboard More Problems



Never in my entire life have I wanted anything more than I want a whiteboard in the newspaper's office. Every effing day, I look at this trash bag of a makeshift whiteboard, that is stuck to the wall by the sheer force of static, and the first thing I do is commend it for being there for the newspaper. The second thing I really want to do is rip it apart and throw it in the trash. But that would mean we have no whiteboard. And while this sheet-bag-whiteboard is no use to us because it is not dry erase and what is written on here has been here since before my time, throwing it out would make it way too real. I just cannot face the fact that The Iron Warrior's office does not have a whiteboard.

A few solutions were suggested by the wonderful staff to combat this problem. There was talk of bringing in stone tablets

to chip away our ideas on. One of us even went rock hunting and came back with limestone that disintegrated at the slightest touch of a chisel. There was talk of painting the walls with ideas but we quickly realized that this would ruin the carpet in the room. Finally, we went to WEEF with a quote for how much a whiteboard would cost and why we needed it and we never heard back. The staff writers are going crazy because they cannot visualize any ideas without a problem. I caught one of them eating paper thinking that it would be a great canvas for the ideas in the digestive tract. This is what it has come to.



Credits, what credits?

White-sheet-board

P-ODE-tato



Some time ago, probably several months back, a farmer bent down and pulled from the ground a ripe oblong brown potato. Smiling, they put the potato into their sack and reached for the next one. Well, given that it's the 21st century I doubt even organic potatoes are harvested by hand, but I'm going to pretend this one was. And so, it traveled to its destiny in a crate and then a bag full of other potatoes fated for a Waterloo supermarket shelf.

Likely a week or two later, this potato was bought by a girl and forgotten in her

cupboard for several week or months, who really knows and who really cares; the point is that when she looked at it again it had begun to sport teeny tiny little green bumps. The miracle of life, ladies and gents, can happen in the most inane places. This girl was intrigued by her potato and brought it out to coffee to show her friends, whereupon it became the unofficial "mascot" of a design team, acquired a face, and was sent home with my roommate to be planted.

Days, then weeks, then months passed while this potato, now bearing a foolish grin, sat in our kitchen window, unplanted. I think we have all forgotten this potato exists, tucked away in a corner behind the dish rack as it is, but every so often I will glimpse its mischievous little face grinning

at me. Though it has still not been planted, the tiny little bumps have grown into slightly larger buds, defying the very cycle of farming – who needs dirt anyways?

Yet every time I catch sight of the little potato eyes, staring at me from behind a plate, I think how silly it is that we still haven't planted it, yes. But I'm also reminded to put a damn smile on my face, because if a fucking potato can smile like it hasn't got a care in the world, even though it doesn't even have any goddamn soil to grow in, I can find something to smile about too, even if it's just in response to a potato. And honestly, I think that's the greatest gift you can receive; a reminder that there's always a reason to turn the corners of your mouth up and un-furrow your brow. That, and fries. Fries are a literal godsend.

Threat Level: Goose

You Never Know Who is Listening



****INTERCEPTED MESSAGE TO GOOSE HEADQUARTERS****
TOP SECRET – TO BE OPENED ONLY BY GOOSE OFFICIALS

To: General Goose – Director of the Waterloo Goose Syndicate (WGS)

Dear Gen. Goose,

This correspondence is to provide you with an update on the current state of our agents stationed at the University of Waterloo. Please read the following carefully, as it contains important information on the location of our spies.

As per your request, we have strategically placed our top agents around the entire campus to intimidate the students as they walk to and from their classes throughout the day. I assure you, we have been doing our best to remain positioned even at night and early in the morning. So far, our efforts have been somewhat successful, with some of the targets taking longer routes to get to their classes so as to avoid walking near us, while oth-

ers have flinched if we honked loudly as they passed by. Overall, the operation has been successful, and we are projecting further success as we head into the warmer months of the year.

Our usual techniques of honking loudly and flying low to the ground have proven triumphant, with multiple terrified targets. The overall consensus of our agents is that we should practice honking louder with more zeal, maybe even flap our wings every so often to mimic the beginning of an attack. This should prove effective in maximizing fear.

We have also been able to find successful vantage points on the tops of multiple campus buildings overlooking the pathways. As our motto states, "Intimidate, Frighten, and Menace", that's our goal. Establishing such a position helps exert our power, since the students know we could swoop down at any time and attack.

Speaking of swooping down, Agent Wing was injured last week from a fall taken while he was trying to swoop down from the environment building towards a student. He is currently recovering, and is expected to return to active duty next week. Agent Tail is covering for him in the meantime.

With regards to locations, we have

agents stationed at all of the university colleges, as well as the university residences. There are fields at some of those locations, so we have been able to form large groups to patrol those areas in the mornings. We also have spies stationed around the pathways leading to and from the engineering buildings, MC, AL, ML, and EV1. These are prime locations for student traffic, so we've got those spots covered well.

Please, let us know if you have any concerns, or if there are any other locations you would like us to cover. We can redistribute our agents if the students catch on to our scheme. On the off chance that this message is intercepted by humans, I have encrypted a secret message below. Rest assured, I am sure none of them will be able to crack it.

Regards,
Lt. McFly

If this message is intercepted by the humans, the secret message has been encrypted below:

Try solving it!
Hint: HONK

IUSESOWGYORSONVIGELEG-GEYALHRSUVUDDFCOTMOHOOA



Editor-in-Chief

Procrastinated through the term

Assistant Editor

Wants to live under a rock

Layout Editors

How long can I go without actually learning InDesign?

Copy Editors

"I'm just going to run this through Grammarly."

Advertising Managers

Fishing in friends and family to pay for ads

Social Media Manager

Heart-eye emoji
Smiley face emoji
Eggpla-

Staff Writers

When were you last here?
You call this news?
Waits till Monday to send articles
"Can you look over this article before I post it?"
MIA
I don't write here anymore
Will watch Netflix in the name of the paper

Contributors

Ask me one more time for an article... I dare you!

ADVISORY BOARD

Didn't answer the Doodle
Didn't answer the Doodle
Didn't answer the Doodle
Who needs quorum anyway.

Do you people actually do anything?

No, not really
What is your job?

The Tin Soldier is not a forum for thought-provoking and informative articles, and has no association whatsoever with the Society of the Travelling Pants. Views expressed in *The Tin Soldier* are not those of the authors and do not necessarily reflect the opinions of Chuck Norris.

The Tin Soldier encourages submissions from students, faculty and members of the Non-Existent Action Committee. Submissions should reflect the concerns and intellectual standards of the Society of the Travelling Pants in general. The author's name and phone number should be included, except if they are non-existent. This information may or may not be posted on our website.

All submissions, unless otherwise stated, become the property of *The Tin Soldier*, which reserves the right to refuse publication of material which it deems too suitable. However we're so desperate for content that we'll likely take it (but we might just send it to *Imprint*). *The Tin Soldier* also reserves the right to edit grammar, spelling and text that do not meet university standards, but engineers suck at english so it's a low standard.

Mail should be addressed to PJ Katie, c/o YTV Canada, P.O.Box 7500, Paris, Ontario, N2L 3W7. We do not currently have a phone, however you may redirect all inquiries to Kickoff's, as we're likely there. We don't have a fax number as no one uses faxes anymore.

Ion Testing Coming to an End Spring 2050



SHELDON COOPER
2A PHYSICS

With the spring once more in the air, the people of Waterloo are saying goodbye to a constant feature of the last 35 years: testing of the Ion trains is almost coming to an end. The lucky people of Kitchener-Waterloo region, who have been waiting patiently to experience this 8th wonder of the world can now, almost, finally get ready to commute with the LRT. The Ion testing started back in September of 2015. Mr. Richard Williams, presently the software testing lead on this project, was excited to share in his interview, his journey of starting as a coop and growing to the testing expert through his career. From his comments at the interview, Mr. Richard Williams said "As much as I was fortunate to grow as being a part of the Ion Train Testing Team, I am also thankful to all the individuals who believed in this mission and stood by during the highs and lows. The trains have successfully passed the testing, and people can expect to start using them very soon. Not only that but also we will be creating an exhibit of all the worn-out train models for public display at the MUSEUM in Kitchener." Over the last 35 years, the testing team wore out



Gemma Longman via Wikimedia Commons

Thomas the Tank Engine: The Face of ION

a modest 9 trains of 3 different models, by Canadian engineering giant Bombardier.

While writing this article, I was also lucky to have run into Mr. Johnson who came with his son last week for the open

house at the university. Mr. Johnson was elated to find out that finally his son would have access to not only the SLC-PAC expansion area, that was completed last year, but he would also be able to use the LRT

rapid transit services to save time during his education. The LRT in the region will definitely provide residents with a frequent, reliable and convenient way to travel around the Region VERY SOON!

VP Com?! More like VP Gone?

Air Buds 2 is Cool



DOUG WALKER
1B TRON

Oh, darnit! [Groaning] Okay, mutt. Show time. Okay, come here. Hold it. Hold it. Hey, do not make me use this, okay? Hi. "Clown and the Hound."

Ow! [Whimpering] Hey, kids, it's happy, slappy time!

[Clown Laughing] All right, now, I tell ya what we'll do. We'll start off with a little bit of plate-spinnin', okay? I bet you won't be able to guess what this one is. Hoo-hoo-ha, hoo-hoo-hoo. Hula, hula, hula hoop Pick a card, any card.

Now we put the plate in our mouth! [Wheezing, Coughing] [Coughing Continues] It went down a little bit... far. [Humming]

- [Clown Groaning]

- [Boy Groaning] Okay, dog, your turn.

- [Panting] - [Laughing]

[Children Gasping] Oh. Oh. Oh.

- One more. - [Together] Yeah! And now for the grand finale, kids!

- [Grunting] - [Shrieking]

- Where are you? - [Crowd Shouting]

- Come back here! - [Screaming]

- [Whimpering] [Grunting] Ow!

[Clown Shouting] - My cake! - [Screaming]

- [Children Screaming] - [Mother] Oh! [Grunting]

Would it be okay if I get a couple references? Come on! Get up here! I warned you. You had your chance, you flea-bitten mongrel. You're going to the pound!

Do you hear me? You're going to the pound! I hate birthday parties! I hate kids! I hate being a clown! I can't stand birthday cakes!

Yeah, dog pound? I got a vicious dog. No, it's a horrible dog. It's a menace! I'm bringin' him in now! No, I don't know where you are. That's why I'm calling ya. What? Oh, yeah, yeah, yeah, I know where that is. I could be there in 15, 20 minutes. Yeah. Well, no, I got a map. I got a map here in the truck. - [Whimpering] - [Mooring] [Truck Horn Honking] Oh, my God! Oh, my!

- [Baby Crying] - You okay? - You okay, sweetie? You okay? - No! Well, jeez, almost gave me a heart attack. What on earth is that box doing in the middle of the road? We're okay. Everyone's okay. We-- We're okay. Fine. Isn't it cute? Oh, don't forget: My new job is just ten minutes away. Did I tell you that the Fernfield Napkin Factory... is the third largest manufacturer of napkins in all North America? Well, here we are. [Sighs] So what do you think, huh? [

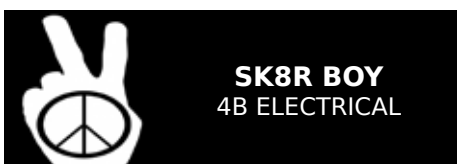
Thunder Rumbling] [Owl Hooting] [Mother] I am concerned about him starting three months into the school year. He doesn't make friends very easily. Not that he's not friendly. It's just-- Well, he doesn't talk much these days. You see, when his dad passed away last year--

- Oh, I'm so sorry. - Thank you. It's been difficult. So, anyway... I used to spend a lot of time around here because my grandparents lived here. So I thought that the move would really be the best thing for us, especially for Josh. I understand. I'm sure he's going to do very well here. But tell me about extracurricular programs.

Does Josh have any interests or hobbies? Well, he used to like to play basketball with his dad, but he's lost interest in that too. Well, let's see. We have an excellent band. Oh, I used to play the flute when I was his age. That was fun. [Bell Ringing]

ITS OVER Woof Woof

Another VP peaces out



SK8R BOY
4B ELECTRICAL

I think an instrument would be just the thing! [Man] No, no, no. Don't blow so hard. Okay, blow a little harder. Okay, blow a little harder. [Chattering] Hey, Mike, pass! - Pick up. Come on. - Come on. Go! Come on, shoot! Shoot! [Grunting]

[Dog Growling] [Dog Whimpering] I know, Mom. It's not called moonlighting. Oh, I found it. Yeah, it's-- It's-- It's-- No! It's not moonlighting. You're allowed to have two jobs. Hmm? Mom, would you hold on a minute? I have another call. - Hello. Oh, y--- Q-R-S, T-U-V - Yes, Mrs. Grayson. Hi. - W-X I figured out why Bolivia didn't get the

napkins. Venezuela got 'em. Yeah. - [Knocking] - [Door Opens] Sorry, sweetie, that was Grandma on the phone. - How was school? - It sucks.

How was the trombone? Aw, sweetie.

I'm sorry. You know, we've all been through a lot in this last year.

But I know we're gonna get through it. This is a good place. All we gotta do is just give it our best shot every day. Your dad would've wanted it that way. I guess.

Sure. He wouldn't have wanted you being all mopey.

I love you. Check out the new kid. It looks like he stole that ball from the Harlem Globetrotters.

[Chuckling] How you doin', buddy?

[Man] All right, listen up! Now, you're here today to try out for the school's finest tradition: basketball. Now, I've got five of my boys back from last year, including leading

scorer Larry Willingham. Raise your hands, gentlemen. This year, we are goin' all the way. Why's that, Willingham?

- 'Cause we're winners, sir.

- That's right. We are here to win... 'cause if you can win on the courts, you can win at life. Get your butts out here. Let's see if you can play ball. [Children Shouting] What team you playin' for? What team you playin' for? Who's gonna win

- Who's gonna win? - [Together] Timberwolves!

- I can't hear you!

- [Together] Timberwolves! What team's gonna win?

- Good night, Art.

- Good night. Hey, kid, you're new here, right? Well, uh, I could use a manager.

- Well--

- Manager works his butt off. He arrives before the team. He leaves after the team. Think you can handle it? Practice is

Friday afternoon. You be here.

[Whistles] [Barking]

Hey, boy. Want me to get those rags off ya?

- [Growls] - [Gasps] Yes, Mrs. Grayson, I know, but that account needs to be zeroed out.

[Gasping] Mm. I know. Could you hold on a minute? I have another call. Thanks. Hi. Hello? Oh, hi! Weren't you guys supposed to start wallpapering today?

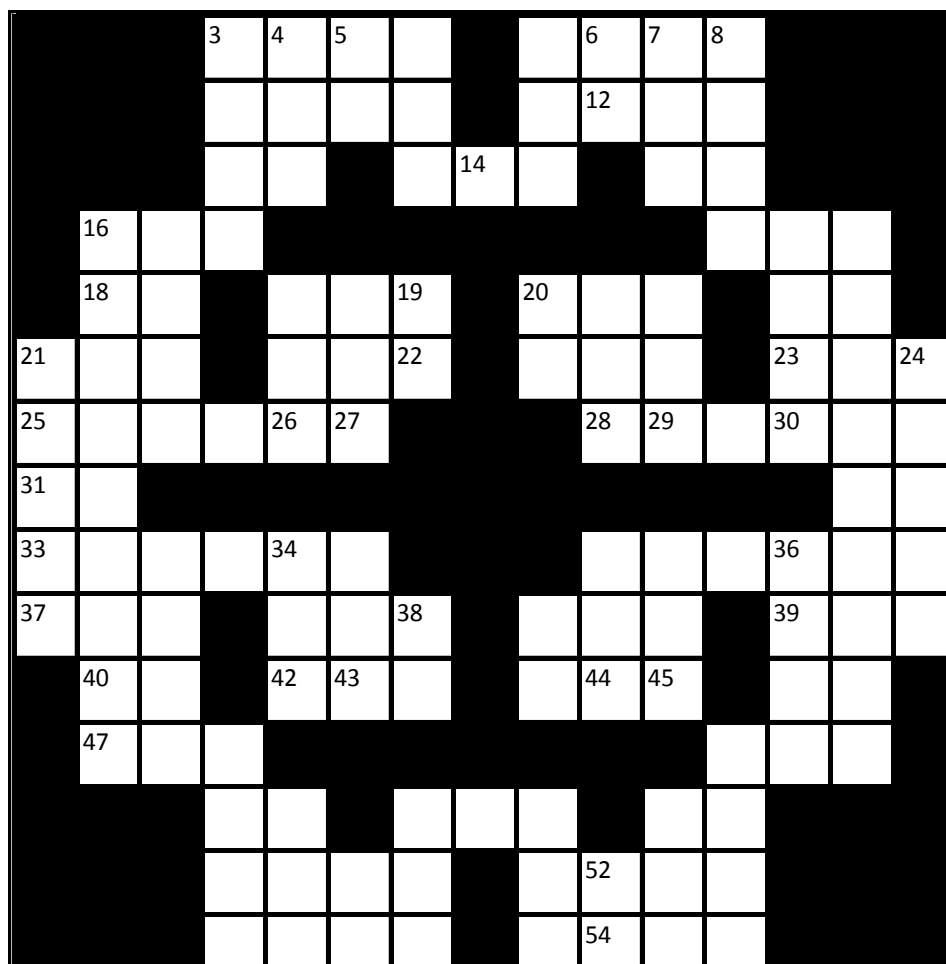
- Josh, would you eat something, please?

- I don't know why [Grunting] Whoa. [Dog Panting]

You like basketball? Hey, boy, come and get it! Come and get it! Hey, boy. Good boy. Okay, in you go. Come on. Come on. [Grunting] Come on. My mom's gonna be home at 5:00. Wait a minute. Hey, boy! Yeah, good boy, good boy. You want it, boy? You want the ball?

The Tin Grid

INTERNALLY SCREAMING
1B ECE



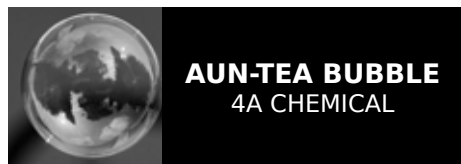
ACROSS

- 1: A type of battery
- 6: American Auto association
- 11: An expert level of hockey
- 12: Alberta Association of Architects
- 13: An indefinite article
- 15: The first letter of the alphabet
- 16: American Association Against Acronym Abuse
- 17: American Association Against Alliteration Abuse
- 18: What some people say on a rollercoaster
- 21: Highest possible rating assigned to bonds
- 22: type of battery
- 23: Abdominal Aortic Aneurysm
- 25: Acne Associated Arthritis
- 26: Asian American Arts Association
- 30: Acute Anxiety Attack
- 31: All female ABBA
- 32: battery type
- 33: Ambulance Association of America
- 34: Akron Area Arts Alliance
- 36: Aminoacidic Acid
- 37: Ariana Afghan Airlines
- 38: Alcoholics Anonymous
- 39: All about Android
- 40: What some people say in a horror movie
- 47: Advanced Account Access
- 48: Asian American Association
- 49: Anti-aircraft
- 50: Aruba
- 51: Angels and Airwaves
- 52: American Angus Association
- 53: Automobile Association of America
- 54: Arkansas Activities Association

DOWN

- 11: What some people say when mad
- 2: What some people say to scare others
- 3: Atlanta Area Aquarium Association
- 4: Battery Size
- 5: Army Aviation Association of America
- 6: American Association for Amateur Astronomers
- 7: Association of American Advertising Agencies
- 8: Alamo Area Aquatic Association
- 9: What some people say at the dentist
- 10: What some people say when singing
- 14: The grade you want on an exam
- 19: Aroostook Area Agency on Aging
- 20: Ajax Antique Arms Association
- 21: Short name of A reckless disregard for Gravity game
- 24: What some people say after a refreshing beverage
- 26: African-American
- 27: Amino Acid
- 28: USDA Grade for Dair Products and Eggs
- 29: Associate in Arts
- 35: The opposite of the last letter of the alphabet
- 41: Alabama Accumulated Adjustment Account
- 42: American Association of Amateur Arborists
- 43: American Anthropological Association
- 44: against all authority
- 45: Amateur Athletic Association of America
- 46: Aerial Agriculture Association of Australia

What Kind of Bubble Tea Are You?



Is BBT your all time jam? Do you dream about those juicy balls in your mouth before you go to bed every night? Read ahead to find out what kind of bubble tea you really are:

What is your favourite colour?

- 1. Yellow
- 2. Brown
- 3. Green
- 4. Purple

What do you prefer your mouth to contain?

- 1. Slime

- 2. Balls
- 3. Juices
- 4. Strings

What food can you eat non-stop?

- 1. Fruits
- 2. Chocolate
- 3. Milk
- 4. Nuts

Where do you get your BBT fix?

1. I bought hella expensive ingredients and made BBT only once using them and now I'm questioning all my life decisions.

- 2. The Alley, also 1.
- 3. Chatime, also see 1.
- 4. 1, and Sweet Dreams.

What size BBT do you usually buy?

- 1. Modest
- 2. Large
- 3. Magnum

4. Are you sure?

Great job at the queez, you bubbleteez. Here are the results!

If you picked mostly 1's, you are a hon-eydew milk tea with mango jelly. You taste great only to a select few and that is the beauty of you. You don't have to please everyone around you and honestly, you may be a dick sometimes but at least you are not sucking on balls in your drink like those who mostly picked 2.

If you picked mostly 2's you are chocolate milk tea with tapioca pearls. No matter what the ones who picked mostly 1's say, balls are good for you. Sure they are chewy and dry and have no real flavour, but that just goes to show how much drama you don't want in your life. You are a person of texture, not taste.

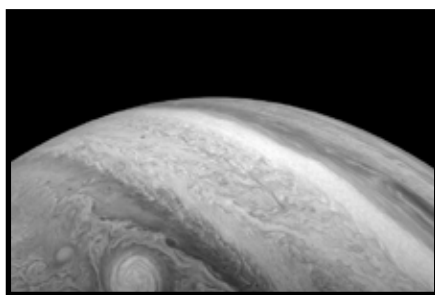
If you picked mostly 3's you are a simple matcha green tea with no added toppings. You are the fancy pants of your group because you can enjoy that nasty green tea without any added flavour or texture. While I do not hate you, I do not trust you either. Honestly, 3's are the worst.

If you mostly picked 4's you like nuts. You my friend are the taro hazelnut milk tea with grass jelly. You are the kid everyone dreams of being and you can take your whole group down the tunnel in one single tantrum. Seriously, grow up and learn something from the mostly-picked-3's.

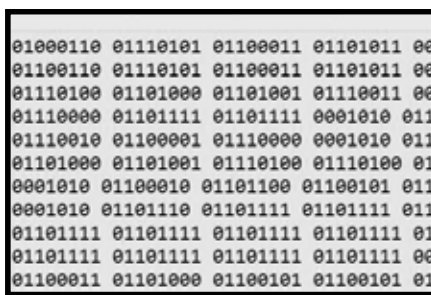
If you picked any other iteration of options, why are you the way that you are? I can't do this on my own. I am calling on MathNEWS for help.

THE TIN TRIBUNAL
Who's Asking? Am I being detained? I'm a sovereign!

"What's Your Favourite Language"



"Jupyter"
Jupiter, Jupiter



"01110100 01110010 01100001 01101110
01110011 01101100 01100001 01110100."
Never could count past 1, 4B General Arts



"QBASIC IS NOT BASIC"
#PC, Refuses to acknowledge defeat



"C++"
Java, 5B Computer



"Dinsse rine negei ou ssem."
Ara Kata, 2T Enviro



"Life's a journey."
Just a potato, Still just a potato

Point Vs. Counterpoint

Paid Podcasts are Worth Purchasing

POINT

RATAN VARGHESE
3A COMPUTER

Most podcasts are available for free, and there are a zillion of them. However, that does not mean paid podcasts are not worth releasing or purchasing. There is one important caveat: there needs to be a lot of free samples.

I have so far only paid for episodes of one podcast, “Hardcore History” with Dan Carlin. His business model is as follows: about a dozen relatively new episodes are available for free. As new episodes are released, the older ones are put behind a paywall. Since only a couple of episodes are made per year, and each episode is several hours long, the free episodes remain free for a long time. They are still playable in ordinary podcast apps through a private URL, although nonstandard podcast apps such as Spotify might not support that. I personally prefer to download the mp3 files and play them in VLC.

I have also paid for Daniele Bolelli’s Taoist lecture series, which is fully audio but isn’t strictly speaking a podcast. The two products offer an interesting contrast though. “Hardcore History” has so much free content that anyone buying episodes probably knows what they’re getting into. There are no such samples of Bolelli’s lecture series: any possible consumer is simply guessing at the quality based on Bolelli’s other work. I wouldn’t necessarily call that a smart buy: I was lucky that it turned out to be enjoyable.

Why would anyone pay for “Hardcore History”? There are other history podcasters, and their work is available for free. However as far as I’m concerned there is no real substitute for what Dan Carlin produces. It is his unique sense of empathy, his attention to detail, his patience, and his voice that make his podcast worth listening to. If I want to see how all that is applied to topics Carlin has covered in the past, I need those paid episodes. That is unless he covers the same topics again in a future free installment.

Which leads to another factor: time. Some podcasts aren’t worth the time spent to download them one month after release, so paying for them is a waste. This isn’t a statement on quality, but on the temporary nature of most topics. Perhaps today’s “Accidental Tech Podcast” episode is worth listening to, but do I really want to hear commentary on last year’s Apple-related “news”? Some podcasts aren’t

meant to be enjoyed forever, and that’s okay. But some podcasts are timeless: they would probably be as useful today as a century from now. One paid series of “Hardcore History” episodes describes the fall of the Roman Republic. This was a pretty well-documented event, so unless the Romans should rise and fall a second time it’s possible the episode will remain up-to-date forever.

The time between podcast releases is also a factor, one particularly relevant to “Hardcore History”. Dan Carlin produces two episodes per week, he’d have to be some kind of podcasting machine, but it would also reduce the need for people to buy his stuff. Yes, as mentioned earlier there needs to be a few episodes available for free for people to know if purchases are worthwhile. However if a podcast releases free episodes often enough that it might be hard to catch up, not many listeners would be desperate enough to buy even more.

The other thing to consider is that niche products need to be supported somehow, and the podcast advertising market is pretty limited. Only a small number of companies really benefit from the ad reads normally found on podcasts. The podcast market is also too decentralized for the sort of massive ad campaigns that companies such as Coca-Cola would want to create.

The whole equation of podcast economics could change, however. Various companies have started trying to create podcast subscription services, pay for original content, and essentially become the Netflix of audio. One of these firms recently agreed to finance Bolelli’s “History on Fire”. Bolelli, unlike Carlin, is having difficulty keeping his podcast afloat. Even with ten minutes of advertising at the start of each episode, and a Patreon, he wasn’t earning enough to hire anyone to help him. Some have argued that these podcast subscription services, with their custom protocols, data tracking and monopolistic aspirations, are bad for the medium as a whole. That might be true, but one wonders if a podcast medium without Bolelli is one worth preserving.

GABRIELLE KLEMT
3B GEOLOGICAL

Everybody wants to be the next “Netflix of...”, but the reason you’re saying Netflix is because it filled a niche that the world wanted filled. The Internet was slowly making cable obsolete, and Netflix swooped in to capitalize on it. Since then every company has been trying to create subscriptions for things people are already getting for free, and it just isn’t working.

It’s really hard to get people to pay for things they can get without paying, just to avoid ads: YouTube, Spotify, Google Play Music, and now podcasts, everyone has tried it, and most have failed. Take YouTube Premium: it was launched as a way to provide users with original shows, music without ads, and exclusive videos. They achieved limited success and recently announced their Originals would be available for free, with ads. Ever heard of ad-block? Honestly though, I don’t use ad-block because I just don’t care enough about ads; they’ve become so much a part of life’s background noise that I’m unfazed and usually not even annoyed by their presence. Unless a YouTuber puts 3 mid-rolls on a 10-minute video. Then I get annoyed.

There are many companies emerging right now who want to create podcast subscription services, but this concept is flawed from the get-go. The service to which “History on Fire” will be moving, which was discussed by my worthy opponent, is called Luminary. In a recent video, author and vlogger Hank Green commented on just what he thinks of putting up podcast pay walls (and were they available he wouldn’t be buying Luminary stocks any time soon). His opinion is that with podcasts, ads work, and people don’t mind them... or the fast forward button which is just as easy to use and totally free of charge.

I understand that if you have a dedication to a certain podcast or podcaster you might move to the subscription service just for them. But equally, if you cared that much, you’d probably become a Patron because at the end of the day every podcaster supporting themselves off creating podcasts has a

Patreon account. I have several podcasts that I enjoy listening to, some have lengthy ad reads, some have mid-rolls, and the independent ones have Patreon accounts whom they thank profusely every episode. The ones that don’t are all part of larger podcast networks. Free ones. Yes, podcast networks that are free are already out there. Networks like Stuff Media, Radiotopia and Earwolf have made full-time podcasting possible for tons of people without charging listeners anything but a few minutes of skippable ads.

Not to mention there are legitimately 1000s of podcasts floating in the ether. There is more free audio available than you could listen to in five lifetimes, and I highly caution against trying; your time is much too valuable for that. With volume like that, it’s likely that whatever your interests are there are five podcasts all doing variations on the same theme. There are outliers like “Hardcore History” which have been around since the infancy of the genre and have dedicated fans who would follow them anywhere. However, for smaller podcasts with less fan-base, being put behind a paywall won’t help grow their listener-ship although it does provide them with guaranteed income, which is nothing to shake a stick at in the world of podcasting where sponsorships can be hard to come by.

“I listen to podcasts in moments when my time is being wasted already”, so says Hank Green and so say I. I don’t care about the ads because I just want to hear people talking while I sit on the bus home to Toronto or do the dishes or clean the washroom. I want to feel like I’m in an enjoyable one-way conversation while I fritter my time away doing the mundane tasks required of me in life. Sometimes I want to listen to music and sometimes I want to listen to talking, and ads on music are a heck of a lot more disruptive than ads on podcasts because the former happens every time the song changes, while the latter occurs every 15 minutes or so.

I agree that the concept is there because you never know what people might be willing to pay for so you should try everything. In the same vein, you also never know what people might be willing to eat, but you don’t see advertisements for Jell-O casseroles anymore because that stuff was disgusting and we as a society said “No, that’s gross”. I think that paid podcast services are headed in the same direction, but only time will tell.

COUNTERPOINT

Editor’s Note:

Point Vs. Counterpoint is a feature meant to stimulate discussion on thought-provoking topics. The views and opinions expressed here do not necessarily reflect those of the authors, *The Iron Warrior*, or the Engineering Society.



Paying for Media Consumption like Netflix

Reminiscing the Time Gone By



KATIE ARNOLD
PRESIDENT

Two years and eight months of my life have been spent as an executive officer of the Waterloo Engineering Society. It's hard for me to remember a time when I didn't respond to EngSoc emails in class, or to imagine where I'm supposed to study if not the exec desks in the EngSoc office, and it is strange for me to picture what my next academic term will be like when I'm not planning the next council meeting, organizing logistics for an event, or preparing to meet with the faculty on behalf of 7000 students. My classmates can attest to how I've been in perpetual motion since I took the mantle of VP Operations and Finance in 2016, and as my 16 month Presidential term comes to an end, I look forward to taking the rest of 2019 at a slower pace.

As platform goals survive, <http://iwarrior.uwaterloo.ca/2017/09/23/43041/presidential-bio-katie-arnold/>, I can tell

you that we have since moved into E7. With much of the credit belonging to Mary Bland and our VPs Finance, our new C&D and Ridgidware have opened smoothly. A partnership has been established to bring Print and Retail Services together with the Sedra Student Design Center and the Engineering Society to give students more access to components but also to roll out our Tool Loan program.

The revitalization of POETS furniture, as established in the POETS Furniture Plan, is a project spanning several years, but is well underway. At this point all of the couches have been replaced (even if the old ones are still around) and we've moved on to securing funding for our chairs.

The UWaterloo EngiQueers is now a fully-fledged affiliate of the Engineering Society, and the groundwork for new partnerships within the University of Waterloo community and further support of our students has been well laid by Nonso, our new VP Communications, who worked with me for the past term in this area and will continue it in the future. I'm excited by developments in multi-faith

prayer space in the engineering buildings that I have been pushing towards, and I'm also proud of the work VPSL Ashley and VPComm Grant have been doing for our event accessibility.

Other aspects of my student life plan included events with faculties and Upper Year Appreciation. While I do think that scheduling difficulties have led UYA to an untimely end, I believe our partnerships with the other faculty societies are stronger than ever, as I co-led an All-Societies-Assembly in January 2019, where we discussed issues faced by the campus at large, gave direction to Feds VP Education Matt in his advocacy efforts, and shared best practices. Our mental health directors are running an event with MathSoc (that I cannot take credit for) and our semi-formal is being jointly run with AHSUM.

Since September 2016, my executive team raised over \$2700 for the Trevor Project. I have given 21 council updates, participated in 41 EngSoc council meetings, and spoken at 18 Board of Directors Meetings. I was given the honour of overseeing 4(5) termly

budgets, attending 12 conferences, and have been directly involved in delivering 19 awards to engineering students. I have sat on 11 faculty and student committees, and represented Waterloo Engineering on 5 tiers of academic or advocacy councils. I will have presented at 3 joint general meetings, two of which I orchestrated with the support of my executive and officer team. Within B-Society, I have had the honour of working with the endlessly supportive, focused, and accomplished Mary Bland, two amazing C&D Supervisors, Lily and Ashley, 34 dedicated commissioners and officers, 11 passionate executive, and more hardworking and caring directors and staff than I have the ability to count.

With 317 days until I receive my Iron Ring, I am excited for the next challenge.

For the last time, I am your On-Term Engineering Society President Katie Arnold, and you can reach me with any questions or concerns at president.b@engsoc.uwaterloo.ca. If you reach out after April 2019, you'll find yourself in good hands with my successor, Ellen McGee.

Dr. Pendar Mahmoudi Wins Teaching Excellence Award

A Great Prof With Some Great Advice



BENJAMIN BEELEN
VP ACADEMIC

This term's Teaching Excellence Award winner is Dr. Pendar Mahmoudi from the Chemical Engineering Department! We, the Teaching Excellence Committee, had the pleasure of interviewing this lovely professor and wrote this article based on that interview!

We asked her a series of questions, and we hope many groups around campus can learn from it. Students, by hearing the perspective of excellent profs, can help us think about what makes a professor excellent and also help us give better feedback. We hope the professors who are reading about what makes a great professor can take away some advice as well.

What made you want to be an instructor?

Dr. Mahmoudi had a lot of excellent points here. First is that she had a lot of great instructors during her undergraduate and she wanted to "carry the torch" of great teaching. She also talked a lot about how much she enjoys interacting with students and seeing our potential flourish as we solve difficult problems, specifically focusing on helping students reach that "aha!" moment.

What's your favourite aspect of being an instructor?

Other than interacting with students, she really enjoys being an instructor that provides tools we need as students to succeed not just academically, but socially and mentally as well.

Dr. Mahmoudi's overarching vision for an engineering degree is a puzzle where each course is a piece of the puzzle that builds to a solid foundation. She especially enjoys being an instructor who can help fill in some of those puzzle pieces, and thus see us grow as engineering students. Dr. Mahmoudi believes this extends well past chemical engineering, and wants us to connect with each other regardless of program. In fact Dr. Mahmoudi focused heavily on the importance of multi-disciplinary experience before graduating,

as that is how we will work as engineers!

Have you felt that you've made a large impact on a specific class or student?

Dr. Mahmoudi felt she could not answer this question well, as she has only been instructing since January (which makes it all the more impressive that she has already won an award for it!). We, the Engineering Society, can't wait to see where she will go and the amazing things she will do because she has clearly hit the ground running.

In answering the question, she discussed how excited she is to see her current first years grow into better and better engineering students, and that she will enjoy seeing them solve harder and harder problems.

What do you think is the most important aspect or quality of a good lecturer?

Dr. Pendar talked a lot about how important it is to maintain a friendly classroom environment (which includes not having classes too early in the morning!) so that we have the right headspace to learn.

Next the focus shifted to providing feedback to our professors. Profs often think that the class is going okay unless someone speaks up, so it is on US as students to provide that feedback and start the change we want to see.

Organization is also a very important aspect of being a lecturer. Students notice very quickly when a prof is just winging it, and how can they expect students to have good time management when they themselves do not?

We talked a lot about how students also need to be organized. Showing up to class late, not being ready to take notes, not being able to schedule time to do your assignments on time and in a learning promoting matter all lead to less effective lectures. It is on our profs to provide us the environment to learn those skills, but at the end of the day, it is on US to learn them.

If you were a shape, what shape would you be and why?

Dr. Pendar Mahmoudi, like Dr. Mary Robinson (Last Bsoc's TE winner), would like to be a circle. Maybe there is some sort of correlation here?

But the reason why Dr. Mahmoudi chose a circle is very interesting. "Other shapes seem to have limitations, but circles don't. We like to have limitless possibilities."

To close off our interview, we always ask if there is anything else the instructor would like to add. And Dr. Mahmoudi provided one of the most wholesome quotes we have recorded.

"Place more importance on life, don't just focus on being a good engineer. Focus on being a good human, taking care of yourself. Getting seven hours of sleep is better than just reviewing lectures all night. At the end of the day our goal is to be happy, and when we are happy we learn better."



Dr. Pendar Mahmoudi, recipient of the Teaching Excellence Award

Denise Mueller Wins the Friend of the Society Award!



The Friend of the Society Award is awarded to a faculty/staff member every semester for their contributions to promoting the mental health of their students. The winning person's nomination(s) must indicate that they have contributed significantly to at least one of the following:

1. Advocating on behalf of students to eliminate elements that have a negative effect on student mental health
2. Showing a long-term commitment to and vested interest in the betterment of student mental health
3. Taking action to directly improve the mental health of students

We're pleased to announce that the second student-voted winner of this award is Denise Mueller. Multiple students from the Chemical Engineering program noted that Denise is always willing and able to listen and help guide students through problems, whether academically related or not. If you want to hear more about her efforts to better students' mental health, read the interview below!

Q: When did you start working at the University of Waterloo? Why did you decide to work here?

A: I came here in July of 1989. I actually started in Psychology and I worked there for just a couple months shy of five years. Then I applied for this job, and I got it. At the time the job was different though, I took care of the undergraduate program, like I do now, but I also took care of the graduate program. It was smaller then, things have grown a lot. That's how I arrived here in Chemical Engineering, and I've been here ever since. As for why I came here, actually my brother-in-law worked here and he was talking about how it was such a great place to work. [...] Once I had a little bit of experience I thought I would try something different, so then I came here and stayed put because I liked it.

Q: What is your favourite part about interacting with students?

A: When they leave I always want them to be happy. Always leave with a smile, even if it's a difficult conversation, that they still feel better than when they came in. That's what makes my day.

Q: Why is mental health important to you? Why is students' mental health important?

A: I have a little bit of experience with mental health, I've struggled with depression and anxiety so when students are struggling my heart really goes out to them. Each one of us as an individual has a different experience, but I just know how scary it can be and how stressed and overwhelmed a person can be. The idea of just wanting to hide and pretend the world's not out there, we've learned that that's not the best way to deal with it. I really have compassion for the students when they come in my door and if they're struggling I just want to help them have a better day, to give them some tips that will help them, and to direct them to someone who can help them even more than I can.

Q: One strength that many students have mentioned is your availability and open door policy. How do you think others across campus could increase their availability despite their busy schedules?

A: I had to think about that one a little bit, my knee-jerk reaction is that it's about priorities. A student standing in front of me needing help versus me doing administrative paperwork, what's more important? In my mind, it's the person standing in front of me. Also, from a service perspective, students are paying the big bucks to go to school here and I think they should get good service. If I can provide that then I'm doing my job.

Q: Given the opportunity, how would you like others to improve how we deal with mental health?

A: I do believe it's very important, it makes me feel really sad when someone doesn't think that it's real, or that it's just an excuse to get out of something. I really truly want people to not have a stigma toward it, I would love for people not to be judgemental in any way about mental

health issues. [...] I really like putting a name to it now, as time has carried on. There's more research into it and more proof that it is real. I think I started feeling that way back when I was in Psychology. [...] I was learning a lot about, at that time, things like PTSD, ADD and ADHD. [...] I thought it was so amazing that those were starting to be considered real things when in the past they hadn't been. I feel the same way now, but with depression and anxiety. [...] I would love for any student to be able to walk into an office and feel that they are being heard, and that it's taken seriously and not just sloughed

off.

Q: What message would you like to send to students reading this article?

A: If you are not feeling well, whatever that looks like: let somebody know, talk to somebody, reach out. In Engineering we're cohort driven, so you have lots of classmates. I would ask classmates to look out for their fellow classmates too. If your friend won't talk to somebody, maybe you can talk to somebody to help them indirectly. I would really love to see a family, like a team, where if someone is not feeling great people will pick up on that [...] and help each other.



Denise Mueller, recipient of the Friend of the Society Award

Upcoming Events Calendar

Wednesday March 27	Thursday March 28	Friday March 29	Saturday March 30	Sunday March 31	Monday April 1	Tuesday April 2	Check out up-to-the-day event postings on the EngSoc website at engsoc.uwaterloo.ca/event/calendar/
Paint Nite: MathSoc x EngSoc 5 - 8 PM E7 2nd Floor Atrium Director Appreciation 5 - 7 PM POETS	LAN Party 6 - 10 PM STC 0060 Exchange EOT 7 - 9 PM	Fourth Year Friday 12 - 4 PM POETS	Dungeons and Dragons 1:30 - 5:30 PM POETS		EngiQueers 6 - 9 PM POETS	Puppies in POETS 7 PM - 9 PM POETS	
Wednesday April 3	Thursday April 4	Friday April 5	Saturday April 6	Sunday April 7	Monday April 8	Tuesday April 9	
Course Critique Screening 11 AM - 2 PM MML		End of Term Party 12 - 3 PM			EngiQueers 6 - 9 PM POETS		

Do Not Drink that Smoothie!

Why Social Media is not the Best Platform for Celebrity Endorsed Products



SAMRIDHI SHARMA
3B CHEMICAL

DID SHE JUST SAY THE F-WORD?

Why, oh, why in this pretty world do ugly people exist? Why, when the magazines are shut and TV switched off do people seem a little duller, and nothing pleases the eye? Why is my Instagram feed filled with people who look fabulous and why is my own profile barren of any new pictures? Why am I comparing myself to Instagram models?

Recently, I have become very aware of the unattainable standards of beauty around me. I think, this may have to do with the fact that everything is just a click away. With Twitter, Instagram, Facebook and other social media sites making everything seem so much closer than before, it just seems like the social standards of beauty are way more attainable. But is that necessarily a good thing?

Before I dive into what I really want to talk about, let me clarify a few things. When I was growing up in the early 2000s, I remember watching television with my family. The big clunky box did want me to be as pretty as those women on screen, but the heavy window of glass in between us made me aware of the fact that these aren't necessarily regular people. They have great resources that create these mirages of perfection. But then the age of social media really took over. We began following celebrities on Twitter and Instagram. People even started to become celebrities from so-

cial media sites. This veil of distance just lifted from our eyes as we saw that these people are from among us. If they can be this amazing looking, why can't we?

This leads us to try really weird things that celebrities endorse to obtain the unattainable standards of beauty that they propagate into society. My favourite Instagram account that I am following right now is @jameelajamilofficial because she makes it a point to comment on celebrities' posts such as the Jenner family when they try to en-

dorse weight-loss remedies that obviously they themselves do not use.

Finally, I just want to leave you with this. A lot of things are out of your control. Be it genes, your lifestyle (which I know can be changed but can be really hard), eating habits and metabolism. Celebrities have resources to change whatever they think needs to be changed. If not the celebrities themselves, then the people photographing them or videotaping them can easily manipulate how they look. I know it is really

tempting to try those drinks that will make you skinny so quickly but those are not healthy, and I promise you, your favourite celebrity is not drinking them.

Give yourself a break from social media, sometimes. For example, when I do spend time on Instagram I look at memes and text posts much more than I look at makeup videos or follow celebrity gossip. You should try that too! It not only makes you less susceptible to celebrity gimmicks, but it also puts a smile on your face!



Nikon D5100 via Max Pixel?

Unlike the Smoothie in the Picture, the Drinks Endorsed By Instagram Celebrities are Super Unhealthy

Thank You, Iron Warrior



**RAEESA
ASHIQUE**
4B ELECTRICAL

I signed up for the Iron Warrior's mailing list during frosh week, never imagining that the newspaper would become so important to me. From the hours spent researching articles, to the late nights spent on layout, to the talented people I've met and the memories we've shared, the newspaper has been a huge part of my life. It's my baby.

I distinctly remember the night of the 2016 American election, when it became apparent that Donald Trump had won.

I remember the pride I felt unboxing the first issue I published as Editor-in-Chief. I remember the hours spent compiling the Tin Soldier, when we were so tired and stressed that everything seemed funny. I have so many fond memories, and I have so much to be grateful for.

I am grateful to the Iron Warrior for the friends I've made.

Maybe the newspaper attracts a certain type of person, or maybe the long hours have made us close. Regardless, I have always had a strong connection with the other members. We can spend hours discussing any number of topics, including politics and artificial intelligence and Lord of the Rings. Good conversations, late nights, and shared purpose make for amazing friendships.

I am grateful to the Iron Warrior for giving me a safe space to grow.

I was a regular contributor throughout 1A and 1B, writing one article per

issue. While I had a distinct writing voice, I was pretty quiet as a person. I sat in the corner of the room during meetings and hardly venturing to speak up. My opinions only came out on paper.

As Editor-in-Chief in 2A, I had a lot of responsibilities, filling an administrative role in addition to writing, editing, and layout. I ran meetings, sent emails, contacted advertisers, and balanced the budget. I was forced to leave my comfort zone, interacting with people I didn't know. I slowly broke out of my shell.

In addition, I had the opportunity to write an editorial, or "Rant from the Editor" as I referred to it. This was my own

space, my own 1500 words to discuss anything on my mind. This freedom allowed me to explore my own opinions. I discovered what was important to me, and what social and global issues I was passionate about.

This freedom allowed me to develop my writing voice.

I am grateful to the Iron Warrior for giving me a pastime outside of ECE.

In 4A, I decided to take a step back from the newspaper. As I had dedicated so much time and effort over the years, I was expected to continue to do so. I had been laying out the paper and writing last-minute articles, essentially filling the role

of the assistant editor without the title. I wanted to let the younger students step up, and give myself a break. And I became noticeably more stressed.

Writing is a de-stress for me.

Over the years, whether I am writing an opinion piece, a news piece, or the Trump update – my column is called "Damnit Donald" – the newspaper has been my creative outlet, and my break from engineering. It has kept me sane and improved my performance in school.

I am grateful to the Iron Warrior for so many things, but I will stop there. I wish all the best to my fellow IW contributors, and to my readers.

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It Doesn't End Here

Problems Arising from Unchecked Mental Health



Hello, faithful readers of the Iron Warrior. Hakuna Matata! Welcome to our last issue for this term. Today we will be talking about some problems that can stem if mental health issues go unchecked. The reason I chose to discuss this topic and not a mental health issue, in particular, is because these problems are unavoidable if a mental health issue of any kind arises and goes unchecked. Therefore, I felt it was important to discuss this and so, to give you an overview: we will talk about the different problems that can result from unchecked mental health issues, some common indicators, consequences of these problems and some support and resources. This might be a heavy reading but hopefully a helpful one. Read on! So, your intuition was correct: the problems that can commonly stem if mental health issues go unchecked (that we will be discussing) are all related to the use of psychoactive (mind-altering) substances ex. addiction to alcohol and smoking; substance abuse of prescription drugs i.e. opioid pain-relievers like Vicodin, marijuana or stimulants such as Adderall; and use of illegal drugs (cocaine, methamphetamines etc.). StartYourRecovery, a website that provides helpful information for people who are dealing with substance abuse and addictions, listed some common indicators including memory loss, dilated pupils, strange/unpredictable behavior, loss of interest in daily activities, relationship problems, loss of sleep and appetite etc. The consequences of these problems are much more severe and complicated. But what is considered as substance abuse when it comes to prescription drugs or over-the-counter (OTC) medicines? WedMD states the following for abuse of medicine: taking medicine prescribed for someone else; taking extra doses or consuming a drug other than the way it is supposed to be consumed or taking the drug for non-medical reasons. But it is not limited to just misuse of prescribed drugs. Even the consumption of legal drugs in a manner that is excessive is wrong for example, alcohol consumption. In an article titled "The Facts on Teen Drinking" published by the Clinical and Research Institute on Addictions at the University of Buffalo, it summarizes why

people, especially teenagers are prone to drinking: (1) Escape: They believe and see it as a means to escape their problems ex. problems with friends and family, problems at school/university, mental health issues etc. (2) Risk-taking: Doing something that is forbidden naturally gives you a certain level of rush which explains why a lot of teenagers drink just because they seek the risk that they get from doing something they are not supposed to be doing. (3) Misperception: People are of the opinion that everyone their age is drinking, and consuming liquor more heavily than they really are. Research shows that 50% of all 15-year old students consume liquor, implying that the remaining 50% do not consume liquor. (4) Curiosity: People start drinking to simply gain firsthand experience and knowledge on what it feels like to drink. (5) Peer pressure: teenagers see their friends drinking and conform to peer pressure to fit in and start drinking. (6) Feeling grown up: Growing up teenagers often see adults, even parents, drinking and they try and copy their behaviour to feel grown-up or mature because in their minds they are thinking "that is what grown-ups do".

Allow me to clear out any misunderstandings that might have sprouted in your mind. Drinking is not as unhealthy as long as it is not out-of-control. But there is a difference between drinking socially and drinking to cope. Unfortunately, alcohol is the most common way people try to use to cope with their problems. From personal experience, I can admit I have used alcohol in the past to deal with social anxiety. I started relying on liquor during night outs to help me cope with my anxiety issues. It took a while some nasty hangovers and family interventions before I realized what the problem was. It wasn't wrong of me to consume alcohol when I would go on a night out, however, I was consuming it for the wrong reasons i.e. to deal with a long-term problem. According to WedMD, if you're a woman consuming more than three drinks a day or seven drinks a week and if you're a man consuming more than four drinks a day or fourteen drinks a week, you would fall under the category of "heavy drinker". Binge drinking can result in nasty hangovers, blackouts to more serious consequences such as alcohol poisoning. Prolonged abuse of alcohol can cause serious and (potentially fatal) health-related issues such as liver disease, neurological problems, high blood pressure, anemia etc. To quote HereToHelp, the rule of thumb is to

"consume not too much, or too often and always in safe contexts".

Let's talk about the difference between addiction and substance abuse because the two terms are very different, however, people use them interchangeably. American Addiction Centers explains "Drug abuse refers to using drugs even though it has become a problem in your life. You may have begun using drugs without any noticeable negative consequences, but as you continued to abuse drugs, the negative consequences became more apparent" whereas the National Institute on Drug Abuse (NIDA) defines addiction as "a chronic, relapsing brain disease that is characterized by compulsive drug seeking and use, despite harmful consequences. It is considered a brain disease because drugs change the brain; they change its structure and how it works. These brain changes can be long lasting and can lead to many harmful, often self-destructive, behaviours." However, since it can seem so casual, it can easily turn into an addiction where the body develops a physical dependency on the effects and depending on what substance is used and how long, withdrawal from it causes extreme physical symptoms ranging from vomiting, nausea, sweating, abdominal pain to more severe symptoms such as hallucinations and seizures. HereToHelp explains "It's helpful to think of substance use along with a continuum, from beneficial use to harmful use. Along the middle of the continuum, substance use may be both beneficial and harmful. At the far end of the continuum, some people develop dependence—they need to continually use the drug in order to feel normal and will keep using even when that leads to financial difficulties, problems at home or at work, health problems, or legal problems". Ashwood Recovery, in one of their blog posts, talk about the four major differences between substance abuse and addiction. We already discussed the first two i.e. how substance abuse can seem a casual experience ex. Taking pain medication to get high, but how it can quickly progress into an addiction. We also discussed how recovering from an addiction is accompanied by withdrawal symptoms. However, the most interesting point they made is by discussing how "Addiction is a mental disorder whereas substance abuse can be a choice". As we established before, substance abuse is primarily defined by how the substance is being used whereas substance addiction is primarily defined by the physiological and psychological effects of the substance

abuse on a person. They establish how the former is a behaviour and the latter is a mental disorder by stating some relevant components of addiction stated by the American Psychological Association: The desire, but inability, to cut down or control substance use; Having a strong urge to use the substance (i.e. a craving); Building up a tolerance for the effects of the substance. All in all, it is an individual's choice to engage in substance abuse before it turns into a substance abuse disorder aka addiction whereby the person is unable to control their use of the abused substance. The last point they talk about is how substance abuse alters the brain briefly as compared to substance addiction, which alters the brain permanently. To quote NIDA, "For the brain, the difference between normal rewards and drug rewards can be described as the difference between someone whispering into your ear and someone shouting into a microphone. This is why a person who abuses drugs eventually feels flat, lifeless, and depressed, and is unable to enjoy things that were previously pleasurable. Now, the person needs to keep taking drugs again and again just to try and bring his or her dopamine function back up to normal – which only makes the problem worse, like a vicious cycle". The main takeaway being, one should not dismiss the possibility of developing an addiction just because they recognize the symptoms of substance-abuse rather than full-blown addiction.

Moving on to some resources and support, I personally found the readings posted on the Ashwood Recovery blog extremely informative, interesting and helpful. StartYourRecovery was another webpage that provided a lot of helpful information on substance abuse depending on the substance as well as who you recognize as i.e. teen, veteran, parent etc. If you can relate to this article in any way and recognize you might be struggling with an addiction or substance abuse, I strongly encourage you to seek professional help. If you have recognized you have a problem, great job! You have already taken the first step on your road to recovery. The next step would be to research what kind of help you can get and the resources around you. For instance, a person struggling with alcoholism can join an Alcoholics Anonymous (AA) group and enter a 12-step program. It is essentially an anonymous group of members belonging to different communities, a safe space, where they can share their honest accounts of setbacks as well as success stories to inspire and motivate each other. The 12-step program is essentially a set of 12 principles that guide former alcoholics on how to tackle the problems caused by their addiction, how to make amends, and how to continue in their new lives as recovering drinkers. If a person is struggling with a nicotine addiction, setting up an appointment with a physician would be a good place to start to figure out if you would benefit from nicotine replacement therapy in the form of gums, patches, sprays, inhalers etc. to help them overcome the physical withdrawal symptoms while reducing the nicotine tolerance and allow them to focus on the psychological aspects of quitting smoking. Smoke Free is an IOS-based application that the user can download on their phone and is a great way to keep track of your progress i.e. cravings, health improvement, time spent smoke-free, money saved etc. There is a mission to be completed every day for a month to help the user resist cravings and motivate them to stay smoke-free. The idea is if you can complete the missions and abstain from smoking for a month, there is a good chance you can stay smoke-free for good. You can also keep track of your triggers and it provides a lot of helpful readings on how to manage cravings. I hope this article was helpful for you or anyone you know who might be struggling with a problem. Take care of your mental health and be aware of what other problems might take roots if you do not seek help at the right time!

WIN CASH EVERY WEDNESDAY

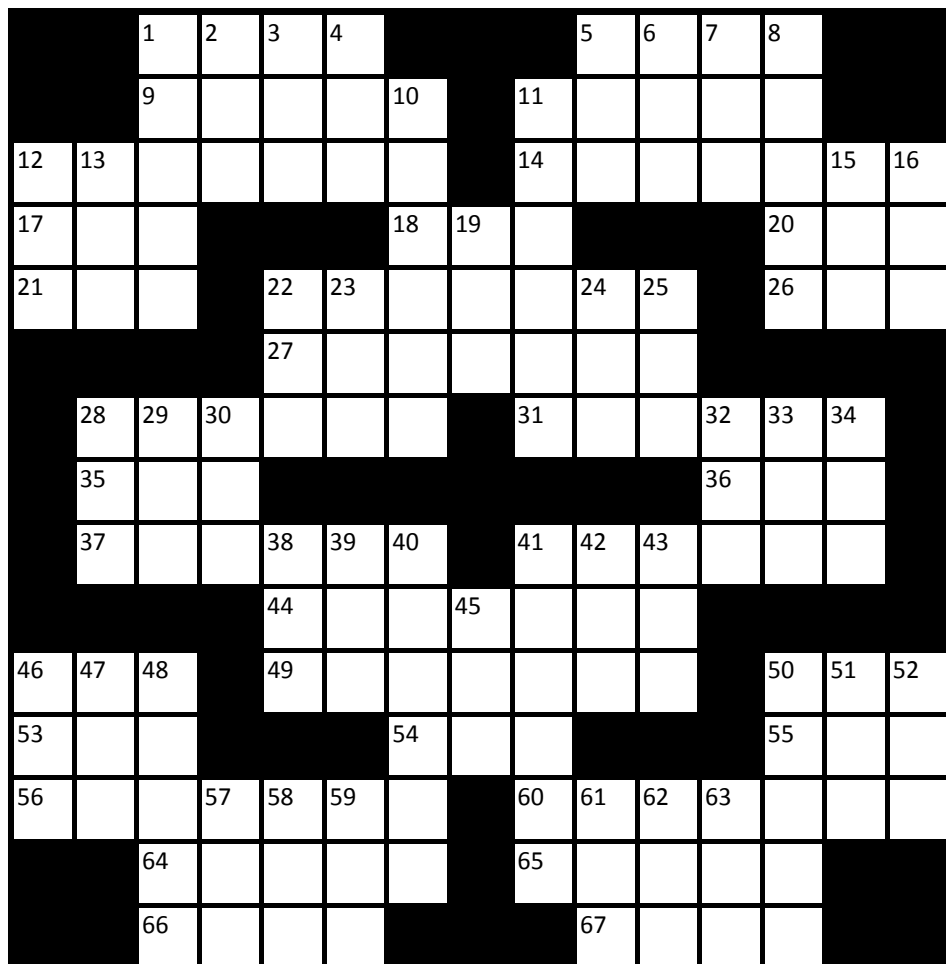
LE SHIN SWAH
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The Iron Crossword

The One With The Friends Crossword

KIRSTEN EHLERS
1B BIOMEDICAL



ACROSS

- 1: Character played by Matt LeBlanc
- 5: Character played by David Schwimmer
- 9: Not over
- 11: Actor who plays 66 across
- 12: To let go
- 14: What some food workers wear for hygiene
- 17: Meaning radio-frequency interference (abbr.)
- 18: A long time ____
- 20: Three
- 21: A female deer
- 22: Monica and Ross
- 26: A type of shelter
- 27: Dissolves in a solvent
- 28: With 46 across, a song by Phoebe
- 31: To bury
- 35: Solid water
- 36: The principle combining yin and yang
- 37: Character played by Jennifer Anniston
- 41: Character played by Courtney Cox

DOWN

- 44: Refusing to give in
- 46: With 35 across, a song by Phoebe
- 49: With 67 Across, the café where Rachel works
- 50: Who, what, when, where, ...
- 53: The remnants of something burned
- 54: A type of router
- 55: The sound an owl makes
- 56: RCMP officer nickname
- 60: People that you detest, plural
- 64: Many people don't like this word
- 65: Joey was on: Days of Our ____
- 66: Chandler's surname
- 67: With 49 across, the café where Rachel works

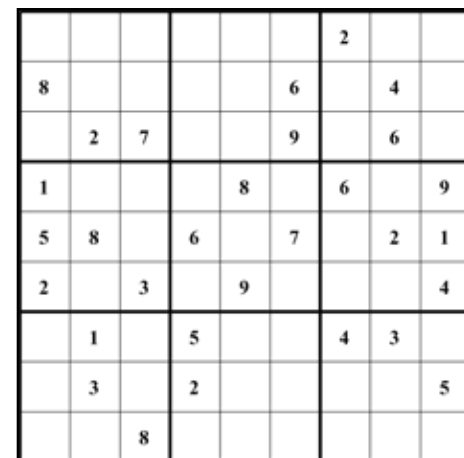
- 5: Tool used to identify environmental impacts of a disaster, abbrev.
- 6: Group of beings from Stargate
- 7: Reconnaissance unit for British Army, abbrev
- 8: Electronic instrument in the keyboard family
- 10: Very
- 11: Lisa Kudrow's character
- 12: Season 8 episode 2: The one with the ____ sweater
- 13: Genre of rock including Rites of Spring and Embrace
- 15: Administration for rugby in Edmonton, abbrev.
- 16: Bird of Paridae family
- 19: American mobile phone game company based in San Francisco
- 22: Acronym for largest salt water lake in Western Hemisphere
- 23: Acronym for the term of the last stage in a product usage
- 24: Branch of vagus nerve in the larynx (abbr.)
- 25: Ready, ____, Go!
- 28: A polite way to address a gentleman
- 29: American music label that released albums such as Heart, Anything Can Happen, Good Love
- 30: Acronym for an organization of european economics
- 32: Acronym for a delivery item on schedule
- 33: Joey's character on TV with the robot
- 34: Type of snake
- 38: Acronym for organization of individuals who fly helicopters
- 39: City in the Netherlands
- 40: Sharp blade used to get a blood sample
- 41: Ross' monkey
- 42: Acronym for provincial nurses' union
- 43: C++ library for manipulating vectors etc.
- 45: South African telecommunications company
- 46: Short for a device used to take pictures
- 47: Acronym for a musical group in Atlanta
- 48: Season 1 Episode 3: The one with the ____
- 50: Kitchen tool for mixing
- 51: Farming tool
- 52: Yosemite, abbrev.
- 57: Acronym for African-American political and religious movement founded in the 1930s
- 58: Element 50
- 59: Business School in Paris, Acronym
- 61: To bite, what a puppy does
- 62: The night before
- 63: The type of maid Ariel is

Sudoku

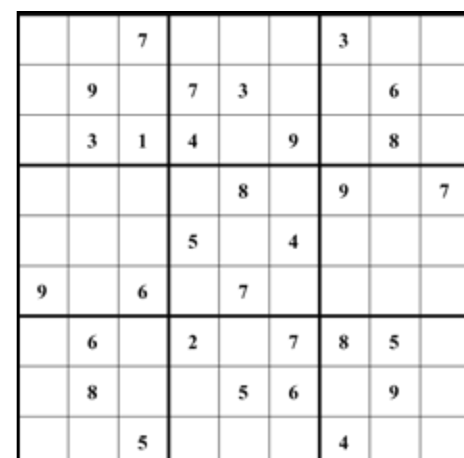
#2019-05

MRIDU WALIA
MECHANICAL

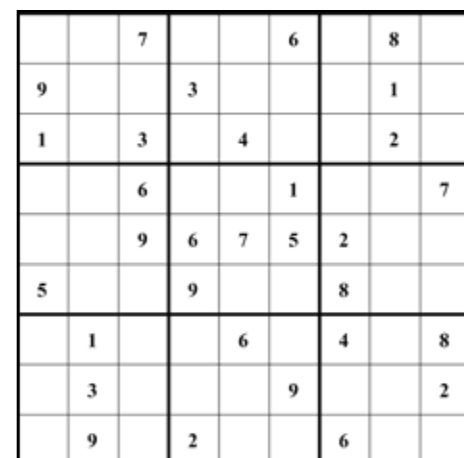
Easy



Medium



Hard



Solutions for previous crosswords can be found on *The Iron Warrior's* website at iwarrior.uwaterloo.ca/distractions.

THE IRON INQUISITION
David Jimenez, 1B Chemical

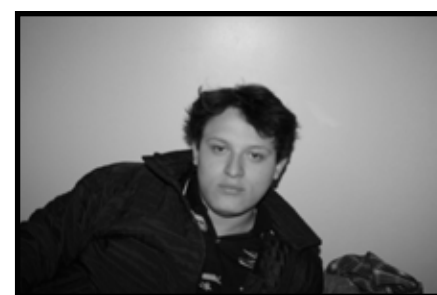
"What language are you learning on Duolingo?"



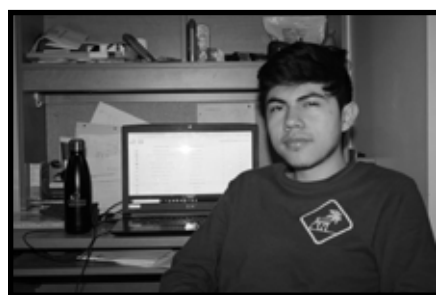
"What is Duolingo?"
Michael Ingstrup, 1B AFM



"English!"
Karla Castro, 1B Systems Design



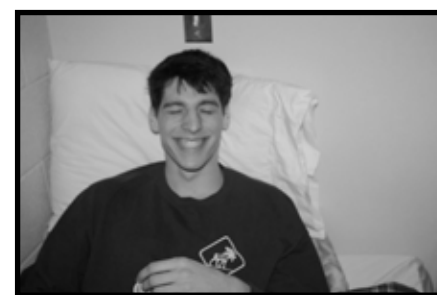
"Persian."
Andrei Perez, 1B Nanotechnology



"Chinese."
Esteban Velasco, 1B Mechatronics



"I don't use Duolingo."
Lucas DiCicco, 1B SDS



"German."
Hayden Havender, 1B Kinesiology