

Twelfth Annual G20 Summit Held in Germany



Office of the Prime Minister of Canada

Leaders of G20 Countries



**RAEESA
ASHIQUE**
3A ELECTRICAL

Climate change and trade dominated talks at the G20 Summit held the weekend of July 7-8 in Hamburg, Germany, coming at a time of shifting political relationships largely thanks to – yes, you guessed it – our friend Donald Trump. Trump sat down for the first time with many of the players involved in his little plans: Russian President Vladimir Putin, and Mexican President Enrique Peña Nieto. We also learned that Trump has a lot more respect for Prime Minister Justin Trudeau than for many others in the room, and that he is trying to amend what was previously a cold relationship with French President Emmanuel Macron.

Trump meets his role model

Trump and Putin met for two hours and seemed to hit it off, and although their warm words contrasted their restrained body language, Trump called their talks “very, very good”. US Secretary of State Rex Tillerson commented that “the meeting was very constructive”, and that “there was a very clear positive chemistry between the two.”

In Putin’s words, their discussion included “Ukraine, Syria, and other problems, also some bilateral issues. We have again returned to the fight against terror and to cyber security.”

One positive, and surprising, sign is

agreeing to a ceasefire in southwestern Syria starting from July 9. The two countries have backed opposite sides of the Syrian war for years, with Russia supporting President Bashar al-Assad, and the US supporting rebel fighters.

The allegations of Russia interference in the 2016 election were not resolved, although Trump pushed this topic and they had a “very robust exchange”. Russian Foreign Minister Sergei Lavrov later said that Trump accepted Putin’s assertions that the claims were false, and Tillerson told the Associated Press news agency that “the President is rightly focused on [moving] forward from what may be simply an intractable disagreement at this point.” It is likely that a definitive conclusion will never emerge.

Interestingly, the two leaders claimed that this was their first face-to-face meeting. In 2013, Trump told late-night host David Letterman that Putin is “a tough guy. I met him once.” In 2014, he said he “spoke indirectly and directly with President Putin, who could not have been nicer.” Last summer, however, he denied having ever met Putin in a campaign press conference. Putin has agreed with these claims, which makes them both look sketchy.

Paris Climate Agreement

This summit is the first meeting of world leaders since Trump announced his decision to withdraw from the 2015 Paris Agreement. The accord is supported by all other members of the G20, besides the US.

In her closing press conference, German Chancellor Angela Merkel said “Unfortunately – and I deplore this – the United States of America left the climate agreement, or rather announced their intention of doing this.” British Prime Minister Theresa May said she was “dismayed” at the decision, and had tried to convince him otherwise.

Trump meets his scapegoat

The border dispute is the reason Trump hasn’t met with his Mexican counterpart since the inauguration until this summit. Nieto canceled his Washington trip earlier this year after a war of words regarding the wall.

On Friday, a reporter asked Trump whether he still wants Mexico to pay for the wall, to which Trump replied “absolutely”. Nieto did not have a chance to respond, as the question came while the reporters were leaving the room.

After the bilateral meeting, the White House released a statement saying the US recognizes the importance of renegotiating NAFTA to benefits all involved parties, and said the two leaders “also discussed regional challenges, including drug trafficking, illegal migration, and the crisis in Venezuela.”

The wall was not mentioned.

Mexico’s Secretary of Foreign Affairs Luis Videgaray Caso called the meeting “productive”, and said that he expects “a meaningful, constructive modernization of the agreement” in reference to NAFTA. Renegotiations begin on August 16. When asked about the

relationship between the two countries, he said “We have some significant and very public differences, but overall the relationship is good and these meetings prove that.”

Trump’s bro?

Trump seems to respect Trudeau, although it was not sufficient reason for a change of heart regarding the Paris Agreement. In his speech on Saturday morning, Trump praised our “great neighbour in Canada”, saying “Everybody loves [Justin] and they love him for a reason so congratulations on the job you’re doing.”

While the two did not have a bilateral meeting, they did speak on the side about climate change and trade issues. Trudeau stressed the idea that economic growth and environment protection “can and must” go together, saying that “this is something that matters deeply to citizens and impacts directly on our economic growth now and into the future.”

A press release by the Canadian government noted that Trudeau promoted open, progressive trade, and emphasized the importance of gender equality and women’s empowerment — this is why I love Trudeau — as well as the need to take action to address climate change and build clean growth economies. Canada also noted its commitment to fighting terrorism.

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Letter From the Editor

Did Someone Say Guitar?



Hello and welcome once again, this time to the fifth and final issue of the Iron Warrior for the 2017 Spring Term. Ah can you believe it? We're in the last stretches of the term, it is crazy how time flies! Once again I have the rest of The Iron Warrior staff to thank for their contributions and help during this issue. As always thanks to all the copy editors, contributors, and advertisers that make this paper what it is. I would also like to give a special thank you to Raessa Ashique, Jessica Keung, and Cameron Soltys who dedicated a good chunk of their time throughout the creation of this issue.

For those of you who are a familiar with The Iron Warrior or perhaps regular readers from term to term, you may know that the last issue of the term has something extra special in it! That's right, it's in this issue that you'll find the much awaited Tin Soldier! Flip on over to the center of the paper to find it... (it should be somewhere there... hehe). Lots of great fun to be had in this term's Tin Soldier.

I would like to take some time now to thank all of our readers this past term! I know I speak for most—if not all—of us at The Iron Warrior when I say we are glad when we see people pick up a copy from the racks or when we find students, staff, professors, and guests alike reading the paper. For our regular readers, thanks once again for being with us for another term. For those who just recently joined us, thank you and I hope we've made a good first impression!

All this being said, for the last time of the term, I cordially invite and encourage any of our readers to send us an email if they want to write for The Iron Warrior or want to join our (almost-always) merry group. We'll be back in the fall term (and shortly before that the Orientation Week Issue) Similarly, if you have an opinion, argument, or praise for anything you read on our paper feel free to let us know! You can find us at E2-2345 (usually during meetings on Tuesday 1730h-1830h) or through our email address at iwarrior@uwaterloo.ca.

Alright so...what did Vince want to talk about in his last ever editorial of the term?! He's been talking about all these random things the past issues... first uncertainty, next motivation, and then last issue was on wanting to control all sorts of aspects in life! Well I'm throwing in a bit of a curveball here, but I promise it follows a similar theme to

my previous editorials!

Since we're deep in the heart of the term's dreaded crunch time when projects are due and exams lurk in that sketchy dark alley that we're forced to walk through, I thought this is the perfect time to talk about all the other things that we would probably rather be doing! At least for me, it's a massive list of miscellaneous hobbies and pastimes. In this editorial I want to talk about one in particular. To be fair, a lot of this should ideally help with de-stressing and relaxing in-between projects and during study breaks.

Did Someone Say Guitar?

First and foremost in my list of things that I would rather be doing: Music! This is my addiction; of all the things that I sink my co-op paychecks into, music-related items are the roaring flames that consume dollar bill after dollar bill. When I say music I mean anything from...actual CDs or FLAC downloads (yes, I pay for my music. Gone are my torrent-ing or limewire-ing, and Youtube-video-audio-ripping days) all the way to a new hand-wired guitar amp, maybe a new pre-amp for my hifi setup at home, or a new plug-in for my DAW. I hop around every co-op term as to what I spend money on music-wise, but the biggest wallet-hitters tend to be music gear (my last major purchase, a PRS Custom 24, set me back a couple grand...I blame the Canadian Dollar. (It does not help at all that a lot of fancy-schmancy 'Made In USA' guitars or amps are marked up beyond belief.) A lot of pieces in my collection either hit me with the CAD to USD conversion or the CAD to GBP conversion. Take guitar amplifiers for example... brands such as Friedman, Mesa Boogie, and higher-end Fenders are all built in the U.S. (they remind you too with their "Made In USA" stickers), and as you can imagine they can sometimes cost an arm and a leg. Hopping over across the pond, you find amps like high-end Marshalls (think Astoria line, or Vintage-Reissue) and hand-wired Vox amps, as well as Victory, and you find yourself paying for shipping and British labour! Not to mention those vacuum tubes can also be expensive to replace when you add it up! Nonetheless they're still all of the fun to have and to look at hehe....

I was introduced to guitar about 12 years ago, playing on a cheapo off-brand acoustic guitar that was almost impossible to keep properly intonated. Regardless of the initial gear, however, playing guitar just stuck to me and I've never let it go. I was hooked to the guitar. I want to say that for the first 6 to 7 years, there was not a day when I didn't pick-up my guitar. Fast-forward

to high school and the gear acquisition syndrome had hit me like a train. I swear the one thing that inspired me to get part-time jobs was simply so I could get my hands on a new pedal, a new guitar, or a new amp! For me, at least, there's a lot of fun to be had looking up new gear or learning about what a particular amp does or how it may sound, even more so when you finally get to try it out in a music store! I simply love A/B-ing different pieces of gear. A part of me also just really like discovering new gear to add to a collection! My most recent obsessions over have been amps and various cab speaker configurations.

My Current Go To Setup!

Guitar: PRS Custom 24 in McCarty Sunburst Finish

Amp: Mesa Boogie Mark V:25 with a MiniRecto Slant 1x12 Cab loaded with a Celestion V30

Misc Pedals: Seymour Duncan Vapour Trail, Xotic Effects BB Preamp

Did Someone Say Study Break?

All that spending aside, guitar was also a really great way to unwind. During exam season it was, for the most part, my go-to for study breaks or for de-stressing. The routine was pretty straight forward: I'd make myself a cup of tea or coffee (depending on my mood!), move my guitar next to the desk I was working on, plug-in, do some practice questions or whatever, then pick up my guitar and let it rip during my study breaks! I'm not one of those folks who can sit for eight hours straight and "just study"; it's been absolutely impossible for me. As such, I put a lot of value into my mini-guitar-session-study-breaks (or at least try to). It's funny that, speaking strictly about my years here at UW, I feel like during the academic terms the most I improve my playing is actually during the exam periods! That being said, I've also been incredibly productive guitar-wise and music-wise during the post-exam season. This is probably due to the fact that I get to spend time at home! When you have the house to yourself on free days, it's the absolute perfect time to crank the amp (at least in my experience).

Anyways that's all I have for this last editorial, thanks once again for joining us this term! Feel free to let us know what you guys do in your spare time or maybe what your go to study break / de-stressing activity is! Also, don't forget to take breaks this exam season!

Wishing everyone all the best one last time as EIC,

Vince Magas

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The Iron Warrior is a forum for thought-provoking and informative articles published by the Engineering Society. Views expressed in The Iron Warrior are those of the authors and do not necessarily reflect the opinions of the Engineering Society.

The Iron Warrior encourages submissions from students, faculty and members of the university community. Submissions should reflect the concerns and intellectual standards of the university in general. The author's name and phone number should be included.

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Wildfires Burn Across British Columbia



CAMERON SOLTYS
4A MECHANICAL

As of Wednesday, July 12, the province of British Columbia (B.C.) has been dealing with over 200 wildfires, 21 of which are of a notable size. The fires are raging across large portions of the province, causing evacuations, poor visibility, and bad air quality.

A large number of the fires started early in the month, between July 8 and 9. That weekend saw a large number of dry lightning storms, where lightning strikes were not associated with a subsequent downpour that could suppress any nascent wildfires. Unfortunately, the preceding weeks had consisted of hot weather—up to 30°C—and little rain. As a result, most of the southern two-thirds of the province were classified as being at “high” or “extreme” risk of fire. The situation was worsened by high winds, which fanned flames and caused them to spread aggressively.

The wildfires are limited mostly into the interior of the province, fortunately

away from coastal population centers such as Vancouver. The provincial government, with its 2000 local fire fighters and expected 350 out-of-province reinforcements, has been prioritizing preserving infrastructure, communities, and particularly the evacuation-essential highways. Unfortunately, conditions are expected to remain poor for fire-fighting, with no rain forecast in the near future and the possibility of more dry lightning.

Many thousands of people have been evacuated from their homes (16 000 as of July 12), and a state of emergency has been declared throughout the province. Some communities that have been accepting evacuees are at capacity: the residents of 100 Mile House, for instance, were evacuated many hours north to Prince George, instead of two hours south to Kamloops. There have also been reports of disorganization in the government and Red Cross response to the crisis, with Red Cross manager Melissa Fougere admitting to being “overwhelmed.” Nevertheless, most people seem to be obeying evacuation orders and retreating safely.

Surprisingly, this may not be a record-

setting British Columbia fire season, since the early fire season was relatively tame. Thus far, 552 fires have burned 24 000 hectares. This is much less severe than 2015, which saw over 1800 fires and 300 000 hectares burned. The comparison to 2003, a notably terrible year for fire, shows the current situation could be much more dire.

2003 was the hottest, driest year on record for B.C. That year saw 2500 wildfires. In particular, there were a large number of “interface fires,” where the fire approached a boundary between woodland and urban areas. As a result of these fires, 45 000 people had to be evacuated and three firefighters lost their lives. Like with this year, the fires were restricted primarily to the interior.

In the aftermath of 2003, the B.C. government commissioned a report on the fire season. This report suggested, among other things, improvements in forestry management and organization. These recommendations have been, at least in part, obeyed. For instance, in 2009 the Globe and Mail found that the province had identified 685 000 hectares of interface forest that high-risk due to a buildup of fuel (dead vegetation and

overgrowth). Around 35 000 hectares had been cleaned up to reduce that risk.

The organization of wildfire response has also been improved. After the 2003 fire season, an inventory of available firefighting equipment has been established, allowing planners and organizers easier understanding of the resources at their disposal. Improvements have also occurred in the context of the disastrous Fort McMurray wildfires last year in Alberta. The lessons learned from that firefighting effort has led to centralizing of the B.C. effort; the provincial government has taken responsibility for managing the situation, with the Canadian federal government only providing assistance.

While the fires this year may not constitute an extraordinary event, they are nevertheless serious and will take a large amount of time and capital to contain and eliminate. Hopefully the efforts will be able to continue without casualties. Over the long term, continuing improvements in fire management, including practices like controlled burns or strategically allowing fires to burn, will hopefully be able to reduce the severity of fires in the future.

Donald Trump Jr. Leaks Emails Pertaining to Russia

NICK OWENS
1B MECHANICAL

Ever since being inaugurated as president of the United States, there has been much criticism surrounding Donald Trump. Part of these criticisms are due to allegations of potential communication with Russia about influencing the results of the 2016 election. These allegations were further amplified after the director of the FBI was fired, supposedly for wishing to initiate an investigation into whether this was true. The most recent event sparking suspicion comes from the President’s own son, Donald Trump Jr., who has just recently leaked emails, potentially confirming links to Russia during the 2016 campaign.

Over the past week, several emails were made public via Twitter, confirming that Donald Trump Jr. had met with

a Russian lawyer during the 2016 presidential campaign. According to Trump Jr., these emails were released in the hopes of being more honest with the public, and possibly in the hopes that people would find that, although there were links to the Russian lawyer, they are not as severe as some people have implied. The emails entail that this lawyer from Russia had wanted to meet with Trump Jr., offering information on the Clinton campaign in support of the Trump Campaign. Trump Jr. has stated that although the meeting took place, nothing ever came of it.

Opposition to the Trump organisation responded immediately to these leaked emails. Former running partner to Hillary Clinton, Senator Tim Kaine, did not fail to mention that investigations against the Trump organisation are now potentially at the level of treason

against the United States. Congressman Seth Moulton commented on Twitter, “If this isn’t treasonous, I’m not sure what is.” However, even though this might be considered a breach of national security, the United States and Russia are not currently at war, so whether this could even be considered treason is highly unlikely. By the definition found in the United States Constitution, one can only be tried for treason for levying war against the United States. Even if Russia is not considered an ally to the United States, they are not currently considered an enemy nation.

However, this could still be considered a breach of the law. While running for president of the United States, soliciting the help of another nation to aid in your campaign, regardless of whether that nation is an enemy, is strictly forbidden. Even if this help had been com-

ing from Canada, it could still be considered a breach of the law. Therefore, further investigation may be held, as well as discussion of whether discussing potential information about the Clinton campaign is considered soliciting help. This is very discouraging news for the Trump organisation, but it is not the same as being accused of treason.

The only information confirmed thus far is that the Trump campaign and those involved now have a publicly recorded link to Russia. Although this does link the campaign to Russia, Donald Trump Jr. currently has no official role in the White House, so only time will tell what effects this revelation might have on the Trump administration. As of now, Donald Trump is still president, and further investigation will need to take place to determine whether this should be counted as a criminal offence.

Twelfth Annual G20 Summit Held in Germany

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Other

Anti-terrorism was also an extensive discussion, largely spearheaded by Indian Prime Minister Narendra Modi. He had suggested an anti-terrorism plan to Merkel back in May, and pushed to alter the theme of this summit from “globalization and trade” to “global terror”. In a speech, he emphatically stated that “Deterrent action should be taken against countries supporting terrorism. The entry of such countries in the G20 should be banned.”

US announcement of \$639 million in aid for Yemen, Somalia, South Sudan, and Nigeria, coincided with the summit. However, there is concern regarding Trump’s proposed cuts of over 30% to foreign aid. Also, Congress approved this money months ago, but it finally came through.

Trump also met with South Korean and Japanese leaders, saying that “something has to be done” about the nuclear threat by North Korea. The Trump administration has warned China that they have to pressure North Korea.

In a statement, the three countries agreed to “press for the early adoption of a new UN Security Council resolution with additional sanctions to demonstrate to [North Korea] that there are serious consequences for its destabilizing, provocative, and escalatory actions.”

What is the G20?

The G20, or Group of Twenty, is a summit of 20 of the largest economies in the world, comprised of nineteen member states, both developed and developing, plus the EU. It was formed in 1999 to discuss policy matters and financial stability, and meets biannually since the 2008 economic crisis.

Protests

Tens of thousands were protesting outside the summit, against capitalism and climate policies, among other issues. Protests are not uncommon outside such gatherings, and this summit was no different.

Majority of the protestors were peaceful, although this was not the impression conveyed by violent images on social media. One of the most creative was by a German performance

collective, who painted themselves grey and dressed up like zombies, in a statement about political apathy in the world.

However, some turned violent and clashed with police, smashing windows, torching vehicles, and looting retail stores. Regarding this, Merkel commented, “I have every understanding for peaceful demonstrations but violent demonstrations put human lives in danger.”

Many people contend with the very idea of the G20, where twenty-some world leaders making deals behind closed doors. Some concerns mentioned by protesters include, but are not limited to, climate change and economic issues, Russia’s interference in Syria, Turkish President Tayyip Erdogan’s crackdown on dissidents, and corruption allegations surrounding Brazil’s Michel Temer. And of course, general Trump things.

According to Al Jazeera’s David Chater, “There are so many issues involved politically in the G20 summit,” adding that the protestors “are against the globalist capitalist system, they are against Trump’s attempts to pull out of the climate change accords. They’re

essentially protesting every single issue that [was] raised in this G20 summit.”

Addressing those who do not feel the G20 is there to help them, Trudeau says, “We know that the anxiety the citizens around the world are feeling is real.”

Trump’s other bro?

When Trump met Macron back in May at the NATO summit in Brussels after the French election, there appeared to be some tension between the two. However, at the G20 summit they shared a bro clasp, and stood side-by-side for the traditional family photo. Telling? I think so.

Macron invited him to France for Bastille Day celebrations on July 14. He watched the parade alongside Macron, where both French and US troops marched, to honour the US’s entry into World War I.

This may be the start of a new friendship; Trump commented on their long standing relationship: “France is America’s first and oldest ally. A lot of people don’t know that,” he said. “It was a long time ago, but we are together. And I think together, perhaps, more so than ever. The relationship is very good.”

All Glory to THE TOOL

TOOLBEARER #3 GROUP OF TOOLBEARERS

Dearest students, staff and faculty of Waterloo Engineering,

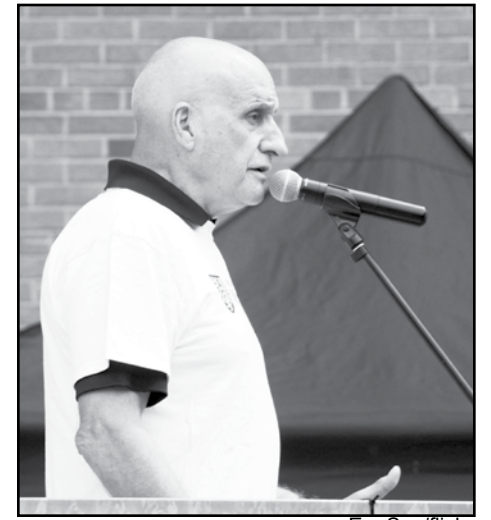
For 50 years we have been united under the glory of an over-sized chrome pipe wrench. One of the oldest engineering mascots in Canada, inspiring jealousy, awe, and confusion among our neighbouring schools. This was a special year for us, having celebrated 50 years with THE TOOL at our sides. Passed down through generations of Bearers, all sworn to keep it safe during our time here at Waterloo. But without your support over these years it would be all for naught, and for this we thank you. You have been the best group we could ask

for, every last one of you has made putting on the mask and coveralls worth it. We love seeing your faces at events, dancing with you, posing for pictures, and showing our beloved mascot off to the world. We love the fact that over the years we've had more reason to show our engineering pride. Thank you to the students and staff who have invited us out to events such as Canada Day, the Toronto Pride Parade, Engineering Day and many more. These events have been amazingly exciting for us as they provide the opportunity to connect with not just our students but our community and our nation. With these events, we can say that we are proud to be diverse, we are proud to be Canadian, and we are proud to be pro-LGBT. These are

things we cannot express on our own but they are values we promote and values we are glad our Engineering Society stands by. And an overwhelming thanks to all the students who come out to our events! Events like Romantic pictures, Pictures with Santa, and, most recently, THE TOOL'S 50th Birthday have been spectacular. Thank you for coming out, having a good time and taking some cute, funny, and altogether fantastic photos. Together we have made something worth remembering: a mascot and a story that will continue for many more generations. Thank you all.

Keep it RIDGID,

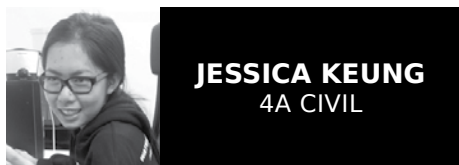
ToolBearer #3



EngSoc/flickr

**Jim Pike speaking at
Engineering Day**

Engineering Day



JESSICA KEUNG
4A CIVIL

On July 14, 2017, the second annual Engineering Day was held in the CPH quad where students, alumni, professors, and staff celebrated the engineering community and the Tool's 50th birthday. Hundreds of people showed up for this fun-filled afternoon of purple-coloured powder and free food. Attendees enjoyed a barbecue featuring the famous 'Boggan Burgers, frozen treats, refreshments, a photo booth, and purpling. 'Boggan burgers were provided by the University of Waterloo Concrete Toboggan and Canoe team. The Concrete team served over 1500 burgers that day to all the attendees. The volunteers were flipping burgers and serving buns. 'Boggan burgers are an age old tradition and are a way for the design team to raise money to participate in the annual competitions. If you enjoyed your free burger on Engineering Day, consider buying a burger every Monday, outside of CPH.

Jim Pike, the Mechanical Engineering graduate from 1969 who brought the engineering mascot to campus when he was EngSoc president 50 years ago, was also there. Unlike his claim to fame, Jim Pike is not a massive tool; the Ridgid Tool is a massive tool. Pike first brought the sixty-

inch adjustable pipe wrench to campus in 1967. The Tool was donated by the Ridged Tool Company of Elyria, OH, USA. The University of Waterloo Engineering Society was lacking an engineering mascot at the time. The Ridged Tool Company donated the Tool on two conditions: the Tool would be known as the Ridgid tool and the original tool would maintain its original colors. The Tools are protected by the Tool Bearers out of necessity; after years of having to thwart robberies, the Tool Bearers are responsible for the safe-keeping of the Tool.

Some of the highlights of the event included cupcakes arranged in the shape of the Tool, two ice cream trucks side by side which had ice cream, slushies, and rocket popsicles; human foosball; large Connect Four; purple sharpies; and purpling. Students, administration, and faculty alike had the opportunity to mingle and celebrate engineering together.

Many people were disappointed when the "Dunk your Prof" event didn't happen. Although this is no excuse, we found out from a credible source that the Dunk tank truck had crashed on the way to Engineering Day. Everyone involved in the accident is fine except for the students who didn't get to see their favourite professors get wet.

This is only the second time that Engineering Day occurred. It was a lot of fun, and it is likely to become a beloved tradition.



CAMERON SOLTYS
4A MECHANICAL

Like many of you, I went to Engineering Day last Friday. It was really exciting, eating the free food, enjoying the music, and catching up with friends. It was also a tonne of fun to run the purpling station for a few hours, helping students refresh their engineering spirit with their first or fourth purpling.

There was, however, one less-than-pleasing thing that I found with Engineering Day: the reception of the Tool. When it arrived, the cheering was so sparse and quiet that I, sitting facing away from the POETS patio, didn't even know it was there for a short time. Once I did see it, I shot up and began cheering at the top of my lungs, hoping that those around me would join in. For the most part, they did not. It was very frustrating, watching hundreds of people who had shown up for the nominal purpose of celebrating the Engineering Faculty, the Tool, and ourselves standing there silently. To be sure, there were other people cheering; I was far from the first to start. Looking around, though, I felt like I knew most of my fellow cheerers by name, and that they knew me. I also know that cheering and school spirit isn't everyone's thing, and that's OK. What

Join in the Fun

astonished me was the size of the body of students who weren't cheering. I was expecting something akin to Orientation Week, where the vast majority of leaders and incoming first years cheer their lungs out for the Tool.

I know that I don't have the right to demand everyone else cheer, or to tell others how to have fun. Maybe I shouldn't be bothered that the "TOOOOOOOOOOLS" were quieter than I wanted, or that faculty spirit is only really widespread around Orientation Week. So I don't want admonish, or judge (which, unfortunately, a previous draft of this rant did). What I want to do is encourage. Everyone who's reading this and who feels like they don't get school spirit, or that they're too busy, or that they just don't care: I understand. For my first two years here at Waterloo, I did very little except for my one extra-curricular, The Iron Warrior. There are so many other things to do, things that take less time, or things like studying that are more important than attending events. Then I attended one EngSoc council meeting. From that one meeting, a seed was planted that evolved into a loud, cheering, event-attending alter-ego. That won't happen to everyone, not everyone would want that to happen. That's OK. What I would like, what I want to encourage, is for anyone who has a spare hour to attend an event, to do so. There are so many great opportunities to get involved and make friends at Waterloo; seeing the crowd at Engineering Day made me realize how many people aren't a part of it. I think that many of them would flourish if they got involved, and it disheartens me to think that some of them won't because no one around them is.

In summary, my initial frustration was misplaced. Everyone doesn't have to be a psycho-cheering machine, or even cheer at all. You can probably be a happy, productive student without attending any events or celebrations between O-Week and Convocation. What is not misplaced, however, is a desire for more people to participate in the community and engage in the traditions. It's fun, makes the school year go by faster, and makes the memories that you will actually remember when you graduate. I was late to the party too, so I can say with complete confidence that it's not too late to get out there and participate. If seeing the ToolBearers on Friday brought a smile to your face, or if you excitedly threw yourself into the big purple smoke cloud during the purple throw, but you otherwise feel like getting involved isn't for you, please please give it a shot: if a seed gets planted, you won't regret it. If a seed doesn't get planted, well, many events offer free food.

KITCHENER WATERLOO



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The Insights of the EIC

SUPER EDITORS

THREE-FOR-THE-PRICE-OF-ONE

Hello world. I am here crying about the state proven by Newton. It consists of dangerous quantities including, but not limited to, mendelevium. Mendelevium is proven to create terrible breath and death. Death can be postponed, although not altogether eliminated. Therefore, comrades, we must take up the red banner and march on Port Stanley. Port Stanley has been the source of zombies and biological weapons. In the event of apocalypse, which will definitely arrive in the near future, there are some pre-emptive steps one can take. Firstly, get ammo, and, if possible, a gun. Secondly, do the responsible thing and learn how to use a gun. Side note: don't forget to stock up on toothbrushes. Thirdly, buy a gun safe and other appropriate gun safety equipment. Fourthly, test your gun out on small animals and children to make sure you adhere to gun safety procedures. Fifthly, avoid the law.

In the coming revolution, there will be many factions: the fascists, the communists, the liberals, the Liberals, the conservatives, the Conservatives, the pacifists, the atheists, the anarcho-communists, the illegal immigrants, and the extra-terrestrials. To ensure your safety, please remember to sign up for all these groups and carry your business card. Identification clothing patches may become necessary as well, or perhaps tattoos. Shelter can sought in E7, where the forces of the doe place-to-buy-things are sure to mustard. In E7, there will be innovation, disruption, the spirit of Why not?, altars to Feridun Hamdullahpur, and snacks. So join us for the free food!

Whispers of an Uprising

HERMIONE GRANGER POTIONS CLASS

Dissension in the Potions department is sparking rumours of an uprising. Reasons cited for these include:

1. Lack of apathy on the part of figures in positions of power. This is common through all levels of the hierarchy, and trickles straight down to the bottom. Although, waterfalling may be a better term, or perhaps "pouring buckets". This may also be likened to "sprinkling salt".

2. Bitches

Now, there have been multiple complaints in the past, so although one particular incident may be a trigger, it does not come out of the blue.

Department policy has acclimatized its students to poor performance; not only do they expect to fail, but they are surprised if more than half the class passes. Where do we find 30% averages? Potions. In fact, interacting with students in other programs gives Potioners anxiety. "What do you mean, your average was 'only' 75%?? We've never had an average that high in fifty years."

Let's not forget that there is another reason Potioners choose not to interact with students in other programs – they only know how to talk about Potions. How to talk to normal people who can't relate? And more importantly, don't want to relate? Just don't do it.

Seeking help is discouraged. "Excuse me", say the figures in positions of power. "I scheduled one episode of television during this time slot. I am not available to answer questions or discuss difficult concepts." And so, the Potioners carry on, becoming more lost and alone and salty.

Salt is the great issue plaguing Potions as a department. Mockery and failing averages breed contempt, and salt accumulates like a thick, rind-like exterior, shielding its occupants from events of the real world, and

One night I was walking to stargaze in the Columbia Ice Field at those AstroFire events that Physics Club or something related to Physics Club holds. Anyways, I walked along Columbia Street to get there. In a parking lot, I saw a cat sitting there. Being a cat lover, I approached it in the most inoffensive (to a cat) way possible. I didn't make eye contact and I walked towards it slowly. As expected, the cat ran away from me when I approached it. I kept following it around the parking lot and got offended when it finally ran under the building. Then I stopped to think, to put myself in the perspective of that cat. To that cat, I am just a weird large hairless creature. I am a stranger and that cat has never seen me before. We have no rapport and the weird furless creature is just incessantly approaching me, not looking me in the eye, and trying to touch me. As a human, if someone attempted that on me in the middle of a parking lot, in the middle of the night, I would be terrified. So I understand you cat, I understand why you would be scared of me. But in my defense, I give great pets and I am very nice to cats.

I am very socially awkward and have weird views on many things. One of these is washroom etiquette. Sometimes when you go to the washroom, other people will join you (Disclaimer: this is from the perspective of a woman). I enjoy the comradeship of it all but why? Why do we need to go to the washroom as a pack? Maybe I don't go outside enough and haven't been around enough to enjoy the gossip but if I go to the washroom, I either want to go number 1 or 2. Not to have a conversation while trying to pee. I appreciate others being there for moral support while I go to the washroom

but come on, I am uncomfortable with that.

Have you ever considered the perspective of a dog? They see us two legged humans as their god. We somehow bring home food to feed them, control giant metal beasts that bring us to places, and are able to throw tennis balls really far. The dog runs out, finds the ball, and returns it to us. We make light appear in rooms even though it is night time and we watch moving pictures of things that aren't really there. Dogs will never understand the logistics and the science that go into the technology that we know and love. They are too dumb, their brains can not handle that. Then as the dog grows old, their joints become arthritic, their sight weakens and they can't run for as long anymore. They see their owner, as young as ever, our aging process so much slower than theirs, almost as if we will live forever. Only a few dogs can tell other dogs about outliving their masters. Essentially to dogs we are gods. We provide everything for them and we are the reason they exist. This makes me wonder if there is a human equivalent of that. Something that we live amongst that takes care of us that is beyond our comprehension. If so, what is it? When I grow up, I want to be big. I mean really big, I want to be so big that my life span is near infinite, where the passage of time is slowed so much that a year feels like a second and I can watch the stars form and die. I want to be able to watch glass, an amorphous solid, melt and flow like water over a waterfall. (Copy editor's note: Glass is not an amorphous solid. See the latest episode of the Titanium Physicist for details).

But that isn't possible, it would be very cool though. It's good to dream big though.

hence it did not pass.

Now, one may ask, why one earth may one oppose the suggested, and mutually beneficial, deal?

The short answer: bitches.

The long answer: still, bitches, but allow me to elaborate. Some are living under a dark cloud, touting the benefits of screwing people. They believe that if others look bad, they look better. What type of system is this?

Let's investigate the extent of such backwardsness:

1. No one important in your future will ever ask about the performance of your classmates.

2. No one important in your future will ever appreciate your skill level in screwing people over.

3. No one who could potentially become important in your future will ever want to become important in your future because of your skill level in screwing people over (aka good luck getting married *cough* Potioners *cough*).

4. Snakes are not cool. Except the reptile kind. Which are literally cool.

In summary, there are no reasons, selfish or otherwise, to explain this result. It will never harm you, and will likely be beneficial. One would only oppose such a suggestion to harm others.

The final explanation is that the level of salt accumulated upon the flesh of division B is so thick as to question whether there remains any element of humanity underneath. Might the lost coin toss, from last year, be sufficient cause to troll their brother, division A? Might this system have descended to new, previously unattainable, levels of the abyss, in which backstabbing is commonplace?

Either explanation is possible, and both

Continued on Page 7 as
"Whispers of an Uprising"

<http://caiti-online.blogspot.ca/2009/03/cerberus-three-headed-dog-that-guards.html>

THE TIN SOLDIER

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Nebuchadnezzar II

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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.

Totally Accurate Acronyms

ACRONYM MASTER ON THE BALL

After a long year at Waterloo, I've FINALLY become accustomed to all the acronyms around campus and some of their reasons for being named. I wanted to share with you a few that I learned about to properly inform the Waterloo population.

IW – Illiterate Writers

This one kind of speaks for itself. Don't believe me? Just read this article.

EWB – Engineers Without Bananas

I mean, I don't see any engineers walking around campus holding bananas, so I think it's safe to assume we're all part of the EWB. And if you're not part of it, hook me up with some bananas please.

PAC – Please Avoid Construction

The acronym may be temporary, but the trek to CIF is forever.

SLC – Super Loud Construction

Alternatively, for the weekends, "Some Lunch? Closed."

UWP – Useless Without Ping Pong

If you aren't using UWP's residence ping pong tables to become the best in the building then you're living in the wrong building. That stuff was very competitive.

DWE – Down With EngSoc

Ahhh, the great protest of many decades ago, where students rallied against EngSoc for making changes without consent of the student body (it used to be just the executive). This was when Roberts Rules and all these council meetings began to open for students to fix issues and whatnot. It was a positive event in the end to hold proper meetings to adjourn the constitution in any manner.

SCH – Sells Countless Hoodies

If you're an engineering student and

you don't own one of the Waterloo hoodies, are you really an engineering student? Bonus points if you bought before you started 1A.

CLV – Castaway Living Village

It's the furthest residence so I feel kind of bad for them but it's got good living space so it evens out I guess.

POETS – ?????

I'll leave this one for you to figure out. Here's a hint: It's mentioned in a past Iron Warrior article in a VERY OLD issue (I just found out myself that it was mentioned here). Contact us back with the appropriate acronym to win absolutely nothing except the minute satisfaction of figuring out the acronym and going, "huh, so that's what it stands for."

CPH – Coffee and POETS Hall

As a nanotechnology engineering student I pretty much only go here for these

reasons so that's why I'm naming it this way. Or could be cookies and POETS because the cookies in the C&D are top tier cookies.

RCH – Really Confusing Hall

I'm not talking about the layout of the building. Some engineering lectures happen in here, and well, yeah, that's what makes it confusing. Remember to use your professors' office hours folks. And of course....

UW – University of Washington.

This was the first result that came into google for me, and I didn't look back. The University of Washington is based in Seattle and has a great alumni network. With such disruptive innovation, it's no wonder this tech University is so well renowned around the world. I really wish I went there. I've heard they've got a lovely president too. I've heard they've got a lovely president too.

Scorpio Sam

SCORPIO SAM

ASTROLOGY, A LEGIT SCIENCE

The zodiac is amazing, isn't it? A true marvel of ancient mystical spiritual achievement, it was, to discover the relationship between the heavenly spheres in their unknown dance and the cosmically-connected humans below.

The practice of astrology has changed so much since those early, foundational days. It was clear to the shamans of old that, no matter the precision with which they tracked the motions of Mars, Jupiter, Mercury, and Nibiru, they could not divine the entire human condition.

The first major progress in the study of astrology occurred in the year 1569, when the alchemist Galileo gazed upon the sphere of Jupiter, aided by the application of quartz divining crystals, and saw the dance of the moons. Suddenly, the heavens opened up to him, and he saw the truth.

It may seem like a quaint, elementary concept today, but the idea that there are heavenly bodies that cannot be seen by normal humans--that require a particularly clear mind or ritual preparation to observe--was an incredible revelation, and a dangerous one at that. The thought that mediums and warlocks, witches and soothsayers might finally be able to predict human nature to an infinite

degree was so offensive to the church that they brutally suppressed the information.

Modern astrology, as we all know, is a frightfully accurate and precise art because of the increased sophistication of modern astrological charts. However, the work is not done. Just last year, a collaboration of Washington State Druids and Louisianan fortune tellers managed to use advances in colour therapy, meditation, and introspection to sense mysterious objects known as gravity waves. These waves represent a deeper spiritual connection to the universe's energy, allowing us to know ourselves on a new plane.

It is likely that our work will never be done. There will always new ways to better

understand our connection to the universe. Spiritualists are using increasingly-exotic methods, and reading increasingly-obscure texts to find newer, deeper energy. There is even fascinating work that uses the science of genetics, of all things, to delve deeper into the concepts of chi and chakratic aptitude.

It was once the dream of shamans to know the entire universe and all things in it. However, we now know that everything is connected, and to know anything about the universe is to know everything about the universe. Unfortunately, it is not possible to know the entire purpose, and so we must make do with our ever-more-accurate approximations.

Whispers of an Uprising

Continued from Page 6

are deplorable.

So the real question remains: will this incident spark a civil war, or a military coup?

In the first case, division A will turn on division B. The two may have emerged from the same womb, but salt has turned the tables, and backstabbing is the only way to make it in such a world. In the terrible

case that division A is too angry to wait for definitive proof supporting such allegations, and that they are incorrect in believing such horrible capabilities of B, the damage will be irreparable. In the even more terrible case that division B was, in fact, in possession of such horrible capabilities, the damage will be astronomical.

In the second case, both will band to-

gether, finally rejoining the twin it long ago separated from, to overturn the hierarchical system of figures in positions of power. Armed with hair dryers, they will march as one unit in a show of unity. A grand show it will be, yes, but a show just the same.

As a pessimist, and someone who always tells the truth (I make great cookies), I must share my prediction that they will miserably

fail in this very noble endeavour. Potioners could never successfully execute a coup.

In consequence, the Potioners will be banished to the dungeons (oh wait, they already are). They will be tortured with an ungodly quota of work (oh wait, they already are). 95% will be held back (ok, that's new), leading to a higher accumulation of salt.

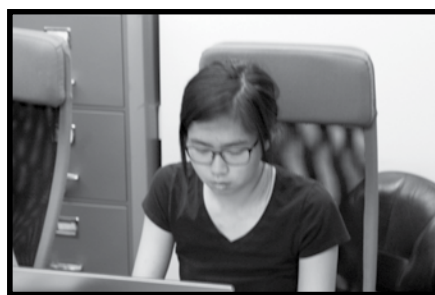
And the vicious cycle continues.

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

"Where do you want to eat in the plaza?"



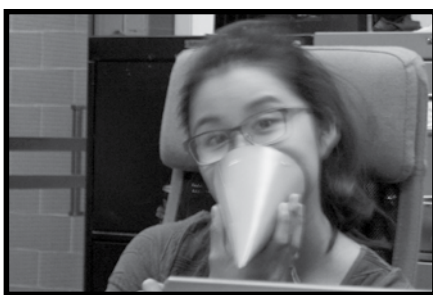
"Idk."
Big Sister, Hungry



"Idk."
New Hire, Procrastinating



"Idk."
Trump Fan Girl, Broke



"Idk."
Leafy Thoughts, Still Here



"Pita Factory."
Keener, Decisive



"Idk"
Loves Dogs, Late

Seams Unusual: Twee



TAYLOR LINDBLAD

SEAMS UNUSUAL

Welcome back to Seams Unusual, where interesting and uncommon alternative fashions are handed the spotlight. Each issue will delve into the distinguishing features of the unique style, a short history on how the fashion was born, and tips on how you can start putting together your own alternative outfit.

In this last issue of the spring 2017 term, Seams Unusual will be turning its attention to a style that seems to be simultaneously trendy and relatively underground – the “next generation hipster”, twee fashion.

Twee seems to be an evolved version of the early 2010s hipster, losing the pretentious air, too-tight jeans, and weird facial hair but keeping the charm as well as the attraction to vintage and retro paraphernalia. The fashion is very bookish and somewhat awkward – think old-timey librarian or uniformed schoolgirl/schoolboy from the days of yore. Consisting of items such as button-down shirts and skirts, cardigans, over-sized sweaters, floral dresses, pleated skirts, bomber jackets, and leather boots, the look instantly portrays a very autumnal picture, like something out of a back-to-school Ivy League clothing catalogue. The aim is to look sweet and romantic, adorned in dainty brooches and vintage necklaces, plaid scarves and leather belts, with a hint of mischievous schoolkid flair. Twee has such a cute and put-together appearance, and, paired with actual vintage pieces, it makes for a timeless look.

The name of the fashion itself comes

from the sound a young child would make when attempting to say the word “sweet”, instantly lending to the cute and youthful aesthetic of the style. It’s supposed to mean “pretty” or “nice”, especially when used to describe something endearingly nostalgic. However, it can also be used in a condescending manner, if something is excessively quaint or over-the-top kitschy and sentimental. Placing the exact beginnings of twee fashion is a little difficult, although it seems to have come into the picture at the same time as the modern definition of a hipster and grew alongside it. While they are fundamentally different alternative fashions with different core values in not only their choice in clothes but also the foundations of the accompanying lifestyles, both twee and hipster fashions incorporated the same trends at the time as well as set the trends by bringing back components of vintage wardrobes.

This is definitely a fashion to hit the vintage stores for. While you can get some new items from regular clothing stores selling trending revivals of old-fashioned pieces (oxford shoes, chunky cable-knit cardigans, plaid button-down shirts, etc.), the entirety of twee fashion revolves around vintage clothing. If you can get your hands on a real retro school uniform, scratchy wool sweater, pleated tartan skirt, and all, you’re golden. As long as puberty didn’t work on you and you’re still the same size as a schoolkid so you can actually fit in the uniform (like a certain Iron Warrior staff writer, sigh). With July coming to a close and malls starting to stock their back-to-school wares, now is the perfect time to consider giving your wardrobe a twee overhaul.

(This article was not sponsored by the local vintage clothing stores. I swear.)

Student Debt Load Survey



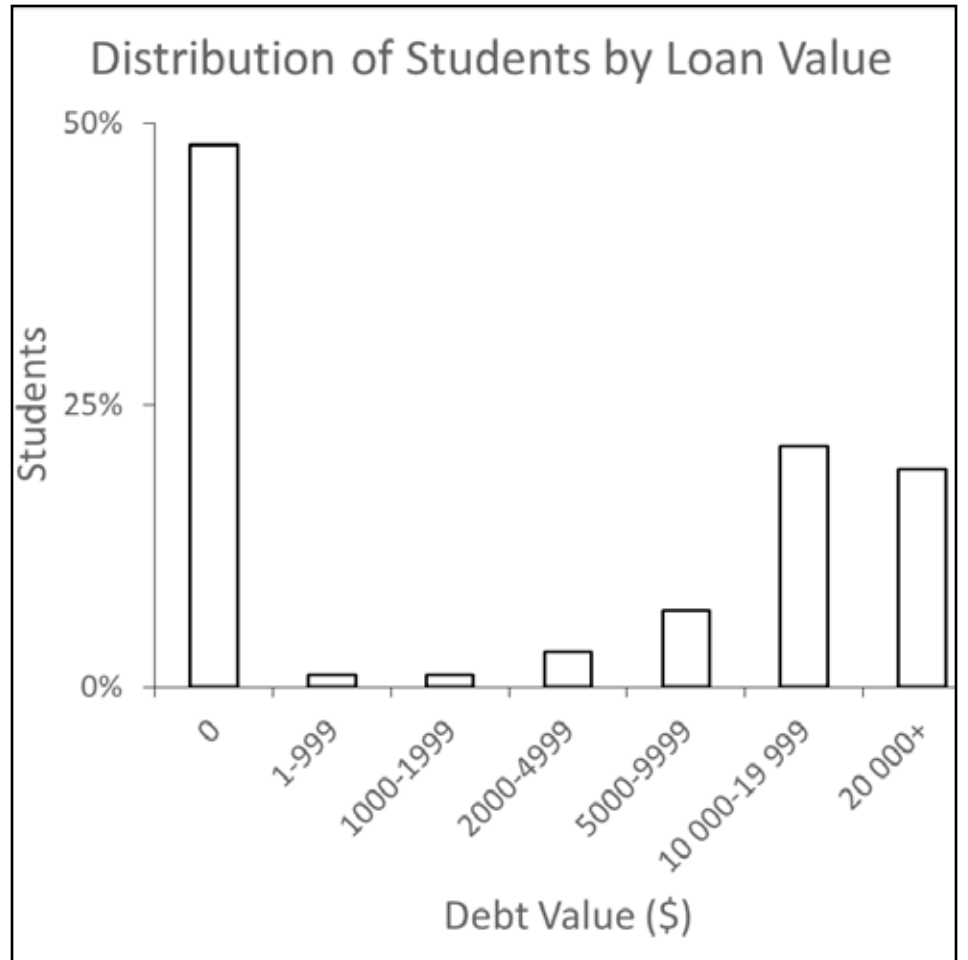
CAMERON SOLTYS
4A MECHANICAL

As is traditional, the Office of the Dean of Engineering was kind enough to provide The Iron Warrior with the Student Debt-Load Survey. Thank you to Karen Dubois, Acting Manager, Faculties & Space, for giving us the report.

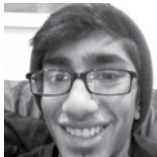
125 students, 4% of those solicited,

responded, with responses to individual questions ranging between 118 and 54 respondents. Select other results are below:

- 64% of students receive familial support
- The average cost of living is \$14 517 per academic and \$5567 per work term
- 48% of respondents have student loans and 58% received OSAP
- 57% of students felt hardship due to increasing tuition
- The average weekly coop salary was \$929 per week



Online versus Offline Shopping



HASAN AHMED
1T NANOTECHNOLOGY

So Prime Day just passed on July 11th of this year, and although there were a few deals that were worth checking out, none of it really struck me as that interesting. I figured I could wait until Boxing Day or Cyber Monday to capitalize on deals with a larger variety of options. But that got me thinking: is offline shopping going to keep up with the rapid increase of online shopping? Should I even waste my time waiting for Boxing Day, or should I capitalize on the online offers that come every once in a while?

So there’s obviously pros and cons to both sides of the argument. Online shopping is good because you can shop for specific products that are your taste. Any specific monitor with this resolution and that refresh rate blah blah can be found fairly quickly and you can look at competitive prices. Sites like eBay also enhance the online shopping experience by bidding for rare items that you definitely would not find in a store. It’s a double edged sword though, as you could end up paying pretty high prices for some of the stuff you buy. So if you’re a collector of anything, this type of shopping is great for you. However, you DO have to wait for a few days for shipping and handling reasons. Not only that, but most good online shopping happens on US based sites, with US currency. Thus, you always have to account for paying more than what it states, and then include shipping on top of that. It’s usually higher for interna-

tional shipping AND it will take longer than someone in the US. Thus, Amazon Prime isn’t a terrible investment if you’re an avid online shopper. I’d still avoid it if you only use the site every once in a while, but you can try using your Twitch account (if you have an account for the video game streaming site) for a free trial of Twitch Prime for a month. Not only do you get benefits from Twitch for games, but it includes a month of free Amazon Prime. Just remember to cancel it at the end of the month if you don’t want to continue the service.

With offline shopping, there may be lines, but you’re guaranteed your item if you grab it (unlike eBay, where someone can outbid you). Also, if you know your style fairly well, there’s not much incentive to online shop if you can, for example, go to H&M and get that style of shirt you like. Some stores specifically cater to certain styles, and it’s a big plus if you like that store and it’s relatively cheap. You don’t always have that benefit with online shopping. When people shop online for clothes or shoes, chances are they’re looking for the latest fashion, thus it’s going to be more expensive. Not only that, but there’s the obvious risk of something not actually fitting you, to which returns might be a pain in the butt, if even possible.

Thus, I suggest find a happy medium. Sign up for email lists of stores you like, and try to balance between when you want to go into the store, or buy it online. Some stores have special birthday discounts which they will email you, which is a huge benefit if you like to treat yourself. As for the future of both, I think people will slowly decline in offline

shopping when it comes to electronics, MAYBE clothes too. As for online shopping, we’ll see a spike in electronics be-

cause of cyber Monday and Prime Day. Both are great forms of shopping, but at this point, it’s a personal preference.



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Where Will We Go?



What will the future of space travel look like? What will the future of humanity look like? These are big questions, and it's outrageous to attempt to answer them in a short column like this, but they are interesting questions nevertheless. However, there is another question that this column could hope to broach: how amazing will the future be? There is a subtle difference between this question and the previous ones. It is very hard to guess what technologies, social trends, political changes, or unknown events will define the next century, much less millennia. It may be that there are true visionaries, both ancient and contemporary, that have successfully gleaned the future. However, it is probably surmountable to try to separate the visionary from the lucky guesser, and the lucky guesser from the crazy fool.

Instead, consider this: why isn't humanity now living in the future? Where are the flying cars and the jetpacks? The answer is this: the future is here, just different than anticipated. There are no flying cars, but there is a hyper-efficient taxi service called Uber that can turn almost any car on the road into a service vehicle, and the service is accessed by a universal communication device the size of one's palm which (depending on the model) costs about as much as any other major appliance and a cable subscription. There are jetpacks: they only operate over water, but they are absolutely here. In the same way, this column cannot hope to guess at what the future will be; it can only talk about what other visionaries or loonies have talked about, with the hope and confidence that the future will have a similar store of amazement.

The Kardashev Scale

In 1964, a Russian astrophysicist looking for extra-terrestrial intelligence (work which continues today through the Search for Extra-Terrestrial Intelligence (SETI) Institute), came up with a scale that could be used to classify different civilizations that humanity might discover. This scale is based on the concept of the energy use of a civilization increasing with technology, and therefore energy use being a good proxy for technological advancement.

This scale can be thought of, in the

most broad sense, the kinds of things that different civilizations, including humanity, might be able to do as they reach different levels of energy consumption.

The initial scale included three types of civilizations: I, II, and III. Other theorists and dreamers have since expanded it.

Type 0

A pre-type I civilization like modern humans, relying on finite and limited sources of energy like dead plant matter.

Type I – Planetary Civilization

A civilization that is so advanced, it requires all the energy that its host planet can provide. The majority of this energy comes from the nearby star, so this requires covering almost all of the planet in solar-harvesting technology, or possibly filling the local space with solar panels. Humanity is currently on-track to reach this state in 100 to 200 years, and will then control 10^{16} W of power. Such a civilization would probably have control over all the energy on the planet, including the ability to control things like the weather, volcanoes, and earthquakes.

Type II – Stellar Civilization

The obvious next-step for a civilization that has exhausted new power sources on its host planet is to move on to its host star. If all this energy could be harnessed, the civilization would control 10^{26} W. There are many theories of how this could be done. For instance, a gigantic sphere or networks of satellites could be built around the star, known as a Dyson sphere or Dyson swarm respectively. This Dyson swarm was first proposed by physicist Freeman Dyson, who argued that SETI-type alien-seekers should try to seek a type II alien civilization by looking for a relatively cold (0°C) but very large object using infrared light, the characteristic signature of such a device no matter its construction.

Initial (obviously high-preliminary) estimates suggest that there could be enough mass in the solar system to construct a Dyson swarm, but there are a multitude of other technical challenges that are currently impossible to solve, much less unknown technical challenges that presumably exist.

A type II civilization would be essentially indestructible, at least from outside forces: an object such as a comet or asteroid on a collision course with the homeworld could be vaporized with ease. If that was not an option, the type II civilization could probably move the endangered planet

out of the way, or move another large planet into the way to intercept. However, given the large material requirements that constructing and maintain a Dyson swarm would take, it is probable that the offending asteroid would have been long-ago disassembled by armies of autonomous mining drones.

Type III – Galactic Civilization

The last of Kardashev's initial civilization types, this civilization would harness many billions of stars to attain power consumption on the order of 10^{36} W. This stage of galactic civilization is significantly constrained by the speed of light, unless a faster-than-light (FTL) method of travel is discovered. Such a method of transport is not out of the question: there is some limited work into a theoretical device known as an Alcubierre Drive. This device, also known as a "warp drive," gets around the speed-of-light limit by moving at sub-light speeds through space while making space warp at incredible super-light speeds.

The warp-drive is, of course, the method used by space ships in Star Trek to get around the galaxy in a reasonable time. The term came from the show, and the mode of operation is similar to the Alcubierre drive, except not rigorously mathematically-defined.

If it turns out that FTL methods are not forthcoming, it may still be possible to grow a galactic civilization. One proposal to colonize the galaxy is a generation ship, a large self-sustaining vehicle like the one seen in Wall-E that houses generations of sentient beings on a trip to the stars. The technical problems, like achieving a perfect recycling program, are significant, but the social issues that are associated with a generation ship seem far more interesting. Science fiction authors, in particular, have experimented with this concept. For instance, what kinds of cultural divergences could occur over generations of space travel. Would internal strife develop? Would the citizens of the micro-world forget their initial goal and purpose? Could the people aboard a generation ship technologically regress, possibly even to the point that everything from the ship they are on to the stars—none of which are close enough to be a sun—become mysterious and unknowable?

Type IV – Universal Civilization

Since a type III civilization would probably already need to supersede current physics limits to exist, some imagineers

have decided to expand the Kardashev concept to an inter-galactic civilization, with power needs approaching the universal output of 10^{46} W. A type IV civilization would be extracting energy from sources that are probably not yet known about. Its capabilities would probably approach that of the modern concept of omnipotence.

As unlikely as it seems, it could be possible for a civilization without FTL capabilities to achieve this state of being. Such a civilization would probably have the energy and material resources, and the technical know-how to turn a Dyson sphere—star and all—into a solar-system sized generation ship to sail across the vastness of space for millions of years. Given the massive surface area that a Dyson sphere offers, the population within the sphere could happily spread over the inside of this gigantic sphere for thousands of generations without running out of space.

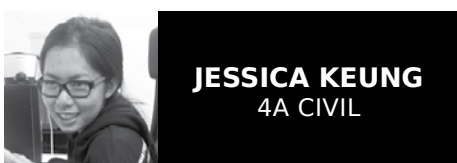
Type V – Maximal Civilization

As vague as the concept of a type IV civilization is, the concept can be extended (at least) one step further. A maximally-advanced civilization is so indefinite that it's hard to even suggest the power limits of this civilization. This civilization would have to somehow transcend universal limitations, exploiting the power generation opportunities of parallel or alternate universes, assuming such concepts exist.

At this point, if not with a Type IV civilization, the purpose of this article—to imagine how wonderful the future may be—begins to break down because the concept of a maximal civilization, capable of maximally-advanced technical feats, is an asymptotic limit that will never be met. Nevertheless, the concept gives some sense of the limits of human imagination, and the goals that could someday be sought.

The closer, more modest predictions of planetary, solar, and galactic domination are probably more suitable for imagining the scale of discovery, science, engineering, and technology that might someday be attained. That does not even touch on the opportunities for artistic and cultural achievement. The connectivity of the Internet facilitating the Arab Spring, and visual masterpieces like the movie Avatar, are two off-the-cuff examples of the cultural and artistic advances that accompany modern technology. Imagine the things, horrible and spectacular, that could be done when stars are the playthings of the denizens of Earth.

You Should Donate Blood!



Most of the readers of this paper will be fairly healthy young students. We live our lives not worrying about terrible accidents or horrible diseases that can affect anyone. Usually we don't think about our own mortality but what we can do is help others out when they are in the most need. We can do this by donating blood through the Canadian Blood Services. The closest blood donation clinic is on 94 Bridgeport Road East in the Walmart-Sobeys plaza.

Blood and blood products are a critical part of everyday medical care including major surgeries, medical procedures, cancer treatments, and managing disease. Some of the causes you can help with when you donate blood is heart surgery, leukemia, car crash victims, and aplastic

anemia. People may need multiple transfusions, and/or daily platelet and plasma transfusions. Blood has no substitutes; it cannot be replaced with animal blood or be manufactured. By donating blood, you can save the lives of up to three people, make a difference in your community, and ensure that adequate supplies of blood are available for you, your loved ones, and everyone else. There is a constant need for regular blood supply because blood can be stored for only a limited time before use.

There are different components of blood that can help different situations: red blood cells are used in emergencies, during surgery, and to help people having cancer treatment. Platelets are used to treat people with bleeding disorders and cancer patients. Plasma is used to treat people undergoing extensive surgery, trauma patients, and patients with liver failure.

For first time donors, it is important to

be in good general health, feeling well, and be able to perform your normal activities. You must be at least 17 years old and if you are between 17 to 23 years old you must meet the Canadian Blood Services height and weight requirements.

The donation itself is only 8 to 10 minutes long and afterwards, you will be able to enjoy refreshments to allow your body time to adjust to the slight decrease in fluid volume. Free cookies and juice under a nurse's supervision are the result of your gift of blood. After giving blood, you should look after yourself for the rest of the day and drink plenty of fluids. You will also want to avoid strenuous activity for 6 to 8 hours. You can return to donate blood every 56 days for males and every 84 days for females.

Another method of helping out is to donate platelets. Through the process of apheresis, platelets and other specific blood components are collected from a donor. The process is accomplished using

a machine called a cell separator. Blood is drawn from the donor, the platelets or another blood components are collected by the cell separator, and the remaining components of blood are returned to the donor during the donation. This donation process doesn't take long, from one and a half hour to two hours. One of the benefits of donating platelets that you can donate every fourteen days.

By donating blood, you give the gift of life to up to three people. It is a very easy process and does not take that much time out of your day to help out. There are some people who cannot donate blood although they are completely healthy, but if you are able to help, you should do it. The University of Waterloo offers blood donation services in the Student Life Centre on certain days. The next blood drive on campus will be held in the Fall 2017 term, from September 27th through to September 29th. If you can donate, then come on out!

Where Has the Term Gone?



ABDULLAH BARAKAT
PRESIDENT

Hey friends! I hope you're all doing well, and I hope that this lovely spring term has been treating you well. We're starting to wind down a bit since the end of term is just around the corner, but as you know, there's never a dull moment when it comes to EngSoc!

This term has been a great term for our lovely mascot, the Tool. We had a term-long SCUNT to commemorate the Tool, we had a great birthday party to celebrate the Tool's 50th Birthday, and we even had the man who brought the Tool to Waterloo Engineering come back to celebrate with us! I had a good time, our 60 inch friend had a good time, and this is the most spirit I have seen for the Tool

in the entire time that I have been a student at the University of Waterloo, and for that I want to thank all of you.

This term I have had the pleasure of being able to represent Waterloo Engineering and the interests of the student body in many ways. Firstly, I was chosen as the student representative to sit on a committee to determine who will be the Dean of Engineering for the foreseeable future, and we were able to reappoint Pearl Sullivan into her position as Dean for the next three years. I was also able to sit on a panel to determine the new Executive Director of Co-op at the University of Waterloo, meaning that I got to influence the decision on who will be working towards taking the co-op system at Waterloo to never-before-seen heights. I have also been a strong voice at the Engineering Faculty Council, the Examinations and Promotions Committee, the Faculty Committee on Student Appeals, as well as

four different Board of Directors (SFF, FEDS, EngSoc, and WEEF).

Recently, Rachel Malevich and myself were asked to do the opening and closing ceremonies at Engineering 101, which is an event tailored to incoming Waterloo Engineering Students. We were able to leave a lasting message with the students and their parents, and I am very proud to have had the chance to welcome new students to the University of Waterloo in the way that we did. I had the opportunity to talk to a lot of the incoming class, and I see a lot of potential in the future of Waterloo Engineering. Rachel and I have finalized our plans for the Engineering Society's involvement in O-Week 2017, and we are really excited to get the ball rolling on that.

I have been working with Peter Douglas, the Associate Dean of Undergraduate Studies for the Faculty of Engineering, on various initiatives. Firstly, I met with him to discuss

the growth of MATES and the support that the Undergraduate Office will be giving us moving forward, so we seem to have a plan in place to get that started. Secondly, I have been meeting with him to discuss my initiative of wanting to expand the professional development services that we offer, and I will be attending the Co-op Working Group meeting on July 24th in order to bring that forward to members of our faculty that will be able to advise me on the best steps moving forward.

Lastly, we have hired our incoming commissioner and officer team, and my Executive and I are really looking forward to working with them. If you are interested in getting more involved in the Society, Directorship applications will be coming out soon, so keep an eye out. Thank you so much for such a wonderful term, and I look forward to serving you as your Engineering Society President for the next 8 months. Catch you all soon ;)

MICHAEL BEAUCHEMIN
VP FINANCE

As the term comes to a close, there's really not much to discuss. The day of writing for this article is Engineering Day, which was seemingly a large success. We sold a lot of Novelties stock and everyone had a good time. Plus, the exec got to have lunch with Alumni, including Jim Pike, the man who brought the Tool to EngSoc. Small history fact: back in the day, students used to come pay their tuition by cheque, and EngSoc would set up a small table next to the collection area to beg people to opt in to paying the EngSoc fee. Within his presidency, Jim Pike convinced the university to give EngSoc a portion of students' fees lumped in with their tuition as it is today. This term we collected

\$48 050.25 in student fees for EngSoc, so we certainly have come a long way!

In other, more current, news, SYDE is also interested in partnering with RidgidWare in a similar way to our current deal with ECE. SYDE wants us to make and sell kits for their students, which will be a huge boon to us.

The Engineering Capital Improvement Fund (ECIF) submissions closed on Sunday, and decisions as to allocations will have been made by the time this article is printed. If you missed the deadline and are interested in applying for funding, you can do so any time at the EngSoc website (bit.ly/ECIFProposals). The ECIF was created as an avenue to improve capital assets of the Engineering Society, its affiliates, and Engineering at Waterloo in general. Any student can submit an

ECIF proposal. This term approximately \$2 700 were available for allocation; typically if we don't get enough submissions, excess monies will be rolled into the new E7 C&D.

As this term winds to a close, we look forward with shining eyes to the next term. For Winter 2017, I am looking for a dedicated director team for the following areas:

- Novelties (3-5 people) [low to medium workload]
- POETS (5 people) [medium workload]
- P**5 (1-2 people) [medium workload]
- Ridgid Technicians (4 people) [medium workload]
- Student Deals (1-2 people) [medium workload]

I don't expect any of my directorships to be too intensive, but I am quite keen on making sure they're not a position you can hold

while slacking off. Pat and I are planning on augmenting the Ridgid Technician position by also having the Ridgid Techs host hardware workshops. We understand that not all people will be suited to both positions equally, so work will be divided based on ability and desire, but we think it'd be a cool idea for the Ridgid Techs to share their technical knowledge not just with each other or individual students who come to the shop, but a portion of the greater student population as well.

That's all from me for now. If you have any questions for me about director roles or my position (for the upcoming election in the Winter term), feel free to drop me a line at vpfinance.a@engsoc.uwaterloo.ca. Thanks to those dedicated few who stayed with me and read until the very end. TTFN.

Ludent Stife will miss you :(

2. EngHack with our new hackathon friends from all across Ontario. We partnered with Major League Hacking (MLH) and tried for the first time to host a larger-scale hackathon. We got a lot of fantastic feedback from our hackers, sponsors and MLH, and amazing participation from all of you.

3. Waterloo Engineering Competition also had amazing turnout and participation, thanks to the amazing teams that participated and the fabulous directors.

4. Semi-formal was run by a fantastically enthusiastic director team, and we got great feedback from everyone who came out to our party. 5. EngPlay WAS LIT. Amazing cast and

crew, and unbelievable directors lead to one of the best and well-attended plays in EngSoc history.

6. Pride Parade was amazing and we had fantastic weather. The Tool got a lot of love, and everyone who came had an amazing time.

7. POETS now has compost thanks to the Environmental directors! This will be continuing into the coming terms, and we will investigate bringing it into the other engineering buildings as well!

A few more things are coming up as well to wrap up our term: Coffee House is happening after Potluck council this week. Bring a song, a poem or a story, and enjoy the friendly

atmosphere! It will be licensed, so bring some cash!

We will also be appreciating our directors next week and thanking them for all the fantastic work they have done this term. I understand how busy it can be with school, friends and family, and self-care; so from the deepest part of my soul, THANK YOU TO ALL DIRECTORS THIS TERM.

As always, I am THIRSTY FOR FEEDBACK on our events and services. If you have any opinions or feedback on things we can change email me at vpstudentlife.a@engsoc.uwaterloo.ca or come chat in the Orifice! Thanks again everyone <3

MARIKO SHIMODA
VP STUDENT LIFE

Good bye Spring 2017! What a term :O
On behalf of myself, and the Student Life commissioners and directors, thank you to everyone who came to an event this term! We had record turnouts at several events, as well as a lot of new faces! A few things stand out as the most memorable from Spring 2017:
1. All the awesome outdoor events that happened! Stargazing, Bonfire, and Beach Day all had fantastic turnouts of engineering students enjoying nature and taking a break from indoor studies.

Upcoming Events Calendar							
Wednesday, July 19	Thursday, July 20	Friday, July 21	Saturday, July 22	Sunday, July 23	Monday, July 24	Tuesday, July 25	Check out up-to-the-day event postings on the EngSoc website at engsoc.uwaterloo.ca/event-calendar/
Council Meeting #5 5:30 - 7:30 PM Coffee House 8:00 - 11:00 PM, POETS	Charity Grilled Cheese 11:30 AM - 1:30 PM, CPH Foyer Life Skills Workshop #5 6:00 - 7:00 PM	Fire Sale 11:30 AM - 1:30 PM, CPH Foyer POETS is Licensed 1:00 - 4:00 PM	Ball Hockey Tournament 12:00 - 14:00 PM		Director Appreciation 5:30 - 7:30 PM	Last Day of Classes	
Wednesday, July 26	Thursday, July 27	Friday, July 28	Saturday, July 29	Sunday, July 30	Monday, July 31	Tuesday, August 1	
WiE Wednesday 5:30 - 7:30 PM Female Professors in STEM Panel 6:00 - 9:00 PM	Female Professors in STEM Panel 6:00 PM - 9:00 PM Puppies in POETS 12:00 - 3:00 PM	Final Exams Start					 

Aaaaaand that's a wrap :) (and what comes next)

PAT DUONG
VP ACADEMIC

Hi All! I want to give everyone a big thank you for a lovely term and for the amazing level of participation in all things feedback related. There have been quite a few things that have wrapped up this term and we'll be looking forward to what's next:

Waterloo Works

Over 380 people responded to the WaterlooWorks Survey, of which about 43% were engineering students. The preliminary results will be available here: bit.ly/WaterlooWorksS17

Thank you all so much for participating and giving feedback!

WatPD

The faculty is looking towards drawing conclusions and making recommendations for shaping the future of the WatPD course. Students have said

that they value developing soft skills but many students (although less than the majority of respondents) felt that WatPD as a program was helping them improve soft skills. I urge students with ideas to make suggestions about ways to improve the program (just email me!). The results of the survey can be seen by Waterloo Engineering students at <https://www.eng.uwaterloo.ca/~watpd>.

Exam Bank

Final Exam season is rolling around (too soon!). Help the future you today by contributing to the EngSoc exam bank! We're a database of many past exams from courses all across the Engineering faculty. We might have the solution you're looking for, but you can guarantee others to have it by submitting your old exams! Whether they're self-written, teacher-provided, are solutions or just the bare exam, you can submit them and win fabulous prizes! You have a chance to win gift cards by making a

submission.

Email exambank@engsoc.uwaterloo.ca today and help future Engineering students!

Depending on the outcome of the last council meeting (which has yet to happen), we may be looking to collaborate with our faculty on growing the EngSoc Exam Bank as a resource. As our exam bank directors have investigated our gaps and have identified the lack of upper year exams/exam prep material on the exam bank. After having talked to other schools, I think it would be possible to have a faculty-student partnership much like U of T or Lakehead do with supporting students with exam-studying resources.

PEO Pre-Graduate Experience

Did you know that up to one year of co-op experience after 2B can count towards your accreditation as a professional engineer (that's right your P.Eng!) after you graduate? This may be

an option you may want to consider! For more information feel free to check out the PEO Pre-Graduate Experience Form which can be found in the link below:

http://www.peo.on.ca/index.php/ci_id/2059/la_id/1.htm

MATES

UW MATES (Mentor Assistance Through Education and Support) has gotten space in the Engineering Counselling office to trial 10 hours of peer-to-peer drop-in/appointment-based counselling support for the Fall 2017 term. It'll be wonderful to see more Mental Health support on campus within Engineering buildings.

It has been a great honour to be able to represent the student voice to the various groups across campus and I look forward to seeing you all again in the Winter term!

STEVEN JIA
VP COMMUNICATIONS

Hey everybody! Spring 2017 is coming to an end and that means that my term is just about done. It's been an absolute pleasure to have served as your VP Communications for the past eight months and it's due to all the amazing people I've had the chance to work with. Obviously, some thank yous are in order!

To the marketing and media directors, thank you for helping EngSoc get the word out about all the events and services that we run. To our wonderful Advertising Commissioner Sarah, thanks for finding new ways to increase exposure on our social media channels and managing your directors well. To Council, you guys were actually quite fun to work with this term! To all the VP Externals I've met at ESSCO and CFES, thank you for making each and every conference a highlight of my term. To Mary, as always, many thanks for your steady hand in guiding the ship that is EngSoc and keeping us afloat with all that you do. To my fellow executives, I can't say that I'll miss all of you (jk Michael you're ok I guess), but being part of the same team as you guys and accomplishing all that we have has been one of the most memorable and meaningful experiences of my university career. You guys are hilarious, smart, enthusiastic, supportive, occasionally annoying, and incredibly committed to improving the engineering student experience at Waterloo. I couldn't have imagined better people to have been an executive with, so thank you!

In terms of updates, other than completing the ESSCO AGM 2017 conference report and producing another exec video, not too much has happened recently. The media team did cover quite a few cool events such as Engineering Day, so check out their work on our Facebook page!

With the term winding down, I'll be wrapping up some loose ends and working on transition docs in between studying for exams. As you probably know, Céline will be taking over in August and I'm very excited to see where she'll take this position in the coming 8 months. We've already started the transition with regards to external representation, so

Céline will be attending any future teleconferences from ESSCO and the CFES.

The last thing I want to mention is directorships! If you are interested in graphic design and marketing, apply to be a marketing director for Winter 2018! Or if you are good at photography and videography, or want to learn, sign up to be a media director! You can also help with EngSoc's website or assist in running our social media channels. There are so many communications-related directorships and all of them add a lot of value to the society. Applications come out soon, so keep an eye out for the email or check out our Facebook page!

Alright, that's it guys! Thanks for reading all the way to the end and being a part of this journey with me. It's been real. #Peace

Steven is a Free Elf!

Awards,
Grants, and
Scholarships
Available

APPLY!
for up to
\$2,000

SFF Memorial Junior Leadership Award

For intermediate-level undergraduate students who have demonstrated outstanding contributions to the Faculty in the promotion of extra-curricular activities.

Fisher and Duxbury Leadership Awards

For graduating students who have shown outstanding leadership throughout their undergraduate career in activities that relate to engineering education.

Undergraduate Travel Grants

For: Conference Presentations, Conference Registrations, Technical Projects, Academic Professional Conferences.

Dr. F. Hecker and SFF Student Exchange Scholarships

For undergraduates participating in a Faculty student exchange program globally.

For more awards, information, and how to apply:

sff@uwaterloo.ca
www.eng.uwaterloo.ca/~sff



The Sandford Fleming Foundation

Professionalism
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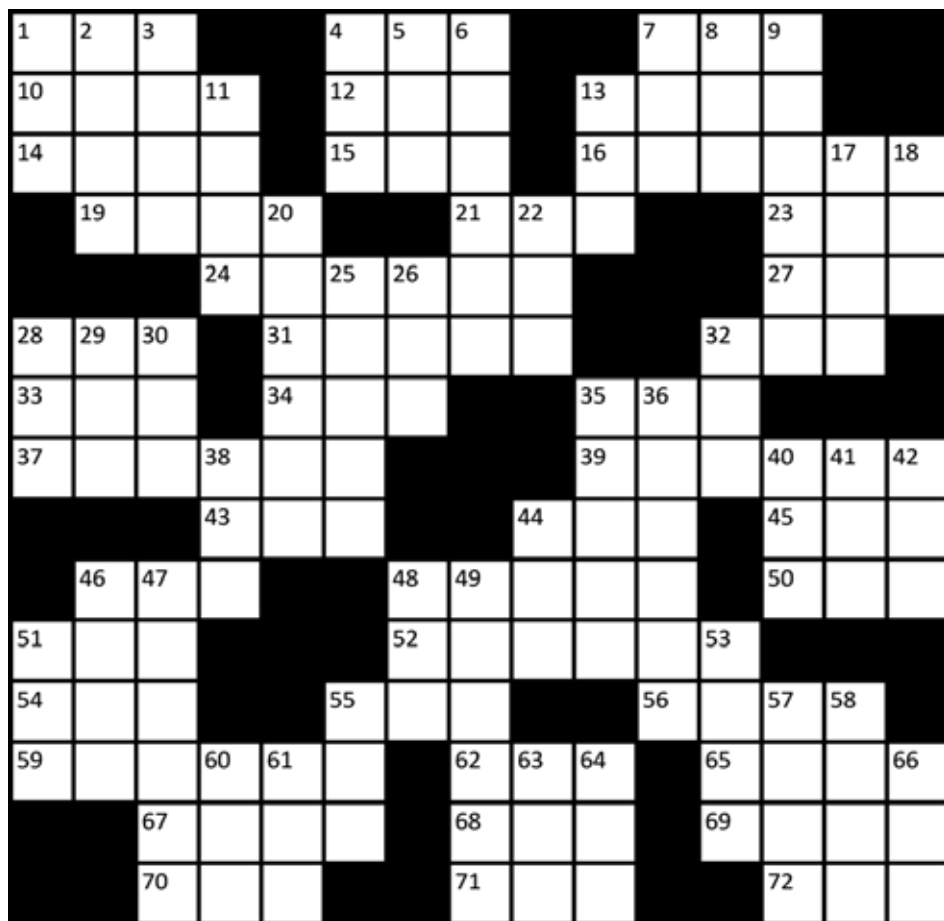
An organization devoted
to the advancement of
engineering education.

UNIVERSITY OF
WATERLOO

The Iron Crossword

Free Exam Studying Distraction

CAMERON SOLTYS
4A MECHANICAL



- 1: Institute of Canadian Bankers (abbr)
- 4: Norwegian POW camp during WWII
- 7: Sheep cry
- 10: Hybrid of horse and donkey
- 12: Snake that famously constricts its prey
- 13: "My name is ___" TV show
- 14: Small sound
- 15: Call for aid
- 16: A "masculine" girl
- 19: Homemade knife
- 21: Personal automobile
- 23: Paired with myself (2 wd)
- 24: Restrict or block, especially information
- 27: ___ 20, D&D jargon
- 28: The life-force concept behind acupuncture
- 31: ___ chart, a project management tool
- 32: Caretaker in a university residence
- 33: Pub
- 34: Girls night out (abbr)
- 35: Web portal Microsoft launched in 1995
- 37: Member of the priestly class
- 39: Christian holiday following 40 days of fasting

- 43: Maneuver to reverse a vehicle's direction (slang)
- 44: Exclamation expressing cuteness
- 45: Take advantage of
- 46: Human male
- 48: "It's a ___ in the USA!" Miley Cyrus lyric
- 50: Small bit
- 51: Dessert (British, informal)
- 52: One who follows orders
- 54: Carbonly sulphide
- 55: French for "of the"
- 56: Underground portion of a tree
- 59: First Saturn moon Cassini flew past
- 62: "___ to a Small Lump of Green Putty I Found in My Armpit One Midsummer Morning"
- 65: Encourage a crime
- 67: Mother of the Greek gods
- 68: An investments gains compared to costs (abbr)
- 69: Finished
- 70: Bank of England (abbr)
- 71: Furniture for sleeping

72: Approximate duration until meetup (abbr)

DOWN

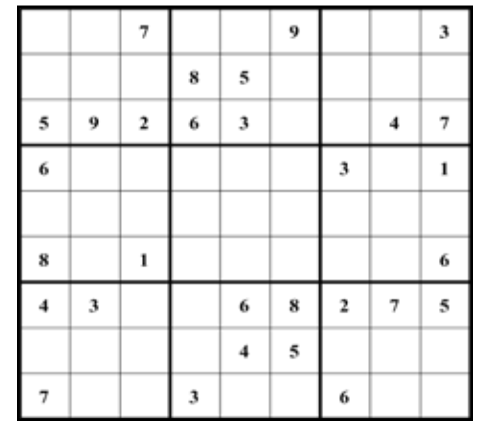
- 1: Trickster devil
- 2: Signals
- 3: Sound of disgust
- 4: Unit of both mass and weight in an archaic measure system (abbr)
- 5: Land of Finn and Jake
- 6: The Tool, for instance
- 7: Chinese steamed bun dish
- 8: An ___ and a leg
- 9: A creature without pigmentation
- 11: The stories of Gilgamesh and Odysseus, for instance
- 13: Highway 407-___
- 17: Country to the east of Saudi Arabia
- 18: However
- 20: Without meat
- 22: Paintings, music, or sculpture, for instance
- 25: ___ Drew, super-sleuth
- 26: Canadian science experiment that detected neutrinos (abbr)
- 28: National Canadian television channel
- 29: ___ 9000, advanced fictional computer
- 30: Anger
- 32: Internet infrastructure that converts URLs to IPs
- 35: Important
- 36: Tom ___, brilliant trickster
- 38: Dash or sprint
- 40: King ___, the boy king
- 41: Space agency of Rosetta
- 42: Opposite of green
- 44: Dr. ___, producer for Eminem and 50 Cent
- 46: A great amount
- 47: Accumulate on a surface
- 48: Edgar Allen ___
- 49: Take in
- 51: Soda
- 53: Route for vehicles
- 55: American agency for narcotics (abbr)
- 57: Double-reed woodwind instrument
- 58: Sleeping quarters when camping
- 60: Environmental Health Officers (abbr)
- 61: Black and yellow flying insect
- 63: Female deer
- 64: Celebration that marks the end of Ramadan
- 66: Drink brewed with plant leaves

Sudoku

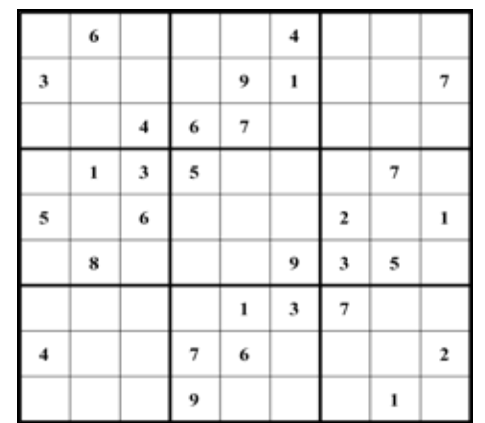
#2017-07-19

CAMERON SOLTYS
4A MECHANICAL

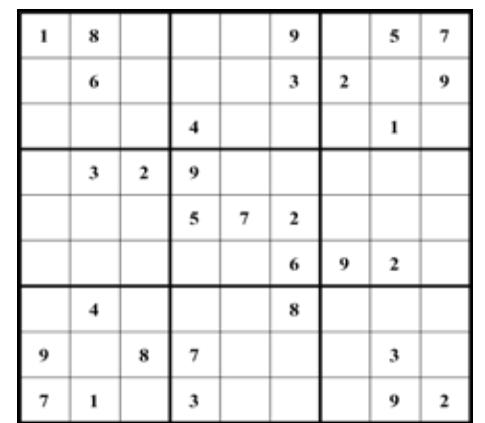
Medium



Hard



Very Hard



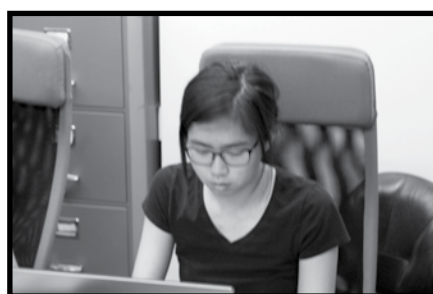
Solutions for previous crosswords can be found on *The Iron Warrior's* website at iwarrior.uwaterloo.ca/distractions.

THE IRON INQUISITION
Cameron Soltys, 4A Mechanical

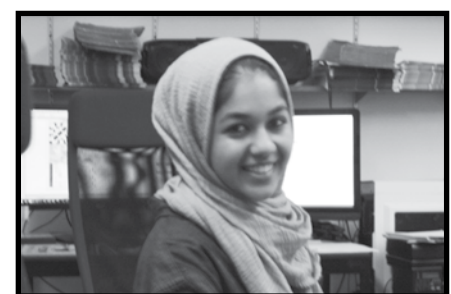
What Do You Want to Eat in the Plaza?



"I don't care. I'm hungry."
Leah Kristufek, Chemical 2016



"Kinkos"
Jessica Keung, 4A Civil



"All I can afford is tea."
Raeesa Ashique, 3A ECE



"Pho-nomenon (lol)"
Nina Feng, Environmental 2016



"Hunt a goose!"
Cameron Soltys, 4A Mechanical



"First Choice Haircutters"
Hasan Ahmed, 1T Nanotechnology