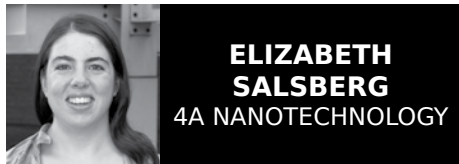




## Major Challenges Ahead Following NYC Bombings



On Saturday September 17, 2016, a pressure-cooker-based bomb device exploded in a Chelsea dumpster on West 23rd street in Manhattan, injuring 29. Similar bomb devices were also discovered at West 27th street and at Seaside Park, New Jersey shortly thereafter. Police suspect a man named Ahmad Khan Rahami planned the attack; he was taken into custody following a shootout with police. Fortunately, nobody was killed in what was considered “a failed attack.” Rahami was charged with multiple crimes, including using weapons of mass destruction, bombing a place of public use, and attempted murder of a police officer.

Rahami had been previously investigated by the FBI following comments from his father that he suspected his son might

have been involved in terrorism. The FBI, however, reported not finding any evidence suggesting that Rahami had ties to terrorism. Rahami had made several trips to Pakistan in recent years. One such trip lasted an entire year. Rahami told customs officers he was visiting his family, which appeared credible given his family is originally from Pakistan and he had married a Pakistani in 2011. After interviews at the US border on his return, he was not flagged as a serious terror threat.

Following the gunfight in which Rahami was captured, police found a notebook containing opinions sympathetic with extremist causes, including “killing the kuffar,” or “killing the unbelievers.” Anwar al-Awlaki, the deceased chief propagandist for al-Qaeda, was praised and cited throughout the notebook. This evidence appears to suggest that indeed Rahami did have ties to terrorism and was inspired by al-Qaeda.

What is unclear is whether this would be considered a home-grown attack simi-

lar to those recently carried out in Orlando, Florida (49 killed) and San Bernardino, California (14 killed). Rahami’s family emigrated from Pakistan to the US when he was a minor and was granted US citizenship. Given Rahami’s multiple trips to Pakistan, this is not a traditional home-grown “lone wolf” attack as there is reasonably high potential for terrorist organization recruitment in Pakistan. Either way, this demonstrates that efforts by authorities to disrupt recruiting networks are hardly the only necessary measure to prevent future terrorist attacks.

This attack comes ahead of a critical time in US politics with the Presidential election scheduled for the first week of November. Republican presidential candidate Donald Trump will undoubtedly gain momentum from this failed attack. Voters on the fence could easily succumb to his anti-immigrant ideals reminiscent of those leading up to Brexit, particularly, now, in the state of New York. Pollsters believe that New York, typically a Demo-

crat-leaning state, could swing in Trump’s favour this time around. The chances of this happening are definitely higher given this recent attack.

Furthermore, this attack illustrates the challenges presently faced by the FBI and other US authorities day in, day out. Out of those travelling to terrorist hot spots, how do they sort out who is travelling for non-terrorist related reasons such as visiting family and who is not? This is incredibly difficult to do. It is certainly not reasonable to ban travelling to these countries. Besides, such a ban would logically encourage home grown ‘lone wolf’ attacks. These issues are highly intertwined, and further investigation and manpower will be needed to address this difficult question.

Many years from now, history books will cite terrorist attacks as the events that defined the present time, starting from the 9/11 attacks in 2001. How will the US and the world as a whole respond? What else will those books have to say?

## Ceasefire Collapses in Syria After One Week



Another month, another broken ceasefire in Syria. About two weeks ago on September 12, 2016, the ceasefire was announced after months of talks between Russia, the United States, and their respective allies. However, only a week later, the ceasefire had completely collapsed as government forces announced they would be recommencing with air strikes on the crucial war-torn city of Aleppo, this time with incendiary weapons. Recent developments in Syria seem like a repeat of events back in February, when the first ceasefire was announced and also quickly fell apart. The collapse of the latest ceasefire has further worsened the already abysmal living conditions in and around Aleppo.

Russia and the USA support different sides in the Syrian Civil War. Russia backs the de facto dictatorship of Bashar al-Assad, while the US aids the coalition of opposition forces rebelling against the government. However, politics in the conflict are complicated by a number of issues. First off, the so-called Islamic State (ISIS) is an active force in the war and has seized large swathes of eastern Syria. However, in recent months they have started to lose ground and have withdrawn troops to deal with increased pressure in Iraq. Al-Qaeda-backed Jabhat Fateh al-Sham (formerly the Al-Nusra Front), has also been a major participant in the war. Neither of these factions are supported by the USA or Russia, though Turkey and Saudi Arabia support them and their allies. To further complicate

things, the Kurds, an ethnic minority with populations primarily in Syria, Turkey, and Iraq, have also been a major faction in the war. The Kurds are opposed to the Islamist militias and the government, but are a separate faction from the main opposition. They are supported by the US, but Turkey is actively opposed to them due to their links with Kurdish separatist groups that operate in Turkey itself. The multitude of factions involved in the war, each with their own aims and agendas, has resulted in the longest and bloodiest conflict to come out of the Arab Spring, and possibly in decades.

The civil war grew out of the Arab Spring, a revolutionary wave of protests beginning in 2010 that rocked the entire Middle East. In many countries, the public performed protests and demonstrations against authoritarianism, corruption, and poor economic conditions; in some of these countries, these protests and demonstrations devolved into revolt and civil war. The Arab Spring had a wide impact on the Middle East, and has resulted in regime changes in some countries like Tunisia, Libya, and Egypt. However, most countries’ authoritarian governments were able to maintain their grip on power, and even in those countries where strongmen were overthrown, conditions have either remained the same or actually worsened. For example, Egypt experienced several years of political instability, and only in the last year has had a stable government, though the President comes from similar military roots as the previous dictator. In Libya, dictator Muammar Gaddafi was ousted with the help of NATO air support, but the country is now fractured between multiple groups and no one government has been able to reunify the country.

However, the worst conflict to come out of the Arab Spring is almost unequivocally the Syrian Civil War. Syria has been ruled by the Assad family since 1970 after a succession of coups that ended democratic rule. The Assad family are Alawites, a minority Muslim sect similar to Shia Islam. Syrians predominantly practice Sunni Islam, and thus the Assad family has had to use authoritarian measures to maintain power.

The Syrian protests began with calls for more civil freedoms and democratization, but they quickly shifted to demanding the outright removal of the Assad regime. The government responded with brutal crackdowns which only served to intensify protests. Eventually, sections of the army became disillusioned with the Assad regime and defected to join opposition militias against the state. The conflict quickly escalated from here into the geopolitical nightmare that exists in Syria today.

The war has raged on for five and a half years, and has settled into a bitter stalemate between the opposition and government forces. Fighting has been most intense around the city of Aleppo, Syria’s largest city and the second most important after Damascus. The government has seized the western half of the city and encircled the rebel-controlled eastern half, but neither side has gained any meaningful ground since.

Though no faction has emerged as the winner in the war yet, the biggest losers have been the Syrian people. Five and a half years of civil war have all but destroyed Syria’s infrastructure and economy, leaving most of the populace in desperate need of even basic supplies. Food prices have gone up several fold

since the start of the war. Conditions are among the worst in Aleppo, where the remaining population lives in fear of bombings and air strikes around the clock. Both sides, especially the Assad regime, have been accused of committing war crimes and using chemical weapons, which are forbidden under the 1993 Chemical Weapons Convention.

Syria’s pre-war population was around 23 million. Today the population still living in the country is around 17 million. Around 10 million have been displaced overall, and 6 million people, nearly one in three, have fled the country to seek refuge in neighbouring countries and beyond. These refugees have put immense strain on their host countries, which has caused a flare in racist anti-immigrant sentiment, especially in Europe.

Peace talks to get the opposition and government forces to reconcile have been attempted since 2012. However, neither side has been willing to compromise on any of the key divisive issues, such as the removal of President Assad. Every time a ceasefire has been proposed, it has collapsed within weeks. As talks continue to stall, it seems there is no end in sight to the war.

Air strikes have resumed in rebel-controlled sections of Aleppo with incendiary weapons, possibly more destructive than anything yet seen during the war. The number of people in Aleppo continues to dwindle as casualties rise. The medical situation worsens every day as doctors are killed and humanitarian aid becomes even harder to access. As conditions continue to deteriorate and become more hellish, the people of Aleppo can only be wondering how much longer until peace is achieved and the nightmare ends.

# Letter from the Editor

## On the Importance of Empathy



**CAITLIN MCLAREN**  
EDITOR-IN-CHIEF

It feels as if every day there is more bad news. Between the war in Syria, the terror attacks and shootings that happen with saddening regularity, the growing controversies over police brutality and various responses to the same, and the long-unresolved refugee situation, any good news seems to get lost in a world that seems to be unraveling. All kinds of people say they have a solution; some of these proposals are selfish attempts to avoid the problems without helping those affected, while others are naively idealistic and ignore the realities of how and why these situations happen.

What does cause conflict? Of course, there are a myriad of causes from ideologies to frustration about injustices to simple differences growing out of control. Conflict is inevitable in any society, and so the success or failure of a society lies in its ability to resolve conflict. This is why we have laws and courts, including the court of public opinion; as a society, we need to be able to express, debate, and come to a conclusion on what values we live by and what behaviours we endorse or condemn.

It is clear that the structures in place are not working as they should. Whether it is government against citizen, law enforcement against citizen, citizen against citizen, citizen against outsider—all of these conflicts are happening around us. Whatever the root causes are, the solution is not to further the conflicts. Warmongering will not help. Building walls will not help. Stirring up fear and hatred against a supposed instigator is the last thing that will help. These are things that prevent an issue coming to any resolution.

Even if there is truly one person or group of people responsible for a problem, the right thing is not to hate, to fear, to use indiscriminate violence. Supposing that you do crush these evildoers so fully that whatever harm they had done is completely eradicated. What have you achieved? True, one crisis has passed, but there will be another, and another. By destroying that group, you have helped create a world where the answer to a difficulty is violence and silencing the opposition. The next group of so-called culprits may be too numerous to destroy, and fighting instead of peacemaking may lead to your defeat or a Pyrrhic victory. They might be scapegoats, and you will be responsible for the persecution of innocents. And—unthinkable though it may seem—they might be in the right.

What, then, are we to do? Can we avoid problems that we think do not concern us? Can we ignore the suffering of the world around us, hoping that it is not contagious? We cannot; we do live in the world. Every person depends upon others. Every country depends upon others. Refusing to engage with the world, out of either selfishness or fear, is both impossible and wrong. If we do not strive to improve the world, we are contributing to its deterioration because all things will deteriorate if nothing is done. If we take all the good things that we can

out of life without then giving good things back to others it means that, willingly or not, we are on the wrong side. If you are unaffected by trouble, you should spread your peace. After all, even without any altruism, it is only logical; no matter how powerful or far away you are, an unchecked problem will, eventually, affect you too.

What can we do, then, to make the world a better place? The path is not clear, but the beginning is: empathy. We can never reconcile with an enemy or make a new friend without learning how they see the world and learning how to see it the same way.

Alexander Solzhenitsyn writes in *The Gulag Archipelago*: “If only it were all so simple! If only there were evil people somewhere insidiously committing evil deeds, and it were necessary only to separate them from the rest of us and destroy them. But the line dividing good and evil cuts through the heart of every human being. And who is willing to destroy a piece of his own heart?”

Even the most abhorrent people—terrorists, dictators, fear-mongering demagogues, the guy who cut you off in the parking lot—they are all people who function in basically the same way that you do. Their motivations seem sound to them and their actions reasonable; if you were in their place, you might well think the same way. If you respond in kind, you will only convince them further that you deserve what they did, and that you are the one in the wrong. You will convince bystanders that you are the one in the wrong. Sometimes you are the one in the wrong.

This is true on whatever scale you choose. If you kill an innocent while bombing a terrorist hideout, their families will learn to hate you and be more open to extremist propaganda. If you get into a fight with an aggressive drunk, their friends are likely to attack you and the police won't be too impressed either. Even a simple argument between friends or partners does not “win” anything; it drives people further apart.

If you want to change someone's mind, you have to convince them using arguments that they would find valid. These are not necessarily the same ones you find valid. This is why you should listen to a person you dislike, no matter how disagreeable that is. Listen to them. Understand why they hate you, and what you need to do to show that you are not as they imagine. If that would require you to change, so be it.

Before you decide that you are in the right, consider the other point of view. What is your reasoning? Is it selfish reasoning? Does it put your needs before those of the other side? Does it dismiss the problems of the other side? If someone is angry at you, there is probably a reason behind it. The other party may well be wrong but, even so, their points deserve consideration.

Never dismiss a person's complaints without listening to them. Most people are not monsters, and everyone thinks that they are good. Warring factions usually have legitimate grievances, or at least a vision that they think will improve the world. Activists are supporting a cause that they think is worthy, not merely trying to upset people. Those who support unpopular politicians genuinely think it will improve their and their

families' lives. Few of these people actually deserve hate and, if they do, what good would hating them be? It will not decrease their hatred.

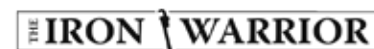
So listen to them. Listen to your racist uncle at dinner. Listen to the crazy street preacher. Listen to the arrogant atheist. Listen to that one friend you have who won't shut up about their pet cause. Listen to that guy who hates you for no reason. Listen to Donald Trump. Listen to al-Qaeda. You might learn how their life has brought them to where they are now and how you can help them or keep others from coming to that point. You might learn how to argue against their ideas in a way they will actually hear. You might learn that they are right. You will learn something.

And what should you do with this knowledge? Well, for one thing, you will be a better person for it. Don't underestimate the effect you have on the world around you. You will be bringing that much more positivity into the world. You never know when or where that will be needed. For another thing, the more knowledge you have the more you will be able to teach others. Ignorance is one of the largest contributors to conflicts and knowledge is the antidote. The more knowledge two sides of any disagreement have the more common ground they will recognize and the clearer the solution will be.

To resolve any conflict, be it personal or geopolitical, the most important thing is to find common ground. Whether it's two countries arguing over territory or a group project that isn't working out, dismissing the other side as being simply perverse or malicious means that the issues will never be resolved except by force, which is rarely a final resolution and damages all sides. Empathizing with people won't automatically resolve conflicts but it is a necessary first step. Refusing to empathize will only perpetuate misery. Never say “Those people can't be reasoned with.” Empathize with them instead. What do they want? Why do they want it? Is it truly unreasonable from their point of view? What can you give them?

Why should you do this, when the other side is likely to abuse your goodwill? Because it is precisely that kind of thinking that leads to endless cycles of conflict without resolution. If neither side is willing to be the first to soften in any way, what softening can there ever be? Yes, there will be people who take advantage of a generous adversary, but many will be willing to listen in return.

Sometimes being right is not enough. Being kind can be more important when it comes to winning people over. A logical argument presented in an arrogant or aggressive way will not resolve anything. If the other side of any quarrel feels that you truly understand their needs and are listening to them, half of the battle is over. Put aside your biases and interests for that time, and try to feel how the other party feels. If everyone would do this—if everyone could see each other not as an enemy or an incomprehensible alien but as another human being simply trying to live their life as they think best, it would be the beginning of the end of hatred, terror, bigotry, and hostility. That beginning is the responsibility of every one of us.



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## Youtube Demonetizes Big Creators



**TAHREEM FAROOQI**  
1A PLANNING

The main source of income for many YouTubers, big and small, are ads placed on their videos. Recently, YouTube has decided to eliminate ad revenue for videos based on whether their content is “Advertiser Friendly”, meaning that many YouTubers are not getting paid.

For YouTube to demonetize a video, the content in it has to violate their “Advertiser Friendly” policies. The general rules for advertiser friendly content would pertain to not being offensive or using inappropriate language, not displaying any overtly sexual content, not displaying violence, not promoting substance usage (YouTube Advertiser Friendly Terms and Conditions), and not discussing any controversial topics. Although most of these conditions are violated in many YouTubers’ content, especially the inappropriate language

condition, the last is the one that is upsetting many. The main complainants are informative channels. According to YouTube’s “Advertiser Friendly” conditions, a video cannot be monetized if it contains “Controversial or sensitive subjects and events, including subjects related to war, political conflicts, natural disasters and tragedies, even if graphic imagery is not shown”. This means that any discussion of topical events that include any controversy would be considered not “Advertiser Friendly” and so those videos would be demonetized.

But, amid the controversy, YouTube claims that their policy has never changed, that these terms of use were always in place, and that they have always been demonetizing videos that don’t follow the “Advertiser Friendly” guidelines. The difference now is that they have begun notifying their users when their video becomes demonetized. This has gotten many YouTubers angry, as they have learned that they unknowingly lost revenue on certain videos that they believed to be monetized and did

not have a chance to battle those claims, causing them to lose the income on that video. This is especially detrimental to the smaller YouTubers whose only revenue stream is from advertising, while the bigger YouTubers who have other means of income, such as direct sponsors, are better able to weather the effects.

Popular news YouTuber, Philip Defranco, is especially perturbed by this rule. Upon discovering the demonetization of his one of his videos, Defranco tweeted “Producer just got off the phone with YouTube and it wasn’t a mistake. Feels a little bit like getting stabbed in the back after 10 years”. Since Defranco’s channel is centred around the news, his videos involve topics such as pop culture, business, national and international government, war, and politics. Unfortunately, many of these topics tend to be “controversial” as well as “sensitive”, meaning that in order to maintain his primary revenue source, Defranco will need resort to self censoring or ignoring potential content. This could lead to him misinforming or under informing his

viewers, and failing to generate critical discussion on important issues.

Another issue with the policy is that YouTube is not consistent in their implementation of it, demonetizing some YouTubers’ content, but not others. According to Huffington Post, large YouTube Channel RoosterTeeth uses foul and offensive language in their videos but, unlike Defranco, RoosterTeeth’s videos still remain monetized. This suggests that YouTube will have to implement a more consistent enforcement of this policy and equal evaluation of all its partners.

Ultimately, despite the repercussions, even Philip Defranco admits that “YouTube is, of course, well in their rights here.” YouTube has always had the right to control the incoming content on their website. They have a right to choose what is and is not “Advertiser Friendly” and a responsibility to their users to advertise on content that is safe for viewing. We can expect that the system will improve as time passes, and hopefully these difficulties can be eliminated with improved transparency.

## Icon: Latest in the Plague



**CAMERON SOLTYS**  
3B MECHANICAL

The student housing market in Waterloo has been expanding quickly in the last few years. The area around the University of Waterloo and Laurier has been filled with construction, as glitzy towers go up and up. It is a real dream for the civil engineers, who can see buildings of all designs being constructed over the months as they trudge to school. What’s more, the competition to attract students is fierce; each new project is filled with amenities and services that the property owners think their primary market wants, trying to get a little edge over all the other buildings that are clamouring for attention. Unfortunately, with each new term there is a building that promises too much and fails to deliver.

ICON was (and is) a top contender for the title of most-luxurious student housing. Its lease website bills it as “The next generation of student living.” Located literally across the street from campus at Phillip and Columbia Streets,

it is a convenient place to live. It offers every amenity one could ask for: workspaces for the fabrication-minded, private study lounges, a fitness center and rooftop basketball court, and Wi-Fi everywhere. There’s even a daily shuttle to the aforementioned adjacently-located campus, and a weekly shuttle to the grocery store. Everything about the twin 25-story buildings that make up ICON are designed to be attractive to students, even the sleek mobile app they use for rent payments.

Unfortunately, ICON is also the latest student housing project that was not ready for the first day of classes. On September 2—the evening before the move-in day—students who had purchased leases in ICON received an email saying that the building would not be complete for at least another week. The reason given is that the city did not grant the occupancy permit they required to allow people to move in. In exchange for the trouble, ICON waived September’s rent and tried to accommodate students in local hotels.

As may be indicated by the fact that the city did not grant the occupancy permit, the buildings are not close to being ready

for occupation. On September 9 the south tower was deemed safe, and tenants started moving in. However, those tenants complained of missing interior doors and furniture. One apartment complained of flooding, which turned out to be the result of a poorly-brazed pipe fitting; not catastrophic, but hardly encouraging to the already frustrated students.

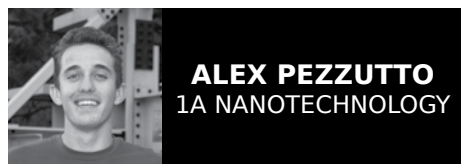
Local news sources took notice, interviewing students and indirectly putting pressure on ICON’s management. Waterloo Mayor Dave Jaworsky weighed in, saying that his primary concern was that students have a place to stay. He further commented that ICON’s lack of communication about why the buildings were delayed and how they were working to move people in “[made him] extremely disappointed.” All the publicity was undoubtedly good news for students, helping them pressure ICON into producing results. The bad news is the fact that this is a familiar story.

The previous two years have also seen unfinished apartments leaving students stuck with poor or no housing. In 2014, One Columbia at King and Columbia was unfinished, forcing students to live

in hotels until mid-October. Students attempting to cancel their leases and find new apartments found Schembri, the management of the building, uncooperative. In 2015, Accommod8u’s property 228 Albert St. was nearly as bad. While students were able to move in on time, they reported exposed wiring and unpainted walls. They were also asked to not use their balconies until further notice. While the 228 Albert St. tenants may not have suffered through the pains of relocating during the term, they were still subjected to a positively un-stellar experience in what was supposed to be a top-end apartment for which they had paid appropriately.

It’s possible to understand the property owners’ predicament; they want to get their buildings open as soon as possible to start generating income. Failing to open in September is a good as not opening until January, since few people will be looking for housing during the term. Perhaps the negative press from these three failures will cause builders to adopt more liberal timelines. Or perhaps there will always be unknowing or unscrupulous renters who are drawn in by the glitz.

## University of Waterloo Increases Female Staff’s Salaries to Account for \$2905 Wage Gap



**ALEX PEZZUTTO**  
1A NANOTECHNOLOGY

The concept of the wage gap has been a major point of contention in recent years: the most common belief that women make 77 cents for every dollar a man makes is quite a convoluted statistic. Many people interpret this to mean that women are underpaid for doing the same work that men do, yet others have questioned the validity of this purported “fact”, stating that the number does not account for variables such as job positions, hours worked, or different jobs. The actual value of the pay gap is somewhat questionable; however, make no mistake: there exists a wage gap between faculty members at the University of Waterloo, which is a

rather shocking discovery.

The investigation created a data set comprising the salaries of 344 female and 827 male faculty members which were analyzed using a regression model. Of the total population, 71 cases were identified to be anomalous and, after the data set was adjusted, the regression model was run once again revealing that a \$2905 systemic gender anomaly existed in favour of male faculty members.

How controlled was the study? Quite thoroughly. Variables including merit (faculty members obtain a grade based on their work performance out of a 2.0 score), lag of years between highest degree and year of hire, years since hire, number of previous Outstanding Performance Awards, highest degree, current rank, academic group, rank at hire, interaction between academic group, a binary variable for lecturer vs professorial rank, and interaction between lag and

rank at hire were all considered when the model was executed. The R2 value (a number used in statistics to determine how close a set of data correlates with a projected regression line) obtained from the data model explains that 90% of the variability in salaries can be described by the model. Without doubt there are other variables to take into account when deciding salaries for faculty members, but those analyzed sum up the significant ones quite comprehensively. When this data was plotted according to gender, the glaring \$2905 pay disparity emerged, with a standard error of \$701.

The report was clear in stating that a causality could not be defined, yet no alternative hypothesis was found that could justify this difference. Understandably, this discovery sparked much outrage, and the university was prompted to boost the salaries of all female faculty members by \$2905 as

of September 1st. Unfortunately, no compensation was made for inequities from previous years.

Overall, it’s great that the University of Waterloo took action to amend the problem, but should the institution be lauded, or lambasted? After all, the implications are quite damning. Why did the institution allow this phenomenon to exist in the first place? Waterloo’s reputation is sterling, being frequently boasted as an elite and innovative school that enables and challenges its students to tackle complex problems of the world and revolutionize the future. How can it promote such a sentiment when it can’t pay its female faculty properly? Whether this pay discrepancy was due to negligence or prejudice is moot; however, one thing is certain: Waterloo needs to scrutinize its own establishment more rigorously if it wants to live up to the ideals it claims to possess.

## Living In Fear



**RAEESA  
ASHIQUE**  
2B ELECTRICAL

I understand that, as a Muslim Canadian who very rarely experiences discrimination, I have no right to be writing a Black Lives Matter article, and will not pretend that I can possibly understand what these people are going through.

In the last two weeks, in cases that sadly feel like déjà vu, two black men have been killed by police officers.

Terence Crutcher was fatally shot on Friday, September 16, in Tulsa, Oklahoma. The encounter was recorded on two police cameras – one in a police car, and the other in a helicopter. He was a 40-year-old father of four.

Officer Betty Shelby came across the SUV stalled in the middle of the road while responding to an unrelated call. She stopped and told Crutcher to stop, but he continued walking towards his car, hands in the air.

Shelby said that Crutcher was unresponsive, and then she opened fire after he reached through the car window. His family argued that this was impossible, since the window was rolled up. There was also a photo showing blood on the window, indicating that it must have been closed. The footage shows Crutcher with his hands in the air, and he then puts them on the side of the car.

Shelby is a white officer who, as a drug recognition expert, believed that Crutcher was under the influence of the synthetic drug PCP. Tulsa police later found a vial of PCP in the car. On that matter, the Crutcher family lawyer Benjamin Crump commented, “Let us not be thrown a red herring and to say because something was found in the car that is justification to shoot him.” There was no gun found

on his body or in the vehicle.

Officer Shelby was convicted of first-degree manslaughter on Thursday, and faces four years in prison. In the court documents, prosecutors wrote that her “fear resulted in her unreasonable actions”, and she became “emotionally involved to the point that she overreacted.” She also had a Taser on her, but pulled out her gun anyway.

On the conviction, Crutcher’s twin sister Tiffany says, “While we are pleased to learn the officer who senselessly killed my beloved twin brother will face criminal charges for her reckless act, we understand nothing will bring him back.”

Tulsa has a history of racial confrontations. A white mob killed 150-300 people, mostly black, in the 1921 riot which is considered to be among the worst race riots in American history. Reverend Marlin Lavanhar commented that “There’s still an element of generational trauma in the culture here.” This is believed to be a reason behind why Tulsa did not resort to violence in the aftermath of this killing.

The police also made a commendable move in the spirit of transparency: they showed the police footage to Crutcher’s family, and then to over 50 influential black leaders, pastors, and officials, before releasing it to the public. These community leaders also played a key role following the tragedy, as they did not feel protesting was the appropriate course of action. Whatever the reason, this city reacted very differently compared to another American city a couple days later.

Keith Lamont Scott was fatally shot on Tuesday, September 20, in Charlotte, North Carolina. The encounter was recorded by his wife, Rakeyia Scott, and by police cameras. He was a 43-year-old

father of seven.

Scott was sitting in his parked car outside their apartment, waiting for one of his children to come home from school, when officers arrived on an unrelated call. Ms. Scott came down to give him a phone charger, the lawyers said, when she saw the cops on the scene and began recording on her cell phone. She released the video to The New York Times on Friday.

In the video, she is heard saying “Don’t shoot him. He has no weapon”, and an officer yelling “Drop the gun.” She continues to plead with the officers not to shoot, explaining that her husband has a traumatic brain injury from a motorcycle accident last year, and that he just took his medicine. She also pleads with her husband to get out of the car, and says “don’t do it”, which is ambiguous.

He gets out of the car, but it is not clear from either Ms. Scott’s footage or police footage what, if anything, was in his hands. The officers claim he held a gun, but his family and friends say it was a book. Regardless, Scott was shot fifty seconds into the video, followed by Ms. Scott’s hysterical repeated swears and shouts of, “He better not be dead.”

Scott’s death sparked protests throughout the city for the next several days, continuing into the weekend. Although the hundreds of protestors were largely peaceful, there were cases of vandalism and clashes with the police. The National Guard was brought in on Thursday to establish peace, and a curfew imposed from midnight to 6 AM. Among the protestors’ signs were some reading “Stop police brutality”, and others with the hashtag #AMINEXT.

As well as justice, protestors were calling for the police to release the footage of the incident, which they finally did on

Saturday. Charlotte police chief Kerr Putney admits the footage contains “no definitive visual evidence that [Scott] had a gun and pointed it at officers”, although they are convinced that this was the case. They also released photos of a handgun and marijuana, which they say Scott was in possession of.

Officer Brentley Vinson, the black officer who shot Scott, is on administrative leave as the incident is investigated.

According to The New York Times, police officers kill about 1000 people each year. Only 77 have been charged with manslaughter or murder since 2005, which are frightening statistics as cases like this become more and more common.

This look into the minds of a group of children can help provide some perspective on the tragic situation in many of these communities: the students at KIPP Tulsa College Prep, where Crutcher’s daughter is a student, participated in a group discussion following the shooting, led by teacher Rebecca Lee, which she documented in a Facebook post with over 150,000 shares. The younger children asked difficult questions: “Why did they have to kill him? Why were they afraid of him? Why does [student] have to live life without a father? What will she do at father daughter dances?” As did the older students: “‘What made him a ‘bad dude?’” a boy asks. “What is his height? His size ... The colour of his skin?” Lee also writes “I share this story, because Mr. Crutcher’s death does not just affect the students at my school. I share this story, because we are creating an identity crisis in all of our black and brown students. (Do I matter? Am I to be feared? Should I live in fear? Am I human?)”

Here’s to hoping that these children can grow up safely and never have to live in fear.

## The New “Kaepernicking” Redefining American Patriotism



**RAEESA  
ASHIQUE**  
2B ELECTRICAL

The return of the pumpkin spice latte, school supplies, and NFL season come hand-in-hand, although some are more eagerly anticipated than others. Some manner of controversy seems to manifest every football season, and this year’s centres around the stance taken by San Francisco 49ers quarterback Colin Kaepernick on the topic of systemic racism and prejudice. This is not a physical stance; quite the contrary – Kaepernick has made a statement regarding the prejudice with which American law enforcement and society in general deals with blacks and minorities by refusing to stand for the pregame performance of the Star Spangled Banner.

He initiated this peaceful protest before the 49ers-Packers preseason game on Friday, August 26 by sitting on the bench for the national anthem instead of standing with his hand on his heart. “I am not going to stand up to show pride in a flag for a country that oppresses black people and people of color,” he said.

Since then, he has also knelt for the anthem before all three of their regular season games.

Colin Kaepernick is biracial, and was adopted and raised by white parents in Wisconsin. The five-year NFL quarterback actively supports the Black Lives Matter movement, and has said he

will donate \$1m to local communities over the next ten months. His signature move is kissing his right bicep, a gesture known as “kaepernicking”. He seems to have redefined that term.

Many athletes have followed suit, including Brandon Marshall, Jeremy Lane, Arian Foster, and teammate Eric Reid, and those from outside the NFL world, such as Megan Rapinoe. Kaepernick also joined an Oakland high school’s football team in protest on Friday. The team lay on the ground with their hands in the air, while Kaepernick knelt for the anthem.

There have been mixed responses to this statement. The team supports his right “to choose and participate, or not, in our celebration of the national anthem”, and veterans have chimed in with the hashtag #VeteransForKaepernick. One tweet reads “I serve to protect your freedoms, not a song”. President Obama said that “I don’t doubt [Kaepernick’s] sincerity. I think he cares about some real, legitimate issues that need to be talked about”, while presidential candidate Donald Trump suggested that he “find a country that works better for him”, a sentiment that Hall of Fame coach Mike Ditka shared with stronger language. Ditka has also claimed not to “see all the atrocities going on in this country that people say are going on.”

Kaepernick has replied to accusations that he lacks patriotism with the observation that “there’s a lot of racism in this country disguised as patriotism.”

49ers coach Chip Kelly is also supportive: “You look at what’s going

on in Tulsa and Charlotte in the last two nights — it’s an issue that’s in the forefront of our country. It needs to be addressed. It needs to be taken care of because it’s not right.”

To sum up the current situation in the US: many are outraged that Kaepernick is bringing attention to the numerous cases of police brutality towards black people by refusing to stand for the anthem, but

seem not to care that the numerous cases of police brutality towards black people are becoming impossible to tally. As Kaepernick said, “there are bodies in the street and people getting paid leave and getting away with murder.”

Kaepernick has responded to death threats with the comment “If something like that were to happen, you’ve proved my point.”



Mike Luckovich, The Atlanta Journal-Constitution via fair use

# Three's a crowd?

## More Challenges Ahead for Third Party Candidates in the American General Elections

**HIRA RAHMAN  
NICK YANG**  
1A NANO, 1A MATH

As many Americans describe the 2016 American election as a choice between the lesser of two evils, it is unsurprising to see support for third party candidates soaring. In fact, national polls show that 44% of registered voters would like a third party candidate to run against Trump and Clinton in the general elections. Both Gary Johnson of the Libertarian Party and Jill Stein of the Green Party are polling significantly higher than third party candidates have in the past, at 8.4% and 2.7% respectively.

Despite this surge in support for non-establishment parties, the American political system heavily disapproves of and discourages their participation in elections, which is why neither Stein nor Johnson will be included in any national debates unless they poll at least 15% nationally. Unfortunately for them, exclusion from debates will limit their ability to establish a brand and pick up voters. To make matters worse, it is extremely difficult for third parties to be included on state ballots, due to overly complex and confusing registration laws. As a result, while Gary Johnson will appear on all state ballots, Jill Stein will not be included on ballots in six states.

Most opposition to third parties comes from the establishment, because third parties take power away from the Republican and Democratic parties. They have the ability to steal voters from one party, thereby "splitting the vote". For instance, this is a major concern for the Democratic Party this election, since the Green Party has been picking up many of the coveted Sanders supporters.

If there is one thing to be learned from the 2016 elections, it is that the American political system excels at silencing the voices of opposition. While it is a huge stretch to say that the presidency will go to Stein or Johnson, their popularity should be an indication to the establishment that the American public isn't exactly satisfied with the way things are going.

### August 31: Trump's Mexico Visit

On August 31, 2016, Donald Trump, the Republican nominee for president, made a surprise trip to Mexico after receiving an invitation from the Mexican president, Enrique Peña Nieto. Trump's visit came as a huge surprise, considering the fact that he has insulted Mexicans on many occasions. Everyone knows of his infamous plan to build a wall along the US-Mexico border, and many have not forgotten that Trump started off his campaign by calling Mexicans rapists and criminals, and later labeling Mexico as an American enemy.

Naturally, the Mexican people were not happy, and many took to Twitter to express their disapproval. President Peña, whose approval ratings are already quite low at 22%, faced a lot of scrutiny from the public due to his actions. His motivation for extending an invitation to possibly the most hated man among Mexicans is unclear, but what is certain is that Peña took a massive political risk hosting Trump and it is unlikely that this will help his likability among his constituents.

Pena is not the only one lacking public support: as Trump's poll numbers fall, it is evident that he was using his trip to Mexico as an opportunity to pick up votes by establishing a more presidential brand. Unfortunately for him, he will likely need more than a photo-op with the Mexican president to win the presidency. While fear-mongering, personal attacks, and general controversial behaviour may have helped Trump get votes during the primaries, that strategy is not likely to work in the general election. What

Trump needs is votes from various minority groups because, unfortunately for him, the American society is not comprised entirely of white males. Unfortunately, his entire campaign has been tainted by sexism, racism, and xenophobia.

### Sept 9th: Clinton's "Deplorables"

At a New York City fundraiser, Hillary Clinton, in what many claim to be the biggest political blunder of the campaign season, said:

***"To just be grossly generalistic, you could put half of Trump's supporters into what I call the basket of deplorables. Right? The racist, sexist, homophobic, xenophobic, Islamophobic — you name it, and unfortunately there are people like that, and he has lifted them up."***

The Trump campaign quickly moved to exploit this, calling Hillary insulting and bigoted towards hardworking Americans. Although Clinton later apologized for the

ing an interview on Fox & Friends, saying:

***"I just hope she gets well and gets back on the trail, and we'll be seeing her at the debate."***

Trump's response is a move that some believe to be a strategy to gain positive recognition, while subtly calling Clinton's health into question. Further milking this, Trump's campaign publicly announced he would release his health records on Twitter, urging Clinton to do the same. Clinton's campaign, further spurred by this and mounting public distrust, released a report that Clinton had been diagnosed with pneumonia three days prior to the incident. In other words, her diagnosis was kept secret from the public until recently.

This is a massive hit for Clinton's campaign. The delayed reporting of her health records and her staff's response to her collapse have further deepened the numerous trust issues the public has with her. Trump's campaign capitalizing on it in political attack ads have likely worsened Clinton's losses this month among the population of undecideds.

campaign, it may have failed to deliver the desired impact.

The bottom line is that Trump Jr. is arguably more politically incorrect than his father. This is likely a strategy to maintain support from already franchised voters while his father moves to appeal to a wider audience during the debates. Luckily for the Trumps, their behaviour is typical and almost expected, meaning that even Clinton's campaign backlash will have very little effect on her approval; if there were any Trump supporters concerned about political correctness they would have switched sides during the first month.

### September 20th: He's with Her

George H. W. Bush will be voting for Hillary Clinton in the general elections.

You don't need to be knee deep in politics to know that when a former Republican president says that he plans to vote for the current Democratic nominee, it's kind of a big deal. According to Kathleen Hartington Kennedy, the former Maryland Lieutenant Governor, George H. W. Bush, the 41st president, plans to vote for Hillary Clinton in the upcoming elections. Although Bush did not make an official endorsement, Kennedy posted a photo on Facebook with the caption "The president told me he was voting for Hillary!"

While this may come as a surprise to many people, Bush's support for Clinton is understandable and expected. Believe it or not, Hillary Clinton and George H. W. Bush are more alike ideologically than one might imagine. Clinton may have boasted about being "progressive" in the primaries, but her record and her current strategy to win votes shows otherwise. Let's look at the recent evidence: she chose Tim Caine, a conservative Democrat, as her running mate; she collects massive sums of money from corporations; and she boasted about her foreign policy being more "muscular" than Sanders' during the primaries. So does it really come as a surprise that Bush, a moderate Republican, supports Clinton, a conservative Democrat? I don't think so.

Then, of course, we can't forget the fact that the Republican nominee for president is a reality television star who has no political experience and has made numerous statements that many Americans have found offensive. At this point, many prominent Republicans are distancing themselves from Donald Trump. He has deeply divided the Republican party and incited worldwide criticism.

### September Summary

It was arguably the Clinton campaign's worst month ever, having to face health accusations, recovery from illness, and recovery from one of the biggest gaffes of her campaign. However, this has not necessarily translated to a huge loss on the polls. But Clinton did drop across most polls, with a 3 to 1 percent lead against Trump. It demonstrates that most of Clinton's supporters are decided enough to stay, or at the very least not attracted by the prospects of the Trump campaign.

Trump, having generally lost voters this month, will need to rally his campaign to become more appealing to the undecideds as he takes on Clinton during Monday's debate. Or perhaps not. The current polls are outdated, likely skewed towards tech savvy demographics, and only survey around a thousand people. Plus, who knows what could happen in October? Global events like a stock market rally, Snowden's new leak, and ISIL are still potential agitators for both campaigns. But, as things are going, the current consensus calls for a Clinton victory in the horizon.



Clinton: US Department of State via Wikimedia | Trump: Gage Skidmore via Wikimedia

statement, Trump supporters have already taken readily to the name as a badge of honour against a world that they believe to be against them. It has been used as the primary ammo in political attack ads.

Clinton has drawn a great deal of hostility with this remark. While Clinton's campaign was unlikely to appeal to the right-wing demographic, her comments completely alienated them in a way that actually increased their support for Trump. But unlike Trump, her campaign does not have the ability to escape comments like this easily. This incident occurring in such a short timeframe with other disasters is a significant reason for Clinton's losses this month.

### Sept 11th: The Clinton Collapse and Trump's Response

Hilary Clinton collapsed at ground zero during a 9/11 memorial service in Manhattan while being escorted into her car. Spokespeople for Clinton claimed that heat stroke was the reason for her collapse (during 28 degree weather). This comes just six days after she had a two-minute coughing fit during a Cleveland rally, causing many to seriously question her physical capability for presidency. Trump offered his condolences to Clinton, first on Twitter then dur-

### September 19th: Trump Jr's Skittles

Donald Trump Jr.'s twitter released an image containing a bowl of Skittles with the text:

***"If I had a bowl of skittles and I told you just three would kill you. Would you take a handful? That's our Syrian refugee problem."***

Unsurprisingly, the comment caused outrage among many who labeled it as grossly generic and incorrect, some linking it to white supremacy memes involving teenager Trayvon Martin who was shot while buying Skittles in 2012. This comes after Trump Jr.'s Instagram post containing the popular 4chan meme **pepe the frog**. Trump Jr., who was unaware of the possible connotations, also made a potentially anti-Semitic comment about "warming up the gas chamber" on air at a Philadelphia radio station earlier in the month, which was later cited as a reference to capital punishment.

Clinton campaign and supporters quickly used this opportunity to attack his public character, although considering the general controversy that often surrounds the Trump

# Psychological Wonders of the Brain



**TIFFANY CHANG**  
IT CHEMICAL

Our minds are our most powerful weapons and our most feared enemy. Psychology and neuroscience are both rapidly-developing fields that are finally beginning to help us understand our body's most complex organ, but we still have a long way to go.

In the meantime, we'll be exploring some interesting and, hopefully, insightful phenomena of our beautiful minds.

## Déjà vu

Most people have heard of *déjà vu* (French for "already seen"), which is the experience of being certain that you have previously been through or have even witnessed a particular situation. The sensation is typically accompanied by sentiments of strangeness and eeriness. The "past" experience is usually tied back to a dream that the person had had; however, in rare cases, said person could have a firm sense that the event had *truly* occurred. There are two methods that help us identify a familiar situation: retrieve the present situation from a past situation—a memory—or have knowledge about the source of a memory. *Déjà vu* seems to rely more so on the second method of memory

retrieval, which seems reasonable. For example, if you go back to your hometown and pass by the library, you might feel as though you've been there—even if you've never gone inside.

## Jamais vu

Meanwhile, if you've ever met someone before but momentarily don't recognize them at that particular moment, you are experiencing *jamais vu* (French for "never seen"). Sometimes, it's described synonymously with "short-term memory loss", even though there are significant neurological differences between the two phenomena. *Jamais vu* always occurs suddenly and without cause, whereas short-term memory loss is an effect of physiological causes (e.g., trauma to the head, shock). In the moment of experiencing *jamais vu*, our eyes continue receiving information about our surroundings but, for some reason, our brain is no longer connected to our sensory systems—you can think of the experience as the brain experiencing a computer system error.

## Presque vu

I know that my brain experiences *presque vu* (French for "almost seen")—also known as the "tip-of-the-tongue" phenomenon—very often, especially when I'm writing. Research has shown that bilingual speakers are more likely to experience this state of mind

than monolinguals are. This isn't because bilinguals have a worse vocabulary than monolinguals do. Quite the contrary, bilinguals really do know the correct word—it's simply harder for their brains to retrieve it when they want to use the word.

Why is that?

First, monolinguals and bilinguals more or less hear the same words on a regular basis. However, monolinguals are almost guaranteed to hear a specific word in a particular language more often than bilinguals, who would most likely hear said word less often in the same language while also hearing it in their other tongue.

Second, bilingual speakers' brains always "activate" both languages while they are speaking or writing, so in reality, the two languages "compete" with each other for superiority (the last bit was a joke). As a result, finding the right word in the appropriate language would naturally require more effort!

However, interestingly enough, "early" bilinguals—bilinguals who learned both of their languages at a relatively young age—experience *presque vu* less often than their monolingual counterparts.

## L'esprit de l'escalier

On the subject of not being able to come up with certain words in the heat of the moment, maybe you can never find a witty comeback to your sassy friend until you've left their

presence, head hung in shame. That's called *l'esprit de l'escalier* (French for "stairway wit"). This French expression has some interesting historical roots. Supposedly, the courtiers at Versailles would leave their audience with the King or Queen and only then would they think of what they could have said to further advance their cause as they descended the long staircase in the palace.

*L'esprit de l'escalier* reminds me of a more modern phenomenon known as the "doorway effect". Let's say that you're watching television in the living room downstairs. You suddenly think of something you had to get from your bedroom—let's say it's a dirty mug. You run upstairs, and once you walk through your bedroom door, you think, "Wait, what was I supposed to get again...?" Then, you stomp back downstairs to the living room in a rush of frustration, where you remember that you wanted to get your mug.

Obviously, these phenomena are only the tip of the iceberg: there are so many other eccentric yet wonderful phenomena that we experience, thanks to our lovely brains. Annoying as some of them may seem to be, they add colour to our lives and offer us a full palette of psychological experience.

# Career Fair



**ERIC SHI**  
WEEF DIRECTOR

As the largest co-op university in the world with 6,700 employers and over 7000 students in the job search, UWaterloo is becoming a popular hub for employment interactions. This week, engineering students are invited to 'mix-and-mingle' with companies at the Engineering Career Fair hosted by the Engineering Society. The event takes place on Thursday, Sept. 29th, 2016 from 1:00 PM to 4:30 PM in E5's Seditra Design Centre. With representation from software, medical, retail, research, robotics, and many other fields, the fair offers opportunities for all engineering years and disciplines. As we're heading into our 5th semi-annual fair, this term's event is the largest in history, with 11 employers including Google, AMD, and TunnelBear. If you're looking to expand your network, come by E5 on Thursday, and remember to bring your resume!

The event is open to all engineering undergraduate students looking for both co-op and full time job opportunities. Even if you have a job lined up, come out so that you can expand your network!

This year we are also partnered with Professional Engineers Ontario (PEO) who will be helping out at the event. They will be exhibiting a town hall after the career fair starting at 4:30 PM, showcasing products and processes developed by engineering firms in the region. The town hall will answer the question, "What do you expect from an engineer?" from the perspective of local MPPs, PEO representatives, and industry experts.

## RidgidWare



**ERIC SHI**  
WEEF DIRECTOR

RidgidWare is open again in the Fall term! We are an electronics store conveniently located in CPH foyer (near C&D). We offer electrical components such as Arduinos, motors, Raspberry Pis, sensors, and much more. However, beyond offering just electrical components, we also support hardware workshops which are being run throughout the term. RidgidWare is more than just your everyday electronics store; we also offer a consulting service to students where they can come in and get advice for their personal electronic projects. Since we are still expanding, if we don't stock what you are looking for, we most likely know where you can find it. We're also open to suggestions, so come on in!

In mid-October, RidgidWare will begin stocking its first kits. There will be three kits introduced this term. The first will be an Arduino starter kit which will have a ton of supporting components for the Arduino to jumpstart your project. We will also be stocking a robotics kit for only \$40 that includes an Arduino, motors, sensors, Arduino shields, and more. Finally, we will also have soldering kits.

Our hours this term are as follows:  
Monday: 11:30 AM - 1:30 PM  
Tuesday: 12:30 AM - 1:30 PM  
Wednesday: 10:30 AM - 12:30 PM  
Thursday: 12:30 PM - 1:30 PM  
Friday: 3:00 PM - 4:00 PM

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For undergraduates participating in a Faculty student exchange program globally.

For more awards, information, and how to apply:

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# Point Vs. Counterpoint

POINT

**MEAGAN CARDNO**  
4A NANO

I'm not here to berate you if you are one of the bandwagoners who dislike anything new produced by Apple (because it's Apple), just as I am not here to pat you on the back if you are one of the bandwagoners who blindly accept any change Apple has and call it "revolutionary" (because it's Apple). If you fall into either of those two categories, I recommend you read both sides of this PCP and decide whether or not Apple's decision to do away with the 3.5 mm headphone jack was a bonus or a blunder.

However, I have two words for everyone complaining about the new iPhone 7 not having earphone jacks:

Git Gud.

It's not what we are used to, no. It's gonna be a pain for a little while, because we have been used to these kind of phone connectors since... oh yeah, the late 19th century, back when they were used in switchboards for people wanting to call ol' Jim Bob down the street. Yeah. These types of connections have been used for over a century.

This dated design shows, too. It's not a new trend by any stretch of the imagination to remove wires when they are easily replaced by a wireless alternative—when was the last time you used a wired phone? Or was forced to use an ethernet cable because wifi wasn't available? Or played with a wired video game controller (aside from Super Smash Bros. of course)? Wireless charging is becoming more and more commonplace in smart phones and other devices. Even using a USB adapter to sync your phone or mp3 player to your car is somewhat archaic, but the benefits of charging while listening to music is too good to give up.

However, the typical headphone jack offers no such benefit—unless you get some sort of weird satisfaction out of untangling headphone wires. They are more of a liability in that regard, since the connection between headphones and your phone is the most common place of torsion and tensile strain, and the most common place for headphones to be ripped, torn, or otherwise deformed to the point where they cannot function properly. The stress is not usually induced from use in stationary objects like a laptop or monitor, but from use in strenuous or mobile positions like being in your pocket (or better yet, falling out of your pocket). I know from personal experience that the headphones I use with my mobile devices have about half the lifespan of headphones I leave dedicated for "home" or stationary use.

The primary reason for Apple's removal of the ancient design is the technical limitations it puts on any phone design. Not only is the 3.5 mm diameter hole taking up precious space within the internal workings of the phone (space that is getting smaller and smaller with each model), but it is physically limiting the minimum thickness of the phone to the diameter of the hole needed for the jack.

This hole also is basically the Achilles' heel of the iPhone's surface integrity or, if you prefer, the equivalent of that very poorly designed exhaust shaft that lead right to the centre of the Death Star. It is only because of the headphone jack's removal that the iPhone 7 could boast to be dust- and water-proof to the IP67 standard. The jack serves as a very, very large hole on the exterior of the case, conveniently located for any sort of fluid (or projectile) to wiggle its way into—and wreak havoc

Should the Headphone Jack be Eliminated?

on—the interior workings of your very, very expensive device.

Yes, adapting to life without a headphone jack might prove a bit awkward at first, but fear not! Apple is even providing an adapter for those users who insist on staying jacked in via the archaic 3.5 mm headphone jack—a very nice "transition" solution, which also shows that all of the information needed to listen to a stereophonic song does not need 3.5 dimeters of space to be properly transmitted via wiring. Even if we are to stick with a "wired" solution to listen to music, it is obvious that the 3.5 mm diameter standard we use right now is desperately in need of an upgrade.

But why do we even need Apple to hold our hand along with this transition? Bluetooth headsets are not new technology, but seem to have been forgotten by the majority of the population. This is could be due to a number of factors: convenience (having to sync and desync between devices is less quick than simply unplugging a cord and plugging it in the device of interest), cost (typically higher for Bluetooth devices of similar quality to a wired counterpart, although not to the extent of it being an entirely new ballpark of cost), or just plain 'comfort' (in my own words: laziness of people unwilling to change from the old because it's what they know). Whether or not these inconveniences are enough for you, the user, to change right now, is up to you. But these are factors that haven't stopped us from moving to wireless elsewhere, and certainly aren't going to continue holding back Apple from a technical standpoint.

So yes, you are free to criticize Apple. Criticize their hardware exclusivity, or their hardware design that makes it almost impossible to perform simple repairs or replacements without going to an official Apple store (and paying an arm and a leg) or cracking something and voiding your warranty. But don't confuse genuine criticism with society's anti-progressive "If it ain't broke, don't fix it" mentality when they do something actually innovative. After all, this is exactly the sort of increased-efficiency and maximized-benefit design choices that we as engineers are often striving to design or implement. Blindly opposing a change such as this simply because it is "inconvenient" to us to adapt to a new design is nigh on hypocritical on our part. Welcome to the future of technology. I had wires, but now I'm free. There are no wires on me.

**ALEXANDER LEE**  
4A NANO

There's been some controversy surrounding the iPhone 7, the latest model in Apple Inc.'s flagship line of phones. When Apple first revealed the iPhone in 2007, they forever changed the world of cellular technology. While the concept of the smartphone had already existed, most notably in the form of the Blackberry, it was the launch of the iPhone, with its sleek, futuristic design and revolutionary intuitive touch screen interface, that truly ushered in the era of the smartphone that we live in today. Now Apple is once again attempting to be pioneering by removing the ubiquitous 3.5 mm headphone jack from the iPhone. Frankly, this decision sucks, and I do not think the headphone jack should be eliminated...yet.

First off, let's clear up some false information. I've heard some say that the jack was removed to make the iPhone 7 thinner. If this were true, you would have gotten another paragraph from me ranting about how much of our tech have gotten small enough, and we really don't need to go thinner; fortunately for you, I only have to write one sentence, because that is just not true. The iPhone 7 has a thickness of 7.1 mm, just like the iPhone 6, so thankfully Apple still has some sense in them.

Here's something that might surprise you: I actually support removing the headphone jack \*gasp\*. Apple is right: the future is wireless. The headphone jack should and will become obsolete soon. Apple's VP Marketing, Phillip Schiller, stated that the reason they're removing the jack is to have more space for other tech, and I agree with this. The space occupied by the headphone jack seems small, but as technology continues to improve, every micron really matters. It's becoming harder and harder to justify the inclusion of an audio jack that first came about in the '60s. Bluetooth headphones have existed for some time as a wireless alternative to the jack, and trends indicate that it is on its way to becoming the next standard in audio technology.

So, why am I writing against the elimination of the headphone jack? I don't think it's the right time to do it yet. While the idea of wired headphones may be becoming archaic, look around. The majority of people on the street are still using wired headphones. The technology clearly still is being heavily used, and if it

COUNTERPOINT

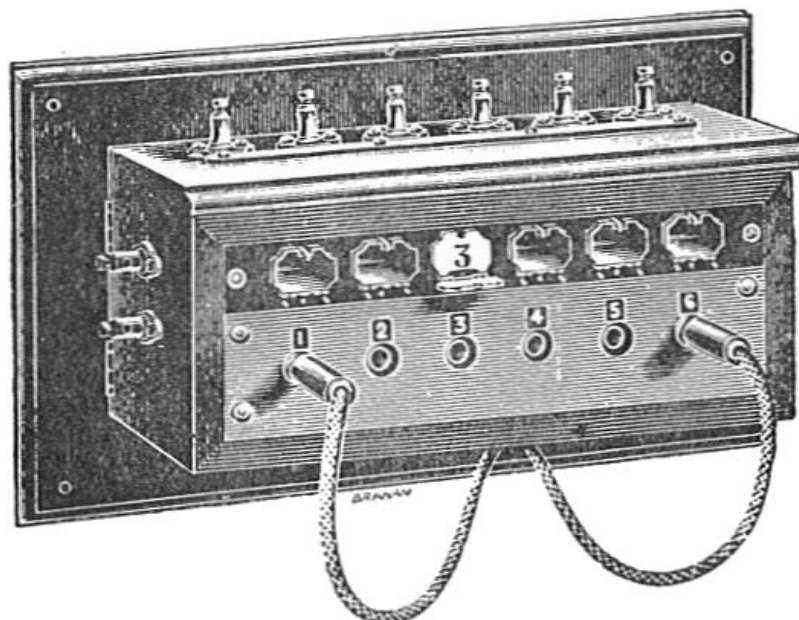
were to disappear right now, the majority of people would be hugely inconvenienced. The iPhone's user base skews toward younger demographics, and even then, I'm sure a significant portion of them will not be happy with this decision. The fact their phone will now be a bit faster and more efficient is going to be a small consolation.

Some might argue that Apple's decision will push people into the future, and force the obsolescence of the headphone jack in favour of Bluetooth and other technologies. After all, I did say Apple was attempting to be pioneering again with this decision. This argument might hold ground if that was actually what was happening; however, as I mentioned above, the headphone jack is already on its way out. Bluetooth headphone sales overtook normal headphones in dollar value sales for the first time this year, and the growth in the Bluetooth headphone market is at least six times as large as the growth in the overall headphone market. The market does not need a push to bring it into the next level of technology. It's not even that far in the future; I think that if we put off removing the headphone jack for a little longer, the market would naturally phase it out itself. We are already almost there — but we're not quite there yet, and Apple jumped the gun on this decision.

Also, about Apple being pioneering... that's not actually that true. This is quite different from the revolution that happened when the iPhone was first introduced. Apple probably had analysts who were looking at the trends and projected that 2017 was going to be the best year to remove the jack. However, they were one or two years off.

Besides, while Apple is removing the headphone jack, they are not actually removing wired headphones. Apple has announced that they will be introducing headphones that will occupy the Lightning port on the iPhone. This is the same port that is used for charging the iPhone, when every other phone out there uses a micro-USB port. While this means you will no longer be able to use wired headphones and charge your phone at the same time, it is also indicative of Apple's overall policy. Apple has a history with vertical integration of its products. There are many things associated with the iPhone and other Apple products that are very different from other companies' equivalents. They use their own OS; they have their own app store; they use a different port standard, the Lightning port, which is unique to Apple. This is because Apple wants to have complete control over its products and regulate extensions and accessories for its products, both official and third-party. The fact that Apple isn't just removing the headphone jack, but is also introducing its own headphones to connect to the Lightning port, implies that on some level, this is one of Apple's ways to increase control over another aspect of accessories for the iPhone, and is not just a benign acknowledgement of the obsolescence of the headphone jack.

To reiterate, the headphone jack truly is archaic and on its way out. Nonetheless, I do not agree with Apple's decision to remove it from the iPhone at this time. Wired headphones are still used by the majority of the population, and it is unnecessary to remove the jack before Bluetooth headphones and other wireless alternatives achieve around 70% market share. The public does need a push to update to the next tier of technology; it's already happening. We just need another one or two years to make the switch, and Apple's decision to do it now will do nothing but inconvenience large portions of its user base.



Is the headphone jack ready to join its granddaddy?

**Editor's Note:**

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

# Welcome and Welcome Back!



**ADELLE VICKERY**  
PRESIDENT

Hey everyone and welcome (or welcome back) to Waterloo! For those of you that I have not had the pleasure of meeting yet, my name is Adelle Vickery and I am your Engineering Society President. I am in 4A Chemical Engineering and I am so excited to be back on campus this Fall.

### Elections

You may have noticed that we are in the middle of election season! This term started off with the opening of Presidential Nominations, and what a crazy campaign period it has been! We have the largest presidential race in (recent) history with FIVE presidential candidates. Voting for the next President is ending September 28th; for those of you who have yet to vote, I strongly encourage you to check out their platforms, get informed, and vote for the person you

would like to see guiding the Society for the next 16 months. Results will be announced September 30th.

After the Presidential race, we are going to be preparing for the Vice-Presidential election. In this election, we will be electing VP Academic, VP Communications, VP Operations and Finance, and VP Student Life. If you are at all interested in running for an Executive position, I highly encourage you to read our Executive Blog Post Series. So far there are articles on why you should run and on how to run in the election, and leading up to the nomination period there will be articles spotlighting each position. We will also be holding an information session on being an EngSoc Executive so keep an eye out for that. More information about the election timeline can be found at [engsoc.uwaterloo.ca](http://engsoc.uwaterloo.ca)

### SSO Collaboration: Midterm Prep

EngSoc is partnering with the Student Success Office (SSO) to hold a workshop on midterm exam prep! Topics covered will include general exam preparation

and time management, scheduling, and problem solving. This is happening on October 6th at 6pm in RCH 205! You will get to apply these skills to your school work with help from upper year students!

### First Council Meeting

We had our first council meeting on Wednesday September 21st; the room was packed and there was a lot of great discussion, starting with the budget. The largest amendment to the budget was a motion put forward (and ultimately passed) to shift money around in the budget to create a "First Year Engagement" line item. Each first year class is now going to get a certain amount of money based on their class size to run an event for their class. The intention is to get more first years involved and to get them excited about EngSoc. This initiative is being run by Rachael Schachtler of Systems Design 2019; first year class reps will be getting more information in the next week to start the planning process.

We also passed a constitutional change to publish complete election results as

well as a stance stating that the Society believes that professors should not reuse old exams. The distinction was made that it is not a stance involving a specific solution, but rather just to bring our position on the issue to the Faculty. Jeff, our VP Education, was mandated to bring this stance to the Faculty and will be setting up a meeting with the Associate Dean – Teaching to start these conversations.

With the addition of another stance, we also implemented an official Document of Stances. This document will be uploaded to the website later this week; if you want to know more about the stances we have taken to date, be sure to check it out. Our next meeting is October 5th at 5:30 in CPH 3607.

If you have any questions about anything in this article, questions about the Society, want to find out more about what we do, or just want to talk, please do not hesitate to visit me in the orifice. You can also send me an e-mail at [president.a@engsoc.uwaterloo.ca](mailto:president.a@engsoc.uwaterloo.ca) and I would be more than happy to help however I can. Thanks, and I look forward to hearing from you!

# Events are FALLing INto Place



**SARBAJOY MAJUMDAR**  
VP INTERNAL

Hey there everybody, I am the friendly neighbourhood Sarbajoy and I am the Vice President Internal (the last existing one). I will be talking about one of the biggest things that form most of my role: events! There are two kinds of events: one that is open for everybody and one that is specific for first years.

For the first year specifics, we have an upcoming First Year Engineering Leadership Conference that is happening on September 30 (Friday) until October 1 (Saturday). This will be an opportunity for first years to learn how to be the best leaders they can ever be, and I would heavily encourage as many first years to sign up for this as possible. We have

Professor Larry Smith being the keynote speaker for this conference, as well as sessions being run by Professional Engineers Ontario, Conrad Centre and more. Its definitely a once-in-a-lifetime opportunity that no first year should miss out on, and you can find out more via the website: [www.fyelc.com](http://www.fyelc.com)

We also have a First Year Mentoring program that is being run throughout the term and this is managed by 2 fantastic directors, Nicole Barritt (2020 BME) and Daniel Lahey (2018 Civil). We have had the most first years and mentors sign up for this service compared to previous years (296 mentees and 96 upper year mentors this year, whilst the largest ever before was around approximately 250 mentees and 83 mentors) and these directors have been nothing but fantastic.

For everybody, we have an upcoming Laser Tag outing that is happening on




Friday 30th September. We had a paintball outing and an Ultimate Frisbee tournament that happened over the last weekend and I would like to thank everyone participating as well as my directors Daniel Lahey (2018 civil, again) and Daniel Stranart (2020 nano) for running the respective events.

We also have a weekly mental health event in POETS every Thursdays which alternate between a Lets Talk mental health session and an arts event. This is a service initiated for by our Mental Health Awareness directors and I am very happy that members are utilizing these services well. We also have a bi-weekly Engiqueers event in POETS every other Wednesday and an EngProv meeting (our engineering Improv workshop) that runs every other Tuesday at CPH 3607.

Events are actually fun and they are also worth your time and money; hence,

you should go for them. I have had not just amazing directors planning these events for you since May 2016, but I am also fortunate to have had Peter Keillor (my Student Life Commissioner, 2019 Chem) and Mariko Shimoda (my First Year Commissioner, 2020 Mech) help me tremendously, bring forward new initiatives and most importantly helped me in creating an amazing culture of involvement for directors, first years, and the general engineering community.

You can view the calendar of events on the EngSoc Event Calendar Page, as well as sign up for the EngSoc mailing list in order to keep informed of all the fun things. If you have any questions about EngSoc, what is fun to do, how to be involved, or how awesome pugs are, please feel free to stop by the Orifice (CPH 1327) on Mondays from 2:30 PM to 4:30 PM as well as any other times you are free. I don't bite (promise)!

Upcoming Events Calendar							
Wednesday September 28	Thursday September 29	Friday September 30	Saturday October 1	Sunday October 2	Monday October 3	Tuesday October 4	Check out up-to-the-day event postings on the EngSoc website at <a href="http://engsoc.uwaterloo.ca/event-calendar/">engsoc.uwaterloo.ca/event-calendar/</a>
Professional Photoshoot 11:30 AM - 1:30 PM  Interview Skills Workshop 5:00 PM - 9:00 PM, Tatham Centre  Engiqueers 6:00 PM - 9:00 PM, POETS	Charity Pancakes 11:00 AM - 1:00 PM, CPH Foyer  Career Fair 1:00 PM - 4:00 PM, E5 SSSDC  Mental Health Thursday 4:30 PM - 7:30 PM	Laser Tag 5:00 PM - 8 PM  First Year Engineering Leadership Conference	First Year Engineering Leadership Conference		Beginner Excel Workshop 7:30 PM - 9:00 PM, CPH 1346	EngProv 5:30 PM - 8:30 PM, RCH 205	
Wednesday October 5	Thursday October 6	Friday October 7	Saturday October 8	Sunday October 9	Monday October 10	Tuesday October 11	 
First Year Mentoring Lunch and Learn 11:30 AM - 1:30 PM  Council Meeting 5:30 PM - 7:30 PM  WiE Arduino Workshop 5:30 PM - 7:30 PM	Charity Grilled Cheese 11:00 AM - 1:00 PM, CPH Foyer  Mental Health Thursday 4:30 PM - 7:30 PM  Preparing for Midterms Workshop 6:00 PM - 8:00 PM				Thanksgiving  	Study Day (Fall Reading Break)	



# What \$15.90 Gets You



**ABDULLAH BARAKAT**  
VP FINANCE

Hello everyone! I hope you are all doing well and I hope you enjoyed your summer! For all the first years that just started at Waterloo, welcome to your new home!

My name is Abdullah Barakat, and I'm the Engineering Society VP Finance for the Fall 2016 term. Today, I'm here to tell you about where your money goes. As the EngSoc VP Finance, I am in charge of deciding how EngSoc allocates all the money for the term. As you may have noticed, there is a fee called ENG Student Society that appears on your Statement of Fees on Quest, which is currently \$15.90. This fee is paid by every on-term undergraduate engineering student. From these fees, I am able to create the termly budget, which is then approved by the EngSoc Council at the beginning of the term.

So you may be wondering, what exactly does your \$15.90 EngSoc fee get you? Well, you'll be surprised by how much you actually do get out of the \$15.90 that you spend, and how each student's contribution has an impact on the work the Society is capable of doing. A significant amount of the fees goes towards a lot of the fixed costs associated with running the EngSoc Office, our facilities like POETS, and the basis for everything that we as the Engineering Society can do.

Part of the budget allows us to offer all of the things we have in the EngSoc Office, such as cheap report binding, printing/photocopying, staples, and board games, as well as all the supplies that are available at the students' disposal. On top of that, we are also able to hire and pay all of our part-time/full-time staff that work very hard in order to keep things running as smoothly as they do, including our lovely business manager Mary Bland. Our staff are able to help us maintain our finances, as well as the daily operations within the EngSoc Office and the Coffee and Donut Shop (C&D).

Furthermore, we have specific funds that money is allocated to every term. These funds were created with the intention of reaching more students, as well as giving students a way of contributing to new improvements to engineering student life on campus. Each term, 15% of the student fees (with certain caps on the amount depending on the term)

is allocated towards the Engineering Society Sponsorship Committee. The purpose of this committee is to sponsor various student design teams and engineering groups' initiatives on campus in order to allow them to offer the best services possible to engineering students. Another fund we have is the Engineering Capital Improvement Fund (ECIF), which is used to allocate money towards any long term purchases that the student body believes EngSoc should invest money towards. ECIF receives 15% of student fees every Fall and Winter term, and 5% every Spring term.

Student fees also go towards initiatives that the EngSoc Executive work towards in order to further benefit the engineering students. These initiatives include the student deals program, which allows the Society to collaborate with various businesses in the area in order to provide special discounts or deals to undergraduate engineering students. Some of these include deals with Mongolian Grill, Marble Slab, Molly Bloom's, and much more. More information on this program can be found on the EngSoc website. EngSoc also has an exam bank, which is used to provide students with the opportunity to study for their exams using past exams pertaining to their courses.

The rest of the budget goes towards funding all EngSoc events and services. This allows us to run things like Resume Critiques, Interview Skills workshops, various technical workshops, Semi-Formals, First Year Conferences, talent shows & coffeehouses, hackathons, mental health initiatives, Career Fairs, the Waterloo Engineering Competition (WEC), and so much more. We run approximately 50 – 70 events each term which try to reach out to as many students as possible. This covers everything from venue costs, to printing costs, to volunteer appreciation, to other event-related expenses. Directors, who are the people who organize and run all of our services and events, request funding each term to cover their costs, and it is up to the VP Finance to allocate money to them. All of that sums up to make our termly budget. \$15.90 might not seem like a lot, but if you think about everything that the Engineering Society has to offer, it really does contribute a lot.

If you have any questions about how the EngSoc budget works, or how your student fees are used to benefit you, please feel free to come and see me in the EngSoc Office, or shoot me an email at [vpfinance.a@engsoc.uwaterloo.ca](mailto:vpfinance.a@engsoc.uwaterloo.ca). All the best in your term!

# VP Education Update



**JEFF GULBRONSON**  
VP EDUCATION

Hello everyone! For those who don't know me, my name is Jeff and I'm the VP Education for EngSoc. Since we have lots of new faces on campus, I thought this would be a good issue to give a quick overview of what the role entails, especially with an election this term!

VP Education's main job is advocating for students. From work term reports to PD, courses to co-op, I represent you on all things academic in nature. This means I sit on a lot of committees with both CECA and the Faculty. This also means that student involvement is key for determining what is advocated for.

For example, at our most recent EngSoc meeting I was mandated to talk to the Faculty about professors reusing old material for mid-terms and finals. This was great to see, because it provides direction for the role by telling me what students find important. As a result, I'll be emailing Gordon Stubleby, the Associate Dean of Teaching, to discuss EngSoc's stance on the issue and what can be done to rectify it.

On the topic of mandates, I hope that classes continue to bring forward such motions. The

Executive are there to work for the students, and we love when classes bring forward their issues so we can work together to fix them.

In addition to advocacy, the VP Education has a few directorships directly under them, such as Career Fair and Course Critiques. The position of VP Education allows you to interact both with directors and a commissioner directly, which is an interesting mix. Speaking of Career Fair, it will be happening on the 29th in E5, so be sure to come out!

Under my portfolio we also have the Student Services Commissioner. They're responsible for events ranging from interview skills and resume critiques (more professional services) to learning workshops such as the hardware workshop we ran last Friday. They're chosen at the end of each term by the Executive so if you're interested in applying be sure to listen for more info around the end of term.

While brief, I hope this starts to give you an idea of what the role entails, and what I can help you with. If you see something you want changed and think I can assist in any way, don't hesitate to contact me at [vpeducation.a@engsoc.uwaterloo.ca](mailto:vpeducation.a@engsoc.uwaterloo.ca), or stop by the Orifice!

Also, if you're interested in running for the position of VP Education, nomination forms will be available soon! For more info on that, keep an eye on our Facebook page.

Revenues	
<b>General Revenue</b>	<b>Budgeted</b>
Student Fees	\$ 65,000.00
Orifice Sales	\$ 1,400.00
Cashier Variance	\$ -
<b>Total General Revenue</b>	<b>\$ 66,400.00</b>
<b>Event Revenue</b>	<b>Budgeted</b>
Career Fair	\$ 1,500.00
EngHack	\$ 1,500.00
EngPlay	\$ 3,530.00
FYELC	\$ 4,100.00
Hardware Workshop	\$ 1,350.00
Laser Tag	\$ 525.00
Paintball	\$ 700.00
Semi Formal	\$ 3,000.00
WEC	\$ 160.00
<b>Total Event Revenue</b>	<b>\$ 16,365.00</b>
<b>Other Revenue</b>	<b>Budgeted</b>
<b>Total Other Revenue</b>	\$ -
<b>Total Revenues</b>	<b>\$ 82,765.00</b>
Expenses	
<b>Fixed Costs</b>	<b>Budgeted</b>
Payroll/Operations	\$ 26,962.00
ECIF	\$ 9,750.00
Sponsorship	\$ 9,750.00
<b>Total Fixed Costs</b>	<b>\$ 46,462.00</b>
<b>Discretionary</b>	<b>Budgeted</b>
Executive	\$ 1,000.00
President	\$ 1,000.00
VP Finance	\$ 150.00
<b>Total Discretionary</b>	<b>\$ 2,150.00</b>
<b>Event Expenses</b>	<b>Budgeted</b>
Career Fair	\$ 1,831.00
EngHack	\$ 1,970.00
EngPlay	\$ 3,618.07
FYELC	\$ 4,324.00
Hardware Workshop	\$ 2,450.00
Laser Tag	\$ 836.50
Paintball	\$ 960.50
Semi Formal	\$ 2,700.00
WEC	\$ 1,700.00
<b>Total Event Expenses</b>	<b>\$ 20,390.07</b>
<b>Other Expenses</b>	<b>Budgeted</b>
Other Expenses	\$ 1,000.00
Appreciation	\$ 2,352.10
<b>Total Other Expenses</b>	<b>\$ 3,352.10</b>
<b>President Directorships</b>	<b>Budgeted</b>
CRO	\$ 977.64
P**5	\$ 650.00
SCUNT	\$ 319.20
Website	\$ 150.00
<b>Total President Directorships</b>	<b>\$ 2,096.84</b>
<b>VP Education Directorships</b>	<b>Budgeted</b>
<b>Student Services</b>	
Exam Bank	\$ 50.00
Resume Critiques	\$ 405.00
<b>Total VP Education Directorships</b>	<b>\$ 455.00</b>
<b>VP External Directorships</b>	<b>Budgeted</b>
PEO Representative	\$ 316.00
<b>Outreach</b>	
Bus Push	\$ 750.00
CN Tower Climb	\$ 150.00
Education Outreach	\$ 85.00
Environmental	\$ 250.00
Santa Claus Parade	\$ 685.38
<b>Total VP External Directorships</b>	<b>\$ 2,236.38</b>
<b>VP Finance Directorships</b>	<b>Budgeted</b>
Meeting Food	\$ 2,500.00
First Year Engagement	\$ 1,200.00
POETS	\$ 120.00
<b>Total VP Finance Directorships</b>	<b>\$ 3,820.00</b>
<b>VP Internal Directorships</b>	<b>Budgeted</b>
Carebear	\$ 665.00
<b>Student Life / First Year</b>	
Arts	\$ 350.00
Athletics	\$ 791.53
Coffee House	\$ 110.51
EngiQueers	\$ 30.00
EngProv	\$ 200.00
Exchange	\$ 65.00
First Year Mentoring	\$ 1,590.00
Genius Bowl	\$ 305.00
Jazz Band	\$ 465.00
LAN Party	\$ 30.00
Mental Health	\$ 559.00
Mental Health - Puppies	\$ 128.00
OT's	\$ 267.00
Professional Photoshoot	\$ 79.00
TalEng	\$ 300.00
<b>Total VP Internal Directorships</b>	<b>\$ 5,935.04</b>
<b>Total Directorships</b>	<b>\$ 14,543.26</b>
<b>Total Expenses</b>	<b>\$ 86,897.43</b>
<b>Net Total</b>	<b>\$ (4,132.43)</b>

## It's a Conference Time of Year



**OLA SUCHON  
WILL WILMOT**  
VP EXTERNAL

Hello to all!

It's Will, the last one to ever hold the VP External role. I'll be going over a major part of what my role: conferences!!

During the first month of this term, the majority of my time is spent with conferences. The past couple weekends in September I have represented our Engineering Society at the Engineering Stu-

dent Societies' Council of Ontario (ESSCO) and the Canadian Federation of Engineering Students (CFES). Topics such as the Engineering Change Lab and eligibility for schools to participate in regional competitions were some more notable discussion points. The Engineering Change Lab is "a social change lab - a place for the resolution of complex social challenges that involve a wide array of participants." (CFES Launch Workshop Document) Both ESSCO and CFES have initiatives regarding the Change Lab and are working to be involved and give students a voice. For more infor-

mation, please visit <http://www.essco.ca> and/or <http://cfes.ca> and get in contact with the executive.

These two conferences are not the only opportunities that we have to directly interact with other schools across Ontario and even Canada; we go to about 7 conferences each year to share best practices, improve professional development, and so on. Four of these conferences are provincial, including Professional Engineers of Ontario Student Conference, hosted this year by the University of Carleton in Ottawa. This leaves three on the national level, including the Confer-

ence on Diversity in Engineering hosted by McGill University in Montreal. Both of the previously mentioned conferences will be happening in November and will have applications out in the next couple of weeks.

ESSCO is currently in search of students to fill directorship positions that can be found at <http://www.essco.ca/essco-directorship-applications>

If you have any questions about anything above, please feel free to stop by the EngSoc office (CPH 1327) and ask, or send questions to [vpexternal.a@eng-soc.uwaterloo.ca](mailto:vpexternal.a@eng-soc.uwaterloo.ca)

## Ulcer Treatments, Coal Tar, and All That Tastes Sweet



**MEAGAN CARDNO**  
4A NANOTECHNOLOGY

CHEMHISTORY

It's no secret that the majority of the population enjoys their fair share of sweet treats (that is, of course, unless you have a geographic tongue or something of the like, that which inhibits your ability to taste sweetness or other flavours). However, that sweet flavour comes with its own not-so-sweet baggage. Sweet flavours usually means high caloric intake (which is great if you need energy, not so great if you don't) and increase in blood glucose levels. Therefore, if consumed in excess, sugar can lead to obesity, diabetes, and other unpleasant medical conditions.

But as clever and greedy as we are, humans of course want to be able to enjoy our sweet, sugary flavours without the associated downsides. Thus, we have a wonderful rainbow of non-sucrose sweeteners that are either low calorie or "zero calorie". In reality, many "zero calorie" sweeteners do, in fact, have some caloric value— even if only from fillers. However, labeling conventions from The US Food and Drug Administration (FDA) typically allow for any product with calories below five per serving to label and advertise as being "zero calorie".

### Aspartame

Perhaps the most infamous of the non-sucrose sweeteners is aspartame, discovered accidentally in 1965 by the chemist James M. Schlatter, who was studying ulcer treatments for Pfizer company G.D. Searle. Aspartame was synthesized as an intermediate to one of the peptides he was working with, but due to undoubtedly horrendous laboratory practice, had some contaminated on his fingertips. When he licked his fingers to pick up some paper he discovered they tasted incredibly sweet. However, if any of you do this in your labs I will personally parade you through the PAC during exam time in nothing but your nitrile gloves chanting "shame".

Most distinguishable by its pronounced aftertaste, aspartame is found in most "diet" sodas. It is actually a derivative of a dipeptide of aspartic acid and phenylalanine. As a result, higher temperatures hydrolyze this dipeptide bond, making it unusable as a sugar alternative in baking. It also hydrolyzes readily into these two amino acids during digestion, which is metabolized in the body like any other nutritional source of these amino acids. This results in it not being zero-calorie—however, it is approximately 200 times sweeter than sucrose, meaning that its typical 4-calorie-per-gram energetic "cost" is highly negligible, as a noticeably smaller amount of aspartame is needed to achieve

the same "sweetness" as sucrose. In addition, the nice blue package of aspartame does not affect blood sugar levels, a great benefit for diabetic individuals.

### Sucralose

The next compound was discovered by... similarly poor means. In 1976, researcher Shashikant Phadnis was working with synthetic derivatives of sucrose, particularly one chlorinated variety, when he was asked by co-worker Leslie Hough to "test" it, which he misheard as "taste". Yeah. Please promise me, if your boss or TA ever asks you to taste ANYTHING in the lab, at least ask them to confirm that yes, they want it to go onto your tongue. What Phadnis tasted was incredibly sweet, and was the yellow-packaged compound we know now as "sucralose".

Sucralose, unlike aspartame, retains its sweetness after being heated, making it applicable as a sugar substitute in baking applications. It also boasts more than double the marketable shelf life, making sucralose (found most notably under the brand name of Splenda) a far more prominent non-caloric alternative to sugar. It is synthesized via the chlorination of sucrose, resulting in the substitution of three hydroxyl groups with chlorine. While this functionalization allowed Splenda to use the tagline "Made from sugar, so it tastes like sugar" in advertisements, it also is the reason why the sweetener is "zero calorie". The chloride functional groups typically prevent the compound from even being absorbed into the gastrointestinal tract, with 75-90% of sucrose ingested being directly excreted as faecal matter. Of the sucralose absorbed, approximately 70-80% is removed from the blood stream by the kidneys and excreted as urine. This results in only 2-8% of ingested sucralose being metabolized. Sucralose is reported as being anywhere near 300-1000 times sweeter than sucrose.

### Saccharine and Sodium Cyclamate

Next, we have saccharine, often found as Sweet'n'Low in the pink packets (outside of Canada, that is), which is the oldest of the non-sucrose sweeteners. It was discovered... sigh... by accident... again. Constantin Fahlberg, a chemist working at John Hopkins University in Maryland, was working with derivatives with coal tars in 1879. Yep. Coal tar. In the evening after work, he discovered that his hand tasted surprisingly sweet, and linked it to a benzoic sulfimide compound. This would further be developed into the benzothiazol-based compound that we know and use today.

While it is 300-400 times sweeter than sucrose, saccharine also has a characteristic aftertaste, often described as metallic. As a result, it is often mixed with other sweeteners in order to make this aftertaste less noticeable. It is also heat-

stable, making it usable in baking. It also is considered "0 Calorie" due to it not being absorbed or metabolized during the digestive process.

Interestingly enough, if you take a look at the "list of ingredients" on a Sweet'n'Low packet you'll find in Canadian restaurants, saccharine will be nowhere to be found; instead, you'll find sodium cyclamate, which was also found through horrendous lab practices. I swear, this article isn't meant to condone bad laboratory hygiene. The story goes that at the University of Illinois in 1937, grad student Michael Sveda was working on medication for fever, when he set his cigarette down on a lab bench (this should go without saying that smoking in a laboratory is MUCHO bad idea), he found it to taste surprisingly sweet. Other versions of this story simply suggest that Sveda had tasted his fingers, not a cigarette.

Sodium cyclamate, unlike the other sweeteners discussed, is only 30-50 times sweeter than sucralose, but still has a distinct aftertaste. While being heat-stable, it is also notably less expensive than any of the other sweeteners.

However, both saccharine and sodium cyclamate's history in approval for consumption is murky. Both substances were independently found to be a potential carcinogen during animal studies. In the US, this resulted in the banning of cyclamate in 1969, but interestingly enough, not saccharin. Instead, all substances containing saccharin simply had to possess a warning label stating "Use of this product may be hazardous to your health. This product contains saccharin which has been determined to cause cancer in laboratory animals". This requirement was lifted in 2000, after research suggested that the rat behaviour was not comparable to human toxic effects at typical levels of consumption.

Canada, on the other hand, banned saccharin for a time, opting to use sodium cyclamate in its place. This Canadian ban on saccharin was lifted, while cyclamate salts are still banned in the US, despite research suggesting the previous results non-applicable to humans. This is why the chemical contents of Sweet'n'Low brand sweetener will vary across the border.

### Stevia

Finally, Stevia is the most uncommon of the non-sucrose sweeteners in North America. When it is found, is in a green packet. However, it isn't new to the rest of the world—the plant *Stevia rebaudiana*, from which it is extracted, has been used for 1.5 millennium by the indigenous peoples of South America for use in teas and general sweet treats. It was named for the Spanish botanist Petrus Jacobus Stevus. It wasn't until 1931 when the chemical compounds that gave the plant its sweet taste—particularly its glycosides, now known as Steviol—were identified. They are isolated via crystallization techniques after drying the plant and extracting the glycosides via water extraction.

Stevia is approximately 150 times sweeter than sugar and is stable at higher temperatures. It is often reported as having a bitter, almost liquorice-like aftertaste. Stevia was first available in Canada as a food additive in 2012, while it remains unauthorized by the FDA for use in the United States, the FDA's website stating: "FDA has not permitted the use of whole-leaf stevia or crude stevia extracts because these substances have not been approved for use as a food additive." Interestingly, though, Truvia and PureVia, which both use glycosides extracted from the Stevia plant, has been approved by the FDA due to being a "highly purified product", not the crude substance previously described.



Steve Snodgrass via Flickr under CC 2.0, recoloured

# \$2million

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for student entrepreneurial ventures

Waterloo Engineering has partnered with Spectrum 28, a Silicon Valley venture capital firm to establish a student venture program for **engineering** undergraduate and graduates students, as well as faculty members, who are seeking ideas or have an idea for an entrepreneurial venture and need cash, mentoring and resources to make it happen.

## Information Session

October 13, 2016  
11am – 2pm, DC Atrium

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October 28 & 29, 2016

**Fast Feedback Day**  
November 17, 2016

**The Final**  
April 4, 2017

If you're successful at the Fast Feedback event you move on to further idea development with mentoring opportunities until The Final on April 4, 2017. Selected companies are awarded funding by Spectrum 28, co-founded by Waterloo alumnus Lyon Wong, Systems Design Engineering '03.

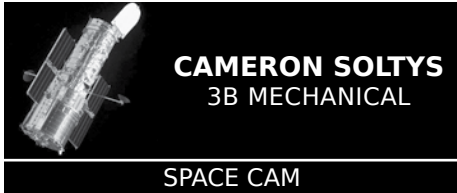
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For more information and deadlines visit:  
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# Falcon 9: The Accident and the Rocket



**CAMERON SOLTYS**  
3B MECHANICAL

SPACE CAM

On September 1, 2016, a SpaceX Falcon 9 rocket exploded on its launch pad at Cape Canaveral, two days before launch. The accident killed none, but destroyed the estimated \$62 million rocket and its \$195 million payload. The event, unsurprisingly, made international headlines and continues to be discussed in scientific and space-themed media outlets, even as a cause for the accident remains elusive.

The explosion occurred while the second stage of the rocket, which enters and returns from space, was being filled for a “static fire” test. This test was intended to ensure the proper functioning of the first stage of the rocket by firing the 9 first-stage engines for a short time. The rocket was securely strapped down and would not have moved during the test. Elon Musk, founder and CEO of SpaceX, took to Twitter one week after the accident, though provided unfortunately little detail. One tidbit he provided is that the investigation team is “Particularly trying to understand the quieter bang sound a few seconds before the fireball goes off.”

The satellite payload that was destroyed with the rocket was the Affordable Modular Optimized Satellite

(Amos-6), owned by Israeli company Spacecom. The name is an allusion to the prophet Amos of the Hebrew Bible, who spoke about wealth inequality and social justice. It was designed to provide communications services for Europe and Africa, and was to be used by Facebook’s controversial Internet.org initiative among other clients. The communications payload itself was built by the Canadian firm MacDonald, Dettwiler and Associates Ltd., who are also responsible for the famous Canadarm and Canadarm2.

Despite the accident, SpaceX has been quick to point out that the Falcon 9 has a typical safety record. Over 29 launches, they have had 2 failures. That works out to a 93% success rate, compared to a 95% success rate that Bill Ostrove, an aerospace analyst at Forecast International, suggests is the industry average. It is unlikely that business will dry up as a result of this failure; Hannah Kerner, Executive Director of the Space Frontier Foundation, suggests that the demand for satellites is much greater than can be supplied, so SpaceX should be able to find customers regardless of the accident.

## The Rocket

The Falcon 9 is a fairly large rocket, standing 70 m tall. It is dwarfed by the massive Saturn V rocket used in the Apollo program, which was 110 m tall and three times larger in diameter. Nevertheless, it is a giant structure

capable of delivering 22 800 kg to Low Earth Orbit or, according to the SpaceX website, 4020 kg to Mars. The first stage of the rocket has nine Merlin engines that burn RP-1 (space-grade kerosene) and liquid oxygen (LOx) to get the rocket through the lower atmosphere. The upper stage uses one Merlin engine and the same RP-1/LOx fuel to bring the payload into orbit, and perform any orbital maneuvers required for the mission.

The Falcon 9 has many claims to fame. For instance, it was the first commercial rocket to be involved in an International Space Station rendezvous, delivering the SpaceX Dragon capsule to orbit so it could perform its resupply task. The most noteworthy aspect of the Falcon 9, however, is that the first stage can land back on dry land to be reused.

The goal of reusability in spaceflight has long been desired. It is hoped that the cost savings from reuse and the faster turn-around time from refurbishing—as opposed to newly constructing—can make spaceflight cheaper and more common. The space shuttle is a famous and rather terrible example. The cargo-bearing “shuttle” part of the shuttle, and the two solid rocket boosters were reusable. However, the inspections and refurbishing of the main body of the shuttle was so intense that the many of the expected cost and time savings were lost. The solid boosters, dumped via parachute into the ocean, had to be manufactured to withstand the corrosive properties of salt water. This led to an

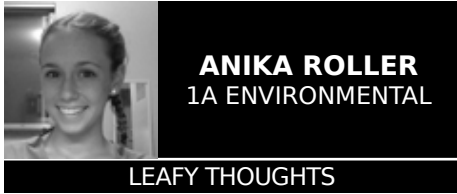
expensive and inefficient mess, negating the entire purpose of reusability.

The Falcon 9’s reusability is much more promising. After the first stage separates from the rest of the rocket, it returns to a landing site near the launch pad, landing vertically on extendable legs and firing its rocket engines to slow down. This has the two advantages: landing vertically, so the rocket is subjected to the same forces as when upright on the launch pad, and thus does not need extra weight for reinforcements; and returning to near the launch site, which saves on transportation costs.

On return, the first stage is so light that a single engine, operating at its minimum thrust, can overcome the force of gravity. This means that the rocket is incapable of hovering; it will always be accelerating upwards. As a result, the rocket performs what is known as a “suicide burn”, so called because small miscalculations in the rocket’s motion will necessarily result in disaster. The single engine is activated at just the right time during the rocket’s decent so that it lightly touches down, and then the engine shuts out before it can start moving back upwards.

SpaceX has been one of the leaders of the commercial space venture, and they remain in that position despite this latest accident. With the Falcon 9, and their planned super-version, the Falcon Heavy, SpaceX will probably be able to shrug off the bad press, and continue its aggressive plan to make space flight cheaper and more regular.

## Leafy Thoughts: A Band-Aid Solution



**ANIKA ROLLER**  
1A ENVIRONMENTAL

LEAFY THOUGHTS

Reduce, reuse, recycle. That is the motto we learned in our younger days. What was drilled in us in elementary school, what we sub-consciously act on on an everyday basis. But has anybody questioned it?

The idea of reduce is, in fact, key for bettering the environment as it leads to a decrease in the manufacturing of material goods. By limiting our consumption, we are reducing the greenhouse gas emissions used for the shipping and making of

these products, as well as keeping more items from entering the ever-so-humongous stream of waste that, one way or another, will end up in landfill.

Reusing is also a fairly decent way of limiting the harm we cause Earth. When we reuse, we buy less stuff and, as stated before, will slightly prevent the growth of the waste stream.

Recycling, on the other hand, is not as amazing as we thought. That begins with the transportation of our recyclables. In a single community there will be several trucks visiting different locations each day. The constant use of these big automobiles result in a continuous emission of greenhouse gases. Furthermore, the system itself does a poor job of ensuring

that the recyclables do not fly away from trucks and bins. A large portion of the litter on the streets and in our waters is recyclable—they may have originally been in a bin, truck, or recycling center, but managed to fly away due to lack of care. This results in the most classic sort of pollution of all: littering.

The final issue with recycling is the most prominent of them all. When things are recycled, they are re-manufactured in order to be sold again. Many of the new items that are made are much more fragile and typically non-recyclable. Due to their weak new forms, these items are tossed into the trash, meeting their unavoidable fates as members of the forever-increasing waste stream. Even the few products that

are recycled to become sturdy and useful items will eventually find themselves in the same landfill. They will fall into a cycle of being constantly remade until it is eventually in the form of a weak, disposable item.

In summation, the three R’s may not be the best way to live one’s life. Reusing is good, reducing is great, but recycling is not quite as beneficial as most people think. Unfortunately, it seems as though we have settled for recycling and convinced society that it is enough to sustain our needs. We need to start thinking of new, creative ways to reduce our environmental impact. We should not be settling for a Band-Aid solution—we need a permanent one.

## Antidepressants

### A Short History of Medication in the West



**WILL KLANAC**  
2A MECHATRONICS

Let’s take a trip back to the 1950’s. We’re in New York sitting in front of two chemists who think they’ve synthesized a new drug to treat Tuberculosis. They’re not wrong, but what they’ve found is also a wellspring that will fuel pharmacological developments beyond the turn of the century.

In 1952, Herbert Fox and John Gibas developed iproniazid, an anti-tubercular drug which improved patients’ mood, ability to sleep, and appetite in clinical trials. With further testing, it was ready to enter the US market as Marsilid in 1958. Iproniazid took effect by inhibiting MAO, an enzyme responsible for the breakdown of the neurotransmitters serotonin and norepinephrine in the brain. Several years after its introduction, there were cases of jaundice that cropped up in those taking the drug, along with con-

cerns of increased heart rate and hypertension; Marsilid was seen exiting the market as fast as it came.

Meanwhile, halfway across the world, the Geigy corporation in Switzerland was developing imipramine, a tricyclic antidepressant. Tricyclics have a dual function: blocking neurotransmitter receptors and inhibiting the reuptake transporters that recover them from the synapse. The end result is an increase of serotonin and norepinephrine in the synapses between neurons, with mood bolstering effects mirroring those of Marsilid.

At this point we’ll stop and acquaint ourselves with the monoamine theory of depression. In 1965, an American psychiatrist by the name of Joseph Schildkraut wrote an article reviewing pharmacological research that trailed the development of the then-novel antidepressant. Schildkraut proposed that depression was linked to a deficiency

of a class of neurotransmitters known as catecholamines, which includes norepinephrine.

While the basis of this theory has fallen into criticism under recent years, it played a significant role in driving future antidepressant development. Close on his heels, Alec Coppen released a review in 1967 proposing a different theory that linked depression to deficiencies in serotonin. And so it is of little surprise that in 1974, a report was published on fluoxetine, a new antidepressant that worked by inhibiting the reuptake of serotonin in neurons. Known as Prozac on release, this drug is one of several Selective Serotonin Reuptake Inhibitors (SSRIs) released in the final quarter of the 20th century. From its conception to the turn of the millennium, several other SSRIs were developed, tested, and released. Sertraline, citalopram, paroxetine, and escitalopram are among these, known by the brand as Zoloft, Celexa,

Paxil, and Lexapro.

We are now in an age where SSRIs are by far the most popular antidepressants used. And just like their predecessors, taking these types of medications can come with a cost. People may experience any range of dizziness, nausea, insomnia, decreased sexual function, and what some describe as emotional blunting. Whether it is worthwhile is something you can only experience firsthand.

Addendum: To those who find themselves piqued, I would recommend reading a history of the Diagnostic and Statistical Manual of Mental Disorders (DSM). The DSM currently offers psychiatrists a standardized method for diagnosing various mental disorders; however, it was not always so. Its story provides a much needed social context for the development of the aforementioned drugs, and the changing role of psychiatrists and their operating methods.

# Hack the North 2016



**YUHAN LIN**  
1A ECE

Over the weekend of September 16-18, over 1000 students around the world gathered into a single building on the University of Waterloo campus to take part in Canada's biggest hackathon. They would spend the next 36 hours huddled together in their 4-man teams on the cold floor of E5's room 2007 trying to build the best project possible. There would be VR sets, Raspberry Pis, and empty cans of Red Bull lying around them as they spend two sleepless nights tapping fingers against keyboards. To put it simply, the objective of the contestants at Hack the North, like any other hackathon, is to do no less than create from scratch a brand-new

piece of technology, software or hardware, in the time given.

Now, despite knowing a thing or two about the event known as Hack the North in which nothing was actually hacked, I wasn't actually there. As such, everything I will relate here will be based on the eye-witness accounts of my friends that did go. One of those was UW's very own Kevin Pei, a Comp Sci first-year and a hardened veteran of hackathon events. Along with three other eager coders, Kevin would spend the next three days working on a smartphone app by the name of EmergiCare. As the name suggests, the app intends to provide a solution for the mediocre response rate to 911 calls—more specifically, the inaccuracy of reported locations in those calls, which leads to the inability of responders to find those in need. The idea was to use Google's location tracking services to automatically send the

caller's GPS location data to emergency operators via text whenever 911 gets called. This would ensure that the app works even when there's no Internet around, since you can text pretty much anywhere, and that the app can also be used with ease, since it functions just like a regular 911 call. And to top it off, the app also calculates and sends an optimized route between the nearest responders and the location of the caller so that emergency vehicles can arrive as quickly as possible.

In the end, Kevin's team's life-saving creation became 1 of the 22 winning projects of the hackathon. The finished products were judged by a panel of entrepreneurs and tech leaders according to the criteria of creativity, technical difficulty, and usefulness, with the winning teams sharing in a whopping prize pool of \$45,605 distributed in the form of game consoles and Netflix subscriptions.

You'd think that rewards as lucrative as that would have the winners screaming their heads off in celebration but, to be honest, no one really cared. In fact, I didn't even know Kevin was a winner until I checked out the website for his project, since the only important thing he told me was that he only slept three hours over the entire weekend. This would explain the abundance of mentors and hardware lying around the venue, free to be of service to any willing contestant. It would also explain the fact that the teams all laid their work out in the open and were willing to lend a helping hand to anyone who needed it, even if that person was part of another team. And all this can be explained by the fact that innovation and problem-solving, the two things most pivotal to society, flourish underneath cooperation and openness, and that, despite the name, the most important aspect of any hackathon is to learn by doing.

## WEEF is Good!



**ERIC SHI**  
WEEF DIRECTOR

Welcome to all new engineering undergrads, and congratulations on your achievements so far. Over the next few years, you will have the opportunity to contribute to all the reasons that made you choose this school, and the Waterloo Engineering Endowment Foundation (WEEF) is one of the best ways to get started.

WEEF was founded by two Waterloo Engineering students, Avi Belinsky and John Vellinga, in 1990 with the goal "to continuously improve the educational environment for undergraduate engineering students, and maintain our outstanding reputation." Through donations from the student body, employer matching contributions, and alumni, WEEF has accrued over 13 million dollars in principal. This fund is professionally managed and the interest earned is distributed each term to a series of proposals that are

evaluated by a student-only council. It is this council for which you will be recruiting two representatives from each of your classes. The representatives will be voted on by the class, and will attend proposal presentations and decision meeting to allocate the funding available.

The presentations will be given by faculty members, student teams, and clubs. As a representative, you will have the chance to see what each faculty is doing with their facilities, what student teams are working on, and what different clubs in the engineering faculty are up to. Faculty (i.e. possibly your professor), staff, and upper year students will be presenting to you. With each class represented, all departments vote on the funding allocation and help guide the University's funding decisions. Yes, the Engineering departments do take into consideration what students are funding when allocating their own budgets. This is how WEEF gives a strong voice to the students.

Over its 25 years, WEEF has funded many of your lab facilities and supported student teams in their accomplishments. If you see

a yellow WEEF sticker on anything in the school, that was funded by a student-only council. Take a look around your labs sometime; there are lots of these stickers. And if you're planning on joining a student team, you should know that WEEF contributed one million dollars to the construction of E5 and its Student Design Center. If you enjoy being more involved and better informed about your school, be sure to put your candidacy forward when we visit your class in the next couple of weeks, or contact us at [wef@uwaterloo.ca](mailto:wef@uwaterloo.ca).

### Hardware Workshop

This term, we have four hardware workshops from EngSoc in partnership with the Engineering Ideas Clinic and RidgidWare. The first one was a beginner Arduino workshop which took place last Friday. Don't worry if you missed out on it, we have a be-

ginner / intermediate workshop on October 24 in the multimedia lab from 7:30 – 9:30 PM. In this workshop, we will cover working with a multitude of sensors.

We also have two robotics workshops on Wed Nov 9 and Nov 23 in the WEEF lab from 6:30 – 8:30 PM. The robotics workshop has a \$40 signup fee and you can sign up in the Orifice. The fee covers the subsidized robot kit which you get to keep after the workshop. The robot kit has motors, an Arduino, a sensor shield, a motor control board, an ultrasonic sensor, and more. In the workshop, you will get to build the robot and run some sample code. The robot is highly expandable with its sensor shield, and can be used for other projects after the workshop!

If you have any questions about the workshops, please email [e3shi@uwaterloo.ca](mailto:e3shi@uwaterloo.ca)

Good luck on your academic and professional careers!

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## Netflix and Chillabit?



**HASAN AHMED**  
1A NANOTECHNOLOGY

During the first two weeks, you may have seen “Chillabit” and their booth floating around campus advertising their social media app. At first, I downloaded the app just to get something for free from those stalls, but then I began to use it and ended up with my own opinions about this app.

Chillabit seems to be a mix of Yik Yak and

Tinder. In one half, Chillabit allows users to make anonymous posts to their university community and people can leave public comments on those posts. The voting system is a simple upvote and downvote method that can influence a person’s “Chillabit rep,” which can be used to identify activity, humour, etc. However, the other half of the app allows users to “like” other people’s profiles anonymously. When you are liked by an anonymous person, it shows their info and an option to request a hint so you can find their profile. When two people like each other, it opens up a chat box, and you can

privately get to know each other through it.

There are also multiple categories which people can post in ranging from Body Positivity to Anime and even Dank Memes. These posts include those from other Universities, so you can also connect with anyone else who uses Chillabit.

Overall, although the app is young and in-development, Chillabit is very easy to use and tailored to students. It’s fun to mingle online with people from your school community and get to know them better. Unfortunately, it does have a tendency to drain your battery if used for even short periods of time, in comparison

to other social media applications. Also, the hint system seems fairly one-sided. Even though the purpose is to find the person when you are liked, the one-way communication often gets frustrating, especially if they are from other schools.

My final overall rating for Chillabit is an 8/10. It is a great way to have fun online with all the other users, and the negatives only exist because of the application’s young age. Chillabit is a nice stress reliever for university students everywhere, and it can foster a nice community if used by more people in the future.

## What Happens in the QNC?



**LEANDER RODRIGUES**  
1A NANOTECHNOLOGY

You’ve probably been eyeing that fancy new Quantum Nano Centre building beside the SLC since its grand opening back in September of 2012, but have you ever wondered what kind of mad science goes on inside? Most students have only seen part of what the place has to offer. It’s not just about the lecture halls, wall-to-wall whiteboards, and aesthetically-pleasing study tables; there are

two other major sections to the building, both of which have had some exciting news in the past few weeks.

Firstly, there’s the IQC (Institute for Quantum Computing), the large office portion of the QNC, which had a historic announcement occur on September 6th during the first years’ frosh events. In high hopes of further the research done by this institution, the federal government granted the University of Waterloo more than \$76 million! The money will be dedicated specifically towards the field of quantum computing with the purpose to make Canadian post-secondary schools the leaders in this research. The University

did have to apply for the grant against 51 other institutions, but fortunately was selected along with 12 other projects to share the grand total of \$900 million in funding.

What does this mean for us as engineers you ask? Well, to be quite honest, not much if your interests and program don’t align with quantum research. For those few in Nano (like me!) it is good news to hear that the field is being supported and the University of Waterloo has the potential for some revolutionary break throughs in the near future because of this funding!

In other QNC news, that cool earthquake-proof fabrication facility and clean room was

put to incredible use this past week in setting a Guinness world record! The record was set for the World’s Smallest Canadian Flag at an incredibly tiny 1.178 micrometres long, which is about the same as 1/100th of the width of a hair. Even more amazing is that the stem is only 20 nanometres wide! This astounding work of art was created by Nelson-Fitzpatrick, a nanofabrication process engineer and a co-op student named Natalie Prinslinger Pinchin. Their prized work will be displayed as part of a travelling exhibit by UW’s IQC known as Quantum: The Exhibition, which will be at science centres all around Canada starting 2017.

## Perseverance and Sleep

### Getting Through First Year Unscathed



**JOSH LI**  
2A MECHANICAL

Hello incoming first year students!! My name is Josh and, as a survivor of first year and writer for the Iron Warrior, I’m taking the opportunity to start a column helping you deal with this gigantic gap in lifestyle and academics between high school and first year. (A gap which is only getting wider.) With that, I hope to continue offering suggestions and advice in this column that will either be psychological/biological facts, in addition to general advice with help from other upper year students.

In the title, perseverance represents a course of tenacity and continued efforts despite difficulty or setbacks. A large part of persevering is psychological; overcoming discouragement or procrastination. This is the part that “gets you through first year.” Sleep is also a general measure of how well you manage yourself (i.e. when you sleep) and manage your health (how long/well you sleep); this is the “unscathed” part of living at school.

Without further ado, let us dive into this week’s content.

#### Join some kind of something

School is stressful. Wouldn’t it be nice to have a couple hours each week to forget all of that stress and simply enjoy ourselves? Countless first years find refuge and sheer joy in clubs, intramurals, or design teams. These activities also promote interacting with students across campus and mental sanity.

Furthermore, a study of 1500 people in the Netherlands found that vacationers were most happy pre-trip; the anticipation of their upcoming vacations enhanced their everyday life. Having that interest you genuinely look forward to will make everything in first year more tolerable.

If you’re worried about the workload when school starts, and are therefore hesitant to take that risk, let me tell you that the amount of work only rises from here. If you join something now and cherish it wholeheartedly, you’ll learn to schedule around it and adjust. Later, the inertia and fear of joining a new club will make it much more difficult to enter what will then be a foreign environment. It is better to join said club early in the year as you will be surrounded by other newcomers.

#### Have a good first weekend...with your assignments

Okay, after orientation and settling down, let’s talk about school. Aside from your special design courses (unique to each dis-

cipline), first year is a full mix of general physics, chemistry, calculus, linear algebra, etc... You know the drill by now: three 50min lectures a week with the professor, one 2 hour tutorial with a TA and an assignment/problem set due over the week. One week’s assignment is not due until the week after, but I strongly recommend you complete assignments the week or weekend it is assigned for two simple reasons:

1. Most assignments should only take a few hours but some will take longer than anticipated, which is why completing them over the weekend—with more free time and buffer—is a safer bet.

2. The famous Ebbinghaus curve states that half of new information (without any review) is lost within a day, and after a week you’re left with a mere quarter. Next week your nights should be spent on the material taught next week (while it is still fresh). If you leave your previous week’s assignment undone you’re not reviewing anything useful, but rather being confused back and forth. This is why it is crucial to have a good start and first weekend by staying ahead of your assignments.

#### Take your shirt off! (Tips to staying awake.)

In this final and perhaps most practical section, I introduce to you alternatives to coffee:

Wear fewer clothes: you sleep under a blanket because of something biologists call Cutaneous (skin) warming that promotes sleep onset. You may not notice how sitting in your first year classroom slowly heats your body until you start yawning. At this point, whip off your sweater or thick jacket (make sure you’re wearing something underneath) and instantly cool your skin’s temperature. This is similar to the ice bucket effect of keeping you alert.

Drink Tea: tea is a cheaper, healthier alternative to coffee. And yes, there is caffeine in it, about 50mg in a cup of black tea compared to 100mg in coffee. It may take longer for tea to take effect, but rest assured that the effect is real.

Sleep: Humans have different sleep schedules. It helps to keep track of your own in writing and maintain consistency. Chances are you’re still not sleeping enough, which is why you need so much caffeine.

Drink Coffee: Caffeine is a miracle drug if you absolutely need it immediately to get through the next important lecture. I provide alternatives because of health and because of crashing/after effects. Also, since you adapt to coffee over time, it might not be a bad idea to avoid getting a tolerance; mix up your methods to really reap coffee’s effects come 4th year.



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# Athletes Make Their Mark at Rio Paralympics 2016



**HASAN AHMED**  
1A NANOTECHNOLOGY

From September 7th to September 18th Rio de Janeiro hosted the 2016 Paralympic games, which featured 1100+ athletes competing from 146 different countries across the globe. Among these participants, Team Canada was represented by 154 members who performed in 158 different events allotted in 24 sports, which are also categorized by the type of disability. After the 11 day event Canada finished a respectable 13th place overall, with a 14th place finish in gold medal amount. They ended with 8 gold, 10 silver, and 11 bronze medals, capping a 29 medal performance for the country.

Although all the Canadians performed to their full potential, a few athletes surpassed the expectations in their respective events by becoming multi-medalists. Michelle Stillwell, a track and

field athlete in the T51/52 events, paved her way to 2 gold medals in both the 100 m and the 400 m events, with a time of 19.42 s and 1:05.43 min respectively. Another track medalist was Brent Lakatos, who claimed gold, silver, and bronze in the Men's 100 m, 400 m, and 800 m. He was also part of the bronze 4x400 m relay team, solidifying his performance in the Paralympics. Tristen Chernove of the Cycling team also managed to collect a gold medal in the men's C2 time trial, silver in the C2 3000 m, and bronze in the C1-2-3 1000 m time trial. There were a few other multi-medalists on the team, but the highlight of the games was Canadian swimmer Aurilie Rivard's 4 medal performance. She placed 2nd in the SM10 200 m individual medley and received 3 gold medals for winning the 50 m, 100 m and 400 m S10 freestyle, which is why she was chosen to bear the flag at the closing ceremonies. Thus, both the Olympics and Paralympics had a Canadian flag bearer who were swimmers (Penny Oleksiak was her Olympic counterpart).

Even though Canadians did well, other

events in the Paralympics were very noteworthy for athletic performance. Particularly, the T13 1500m final race had four athletes who ran faster than the first place Olympic time of 3:50.00 min. The four runners, who are all partially blind, finished within 2 seconds of each other and the first place runner, Abdellatif Baka, broke the Paralympic world record in the process. Tamiru Demisse, Henry Kirwa, and Fouad Baka took 2nd, 3rd, and 4th in the race, but all of them were extremely close during the entire event.

Unfortunately, not every moment of the Paralympics was a happy one. Bahman Golbarnezhad of Iran was participating in the C4/C5 cycling road race when he crashed into the wall and suffered serious neck injuries. All the best medical techniques were used to try to revive him, but unfortunately he passed away later that day. Many condolences were sent out from the viewers, and he was honoured by Iran and the Paralympics with a moment of silence at the closing ceremonies.

Many people have also been wondering why athletes shook their medals when they

were handed out. Well, interestingly, each of the medals have steel spheres in them, and each of them make a distinct sound which identify the type of medal that the athlete has received. In past Paralympics, the medals had braille inscribed on them. This is the first time that an audible cue was introduced to the medals to check which type the athlete received.

Although the Paralympics were a fascinating event, it did not reach an audience as expansive as the Olympics. It's important to realize that these athletes work as hard as their Olympian counterparts, and they should be recognized more for their excellence. Even though coverage of Paralympics is miniscule in comparison to the Olympics, we should show incredible pride and support to all of our Canadian Paralympic athletes who work just as diligently as their Olympian counterparts. Disability doesn't necessarily mean an inability, and the 1100+ athletes from 146 different countries participating in the Rio 2016 Paralympics prove this through the display of elite athleticism.

## The Benchwarmer Report

### Canada to Face Sweden or Europe in Best-of-3 World Cup Final



**ELIZABETH SALSBERG**  
4A NANOTECHNOLOGY

#### THE BENCHWARMER REPORT

The 2016 World Cup of Hockey (WCH) is the training camp for the ages, as the best of the best take the ice in the first WCH tournament since 2004. Many have had their doubts about the NHL-sanctioned tournament, but thus far the hockey has been phenomenal to watch, particularly after the offseason drought!

This time around, a new format has certainly made things more interesting. In addition to the traditional international hockey powerhouses like Canada, Russia, Sweden, Finland, and the USA, continental teams Europe and North America (players aged 24 and under) have created a more competitive international tournament than most of us are used to. To illustrate: typically Germany, Denmark, or Switzerland round out international tournaments, yet these teams are significantly weaker than their continental counterpart, Team Europe.

There was also a ton of hype for Team North America going in, which featured young phenoms Connor McDavid,

Jack Eichel, and Austin Matthews. The advantage of including an under-24 team is that the NHL gets to showcase young talent while simultaneously maintaining the presence of "older" talent that may not otherwise make the senior team had a guy like Connor McDavid been available. For example, Anaheim Ducks forward Cory Perry was a late addition to Team Canada. Had McDavid been eligible for Team Canada, one would have to think a "fringe" player like Perry would not have had a chance. As preposterous as that sounds, Team Canada is so deep that yes, Cory Perry was regarded as a "fringe" player. So was Sharks forward Logan Couture.

Returning to Team North America, they mostly lived up to the hype barring a 4-3 loss to Russia. Despite finishing with the same record as Russia (2-1), Team North America was eliminated due to the head-to-head tiebreaker format. As a result, Team Russia faced Team Canada in the first semifinal this Saturday.

Team Canada had been on a tear up heading into yet another installment of the Cold War Rivalry, with a 3-0 record and +11 goal differential. The seemingly age-old Crosby-Ovechkin rivalry was back on, and what an exciting game it was. Crosby started the game off in style,

netting Canada's first 10 minutes into the game.

The Canadians continued to pour on the pressure, but Russian goaltender Sergei Bobrovsky (Columbus Blue Jackets) kept it close through the first frame. The Russians finally got on the board 11 minutes into the second period as Tampa Bay dynamo winger Nikita Kucherov fired a laser beam past Canadian goaltender Carey Price, knotting the score at 1-1. Anxious moments followed for the Canadians as Bobrovsky made sensational save after sensational save to keep the door shut until his team went ahead 2-1 on a goal from Evgeny Kuznetsov with about two minutes remaining in the second. Team Canada stormed back, with just 1:12 left in the period; Crosby engineered a sweet feed to Bruins forward Brad Marchand for his first of two on the night.

Team Canada came through in the final frame with Brad Marchand, Cory Perry, and John Tavares (New York Islanders) each netting one within a span of 8 minutes to punch their ticket to the Final. Final score: 5-3 Canada, with Canada outshooting Russia 47-34. Despite allowing five goals, the game would have been substantially more lopsided had it not been for Bobrovsky's stellar play

between the pipes.

The Canadians will now face the winner of the Sweden-Europe semifinal in the best-of-3 final. Team Europe, lead by Anze Kopitar (L.A Kings), Zdeno Chara (Boston Bruins), and Marian Hossa (Chicago Blackhawks), has been a pleasant surprise this World Cup, with nobody really expecting them to make it past the round robin. Then again, one would have to think that any team with those three has a chance to win any day of the week. They upset Sweden in the pre-tournament, and will be looking to do it again here.

The Swedes, lead by captain Henrik Sedin, know they have their work cut out for them. Throughout the round robin, Henrik Lundqvist (New York Rangers) has been on his game, posting a .953 save percentage. The 34-year-old Lundqvist is not the only Swede whose window to win big internationally is closing; as the King, the Sedins, Henrik Zetterberg, and Nicklas Kronwall begin to hand the torch to youngsters Gabriel Landskog, Louie Eriksson, and Victor Hedman among others, they are extra motivated to win. Look for the Swedes to come out hungry against the rag-tag Team Europe, having learned from their mistakes in the pre-tournament.

## The Discovery of the HMS Terror

### Second Ship from Franklin Expedition Found



**BRYAN MAILLOUX**  
2T MECHATRONICS

The recorded history of Canada is rather short, compared to the Old World. We don't have medieval castles dotting the horizon, or 2000-year-old ruins under our cities. The roots of our history are not yet very deep. And yet, it is astonishing how much has been lost to the sands of time. We regularly continue to dig up artifacts that had disappeared long ago, each one giving us more and more insight into the lives and culture of the people who preceded us.

Just this month, a relic of the past was

found in the depths of the Arctic Ocean. The shipwreck of the HMS Terror, one of the two ships that embarked on John Franklin's doomed expedition to find the Northwest Passage, was found in the coincidentally-named Terror Bay on September 3. Researchers from the Arctic Research Foundation, led by Adrian Schimnowski, found the wreck after receiving a tip-off from Sammy Kogvik, an Inuk ranger, and Gjoa Haven, Nunavut local. He described the mast of a ship he had seen while on a fishing trip with his uncle six years prior, and from there, finding the shipwreck was straight sailing for the researchers.

This new find comes almost exactly two years after the discovery of Franklin's other lost ship, the HMS Erebus. Since that time, the wreck of the Erebus has been explored

by divers who have been recovering items such as medicine bottles, ceramic plates, and one of the ship's cannons. Artifacts from the expedition, however, have been recovered ever since 1848, only five years after the expedition set out from England. These include a note saying that by June 1847 Franklin was dead, the graves of three crew members who appeared to have been suffering from lead poisoning, and bones with knife marks on them, which researchers believe indicate that the men had resorted to cannibalism.

Franklin's expedition was one of a long line of expeditions meant to navigate through the fabled Northwest Passage, a way through the Canadian Arctic that would make trade with the Orient far more cost-effective than circumnavigating the

tip of South America, or going around Africa. The first successful expedition to pass through the passage solely by ship was Norwegian explorer Roald Amundsen's 1903 expedition, aboard his ship the Gjøa, for which the settlement of Gjoa Haven is named.

The research team that discovered the Terror says that the wreck is in excellent condition – using a robot to photograph the wreck, the team found that many artifacts the Terror's crew would have used are still in place, as if the crew simply vanished. For research purposes, this is a fantastic find – historians are hoping that the condition of the artifacts will allow them to unravel more of the mysterious circumstances surrounding the fate of Franklin's expedition.

# Goodbye, Tristan



**DONOVAN MAUDSLEY**  
**TRISTAN KUEHN**  
3A MECHANICAL  
3A SYSTEMS

BROSKIES ON BREWSKIES

Broskies on Brewskies is a beer reviewing column started by high-school friends and off and on roommates Donovan and Tristan. Due to long-foreseen circumstances, and an ocean, Tristan will be absent from the next several issues of Broskies, and Donovan will be holding down the fort with a rotating cast of new Broskies.

This issue is the official Broskie send-off for Tristan. We're going to kick off this issue with the Detour Pale Ale from the Muskoka Brewing Company in Bracebridge, Ontario. We were a little apprehensive about picking up a pale ale as we've had our fair share of B-A-D

pale ales, but the Detour was a terrific turn in the opposite direction. Dry and smooth and everything that a pale ale should be, the Detour is a definitive triumph. This is the beer that every other pale ale is trying desperately to become. Unanimous four and a half out of five, this is near ideal as a pale ale.

Second up is Gypsy Tears, a ruby ale from the Parallel 49 Brewing Company in Vancouver, British Columbia. We messed up a little bit on this one, as we try to stick to just beers from Ontario, but the mix-up was okay because it was a good beer. It's similar to other red brews which we've had, like the Fire in the Rye, but less aggressive. Tristan was less of a fan than Donovan, but still enjoyed it. We decided on a four out of five for this one.

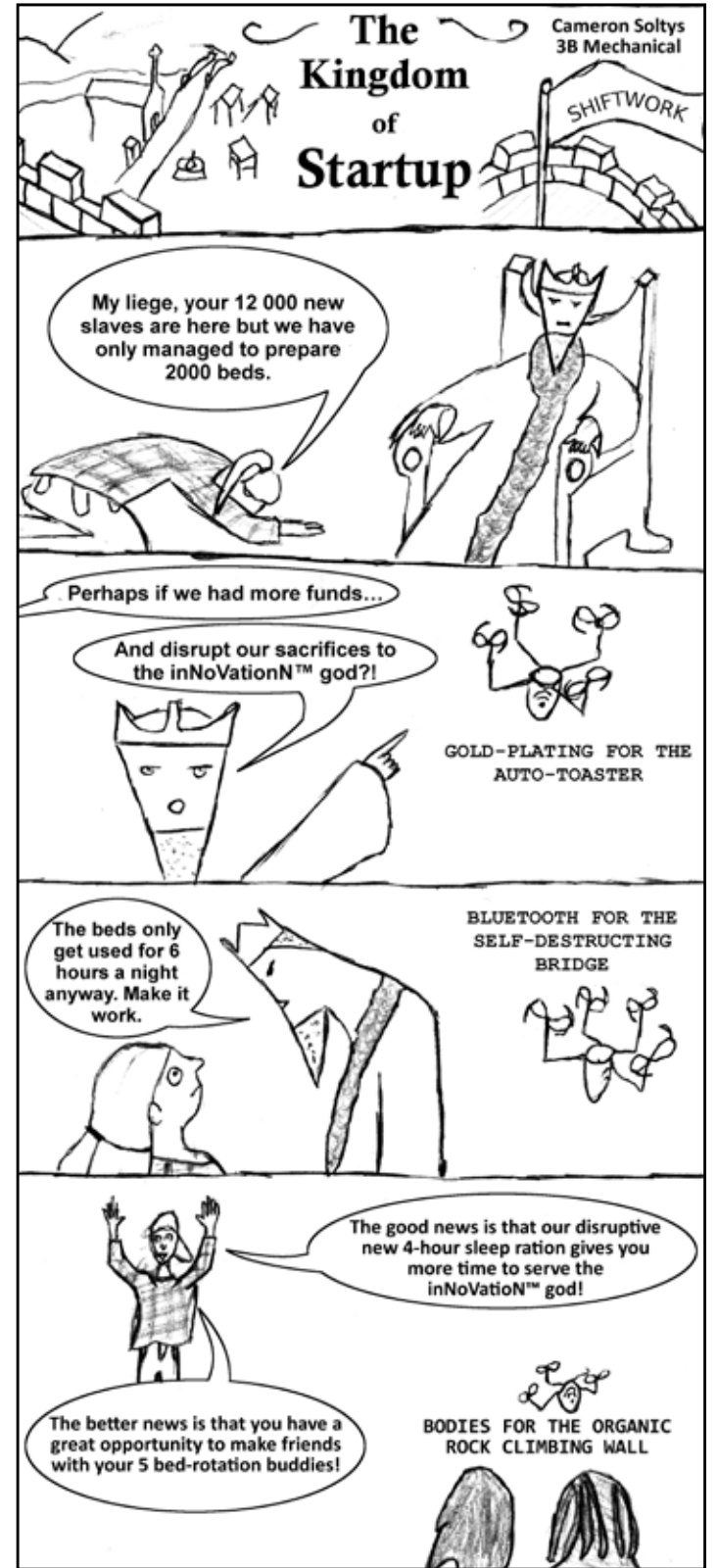
Last up this issue is Tailgate from the Grand River Brewing company down in Cambridge. We both really liked this. It's flavourful, smoother, and has a slightly

unusual flavour and aftertaste, but it is quite pleasant. We kind of forgot to write down more stuff about this beer, but it is a very good beer. Tristan really appreciated this beer as his send off. We gave this another four out of five.

Overall we had a very good lineup of beers this issue, and we strongly recommend that you try any and all of them. Please remember to taste responsibly.



Here's to absent friends.



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## What is TIFF?



**LEANDER RODRIGUES**  
1A NANOTECHNOLOGY

Since 1976 there has been an event held annually in Toronto attracting movie buffs, self-appointed critics, and film geeks like me to the city in hopes to see something incredible before anyone else. For the past few weeks the 11-day Toronto International Film Festival (TIFF) was running, complete with workshops, screenings, features, shorts, and much more. Sadly I personally was unable to attend, but I was still able to find some of the news and happenings to keep you updated.

One of the biggest parts of TIFF, for those who've never been, is the crazy amount of screenings that go on during the week. The festival welcomes over 450,000 people to attend screenings of more than 350 films from around 70 different countries, spanning every movie genre you could imagine. Even the films themselves take their own creative directions; full 1h30m+ fictive features, 10-20min shorts, coming of age movies, and even documentaries from all over the world available to the public to be screened around Toronto!

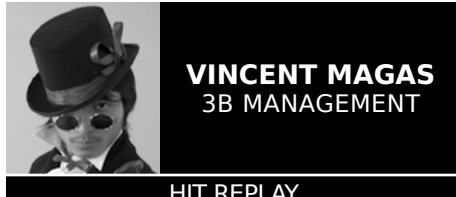
Historically, the Toronto International Film Festival has also been known for its array of different lectures, workshops, and discussions offered by notable names from Hollywood, with the hopes to get the next generation of movie stars and visionaries to find their inspiration. The education portion of TIFF is oriented around all things behind the scenes of the film industry: the lights, camera, and action that goes on behind the lens. TIFF even gets plenty of big-name movie stars to walk down their red carpets with their fans taking photos, just waiting to get into the theatres with them. This year attendees had the opportunity to see Leonardo DiCaprio (for his documentary: *Before the Flood*), Natalie Portman (for *Planetarium*), Matthew McConaughey (for *Sing*), and plenty more!

Aside from the screenings and workshops, an exciting part of the week for the industry itself is the opportunity to win some pretty prestigious awards. While the big name awards, like the Oscars, are more publicly recognized, TIFF is special; the awards given there are determined by the attendees who enjoyed the films! The Academy Awards are given out by the Academy—a group of film industry veterans and current professionals—but the awards at TIFF are far more personal. It's an opportunity for the industry to touch base with their audience and find out how their work is going to be received way before they get released to the general public.

The most coveted award at TIFF is the Grolsch People's Choice Award, which is the equivalent to the Oscar for Best Picture. This year, the award went to *La La Land*, a musical drama/comedy directed by Damien Chazelle (Director of *Whiplash* and *10 Cloverfield Lane*). The film features Emma Stone and Ryan Gosling and will hit theatres December 16th, 2016, but has received critical acclaim and recognition months before its release!

All in all, this year's TIFF was similar to every other year in layout and events, but unique in the way that each film told a different story and from a special perspective. The beauty of the festival is the chance to enjoy international culture through another culture's lens and share experiences in one medium that unites us all: film.

## The Return Of The Vinyl



**VINCENT MAGAS**  
3B MANAGEMENT

HIT REPLAY

Hello once again! We are back with Hit Replay, featuring the sweetest comebacks in the world of trends. This term we bring you a whole list of curiosities that have re-graced living rooms, shelves, and kitchens alike. Let's hit that replay button for all of yesterday's wonders that are trending again today!

The digital revolution! The finest of revolutions, dominated by 1's and 0's, a revolution worth speaking of! The only revolution to bring rise to pirates of the internet sort, movies of the streaming sort, countless mad vloggers, and—best of all—music at your fingertips! But wait! What's this? A rising wave of people are logging off their computers and heading to their local music stores to buy large circular objects reminiscent of CDs. (Just head out to your local Conestoga Mall HMV and see!) That's right folks, vinyl records have made a glorious return from the past. Analog fans, reminiscent audiophiles, vintage-sound lovers, and hipsters unite: vinyl records are trending once again!

So what are vinyl records, you ask? Com-

monly known as a "record" or a "vinyl", the name comes from their material, polyvinyl chloride. Although the process of making vinyl records has changed over time, they still have the same basic structure. A vinyl record is a disc (often black in colour) containing a spiral grooved surface, often starting at the edge of the disc and ending at the centre. Vinyls vary in diameter, most often found in 12" (LP or Long-Playing format), 10" (EP or Extended-Playing Format) or 7" (Single format) and are played at varying speeds, often either 33 rpm or 45 rpm.

The earliest forms of vinyl records have existed since the late 19th century, alongside their cylindrical cousins, the phonograph cylinders. By the turn of the century, vinyl records increased in popularity and ultimately dominated the entertainment market by the late 1920s, proving to be better in quality and reliability than phonograph cylinders. In the many years that followed, various versions of the vinyl record appeared. Vinyl records of various diameters, play speeds, materials, and styles entered the consumer market, appealing to a wide variety of audiences. Vinyl records varied tremendously, from vinyls that played from the inside out, coloured vinyls (often depicting its genre), those of varying non-circular shapes (such as a heart-shaped version of the Beatles'

single "Love Me Do"), and even some filled with dyes and coloured fluids. For over 65 years, vinyl records controlled the consumer market and were the main form of music storage.

Even after the introduction of 8-tracks, cassettes, and reel-to-reel tapes, vinyl records kept their edge in the market. It was in the late 80s shortly after the introduction of compact disks (commonly known as CDs) that the vinyl record suddenly dropped in popularity as it was both larger and more expensive to produce. By the mid-90s, vinyl records had faded to obscurity and existed only in the world of collectors, DJs, and analog music enthusiasts.

But wait! Aren't vinyl records back in the game? Yes they are! A few years ago vinyl records began to reappear due to sudden demand. Vinyl records are once again gaining popularity especially among indie rock lovers and the like. Many artists nowadays are also opting to release new albums in vinyl format along with the common CD and digital download (for example, take AFI's *Burials* which is available to pre-order on vinyl!). Vinyls records in recent years have definitely made a significant comeback with sales nearly doubling in the last three years. Only time will tell if they will playback their glory days into the 21st century!

## Once is Never Enough



**TIFFANY CHANG**  
1T CHEMICAL

DISCOVER BROADWAY

Tiffany here (on co-op), and I'm pumped to continue exploring the Great White Way's sights and sounds with you!

This time, we will be exploring Broadway's unconventional face—quiet, intimate, tear-jerking.

Need another hint? This musical also took away eight Tony Awards in 2012, including—but not limited to—"Best Musical", "Best Direction of a Musical", and "Best Orchestrations."

This is epitomized by *Once*, a 2012 production that is based off an Irish movie of the same name. The music and lyrics in the film were written by Glen Hansard and Markéta Irglová, both of whom also starred in the leading roles—simply known as "Guy" and "Girl."

The two characters' lack of identity further allows the audience to enter their world. Guy and Girl are more than characters: they represent us when we are going through a breakup, starting to fall in love with somebody,

or dealing with a relationship that has come across some bumps along the road. Listening to the cast recording alone, you empathize with their predicament and bawl your eyes out for the challenges they face.

*Once* is a rather unconventional musical. The staging is simple, the orchestration is minimal, and even the choreography is limited compared to most shows.

I saw it at the Ed Mirvish Theatre in Toronto back in 2015, and I absolutely loved it; however, my loyalty still lies with the original Broadway cast's rendition—there is no replacing Steve Kazee and Cristin Milioti.

The first time that I listened to Kazee's rendition of "Leave", Guy's heartfelt ballad that describes his unrequited love for his now ex-girlfriend (who had cheated on him), a little part of me died for his character. The heartbreak, vulnerability, and frustration in his voice are so genuine while Kazee is also jamming on his guitar—did I mention that Guy's character is also in charge of playing the acoustic guitar throughout the show?

And then there is Kazee and Milioti's oh-so natural chemistry in their duet of "Falling Slowly." Not only is "Falling Slowly" a beautiful number—in fact, it won the Academy Award in 2007 for Best Original Song—but they capture its essence: it describes an

innocent, pure outlook on love and romantic relationships. Even though it portrays a naïve perspective about romance, it is how most couples start out—and can only hope to maintain as their relationship progresses and evolves. For most, however, that is often easier said than done...

Kazee and Milioti nail their solos, too, and it appears as though the two compete to see who can make the audience shed the most tears. One of Guy's feature numbers, "Sleeping", is bittersweet—he cannot imagine life without Girl when he moves to New York to pursue his dream of achieving a career in music. Girl illuminates the stage with her heartbreaking rendition of "The Hill" when she finally confronts her newfound feelings for Guy. Something about Girl's mere piano in the background implies solitude and turns up the waterworks evermore.

Like all great Broadway musicals, *Once* has some fantastic ensemble numbers, which can always differentiate great musicals from the good ones. Special shout-out goes to "Gold", which Guy had previously dedicated to his ex-girlfriend and now sang to Girl instead. It begins with Guy on his guitar, and gradually, the rest of the dancer-musician ensemble joins him—a glorious moment that celebrates the spirit of genuine love.

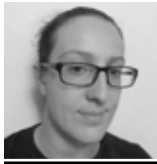
With little dialogue in this show, it's important to keep in mind that one must listen closely to the lyrics; that is where you would familiarize yourself with the characters' personalities.

*Once* reaches out to our inner romantic and entices it to come out, if only just for an hour and a half. No matter how jaded all of us are, one cannot help but be moved by this wonderful piece of art. Even though love is a recurring theme in most musicals—who doesn't appreciate an element of romance in a story?—there is something magical about Guy and Girl's love for each other: it healed both of them and gave them the hope that each needed to move on with their lives.

Though some audiences may find *Once* rather lackluster compared to other musicals that Broadway has to offer, a certain type of audience can appreciate simplicity as its distinct voice. It has no pretense and stays true to the spirit of the story. It exemplifies how we should approach love and our loved ones: treasure and appreciate each other while we can in the case where separation is inevitable.



# Five Things They Should Put in the Next Thor Movie



**CAITLIN MCLAREN**  
4A CHEMICAL

5 THINGS YOU DON'T WANT TO KNOW

Hi everyone, and welcome to the new season of Things You Don't Want To Know! All hope abandon, ye who enter here. This issue, I'll abandon my usual pattern of gross and horrible things done all round the world, and focus on Norse Mythology.

We've all seen the sleek, sexy Marvel version of Thor, Loki, Odin, and the gang. The original version was a lot more violent (as you would expect), but it's also a lot more... colourful. There are lots of stories that would make for a much more interesting Marvel movie. Here are a few for your reading displeasure - make sure you picture Chris Hemsworth, Tom Hiddleston, and Sir Anthony Hopkins in all of these situations.

## Loki Got Pregnant, With a Horse

In fairness to him, it wasn't on purpose. See, the gods made a bargain with a giant, that if he could build huge walls in exactly a year, they would give him the sun, the moon, and the goddess Freyja. They didn't think he could possibly manage, but his magic horse was so strong and helpful that the gods got really worried. They didn't want to have to pay up, but Loki got an idea at the last minute. Just before the wall was complete, Loki turned into a mare to distract the horse. The horse ran away after Loki, and the wall wasn't completed in time, meaning that the gods won the bet. Unfortunately for Loki, the horse managed

to catch him. Loki then became pregnant and gave birth to an eight-legged horse, which Odin decided he wanted. The horse was named Sleipnir and became Odin's favourite horse, and all of the other gods did their best to ignore the awkwardness.

## Thor Almost Drowned in Troll Pee

And, of course, it was Loki's fault. Loki got captured by the troll king Geirrod, who would only release him if he promised to deliver him an unarmed Thor. Loki managed to trick Thor into coming along with him to the troll's castle without Mjollnir, but Thor was warned by a friendly giantess and given some weapons. Then Thor set off for Geirrod's place, but he needed to cross the river Vimur. Suddenly, it started flooding and nearly drowned him. Thor looked upstream and realized what was causing the flood - Geirrod's daughter Gjalp was peeing into the river. Which is quite impressive, really - how many people can literally cause a flood? Thor solved the problem by throwing a rock at her, because simple solutions are sometimes the best. He then went on to slay trolls. Oh, one other thing: the ancient sources are unclear as to whether the flood is actually pee, or menstrual blood.

## Loki Just Does Weird Things With Animals, in General

Once again, the gods have made a questionable bargain with a giant. This one was weirder than usual, though. The gods had killed the giant Thjazi as punishment for kidnapping a goddess. His daughter, Skaði, was angry, but decided that she would forgive the gods if one

of them married her, if they turned her father's eyes into stars, and if they made her laugh. The gods, who were apparently all foot fetishists, decided that she could choose a husband by looking at only the feet of all the single gods and picking her favourite. Skaði was totally cool with that, and it was done. Turning the eyes into stars was easy; they were gods, after all. Finally, they had to make the grumpy Skaði laugh, and Loki had a plan. First, he got out a goat and a rope, and tied one end to the goat's beard. He then tied the other end to his testicles and proceeded to play tug-of-war with the goat, which must have been incredibly painful. Skaði found this hilarious, and that is how the gods made peace with a giantess.

## Odin Literally Vomits and Poops Poetry

You thought Odin was above all these stupid antics? Ha! Think again. One example is the story of how humans got poetry. It's a long story, but I'll go over the main points. Believe me, it makes exactly as much sense in context.

Two groups of gods went to war, but eventually they made peace. To seal their peace, they all spat in a golden bowl, which Odin then turned into a dude named Kvasir. Kvasir was incredibly wise, and two dwarves became jealous of him and killed him. They drained his blood and turned it into mead (an alcoholic drink), but a giant took the mead from them and stored it in an underground cavern. Odin went on a quest to find it that involved tricking farmers into killing each other, turning into a worm, and sleeping with the giant's daughter. Finally he managed to drink all of the

mead. Immediately he flew back to Asgard in the shape of a falcon, with the giant in hot pursuit in eagle form. Odin barely made it over the walls of Asgard and immediately threw up all the magical mead into barrels the gods had waiting. However, he was in such a hurry that he accidentally pooped some of it out at the same time, while his backside was still over the earth. The poetry-poop fell to the ground and became the inspiration for lesser poets and "rhymesters", which I interpret as rappers.

## Thor and Loki Went to a Wedding in Drag (and Thor was the Bride)

The giants were causing trouble again, and this time the giant Thrymr had stolen Thor's hammer. As ransom, he demanded the goddess Freyja as a bride (yeah, this happens to Freyja a lot). No one had any idea what to do, until Loki suggested that they dress Thor up as Freyja and send him as the bride instead. Everybody agreed that this was stupid enough to work, and they dressed the reluctant Thor in a wedding dress, with a very heavy veil. Since Loki was the smartass who thought this up, they dressed him up as a bridesmaid and sent him along to Thrymr's castle with Thor. Incredibly, Thrymr actually fell for this, and whenever Thor did something suspicious, like eating a whole ox, Loki was ready with an excuse. This went on until Thrymr handed the hammer to "Freyja". Thor immediately grabbed it and slaughtered all of the giants in the castle, still in his wedding dress. Would you not pay good money to see this happen in the next Marvel movie?

# Crude Yet Mildly Effective Philosophical Dialogue



**NICK YANG**  
1A MATH

"Could God Make a Rock so Heavy that Even He couldn't Lift it?"

This question (or some similar variation of it) has puzzled philosophers since antiquity. Dubbed the "omnipotence paradox", it asks if an all-powerful being could nullify its own power. Today it's used by atheist trolls to "disprove" God. Strawman aside, the question is a very good place to begin to get into philosoph-

ical thought - a springboard to exercise our mind's creativity and ability to rationalize.

The following is not meant to be offensive in any way, and the author apologizes in advance for any temporary or lasting harm done to individuals or himself because of this article.

Assuming God is all powerful and existent, let's look at some possible answers...

1) No.

God could not create a rock so heavy that he could not lift it himself since his power level shifts to over nine thousand be just above the most impossible thing. So he would just get strong enough to lift

the rock.

2) Yes.

This is GOD we're talking about. G-O-D. In other words he can make reality his b\*tch even if it makes no sense, because guess what? God created logic, time, concepts, everything. He can do whatever he wants and get away with it, he can get two wieners from his mom while his gray crown-wearing friend only gets one, he can download more ram, click the ads that tell him about hot singles in his area without getting viruses, ANYTHING. Which means he also should be able to bypass the paradox with his power (e.g. he could make it so he is unable and able

to lift the rock at the same time), thanks Psycho-pass.

3) No.

God isn't immune to logic so in a way his Omnipotence is actually limited. Like how you can't combine coupons when eating out. God can't do anything logically impossible because no matter how powerful he is, he cannot overcome the rules of existence.

4) I dunno?

Some philosophers believe that applying human logic to a divine being is like applying ground hot peppers to a (totally not serious) crotch rash contracted during applied sex ed.

IT. DOESN'T. WORK.

Proponents claim that God is far too divine, good, all-knowing, etc. to really understand anything about him much less what he can and can't do. We're better off thinking about more practical useful things like phil-. Never mind.

I'm not going to list any more possibilities. Partially because I can't think of any more, BUT also because this should have given you a broad enough picture to decide or reason out a more emotionally and/or logically good point. Remember folks: philosophy isn't about choosing random BS to believe; it's about making up random BS to believe and refining it in accordance to the principles of logic and evidence, or just failing to do any of that and basing it entirely of off pseudo-scientific dogma so you can jack off to how superior and enlightened you are cough-Richard Dawkins-cough. Join us next issue where we'll examine different ethical theories and their strengths and weaknesses. Until then please send your angry emails suggestions to [69xXskull-kicker.Xx69@gmail.com](mailto:69xXskull-kicker.Xx69@gmail.com)

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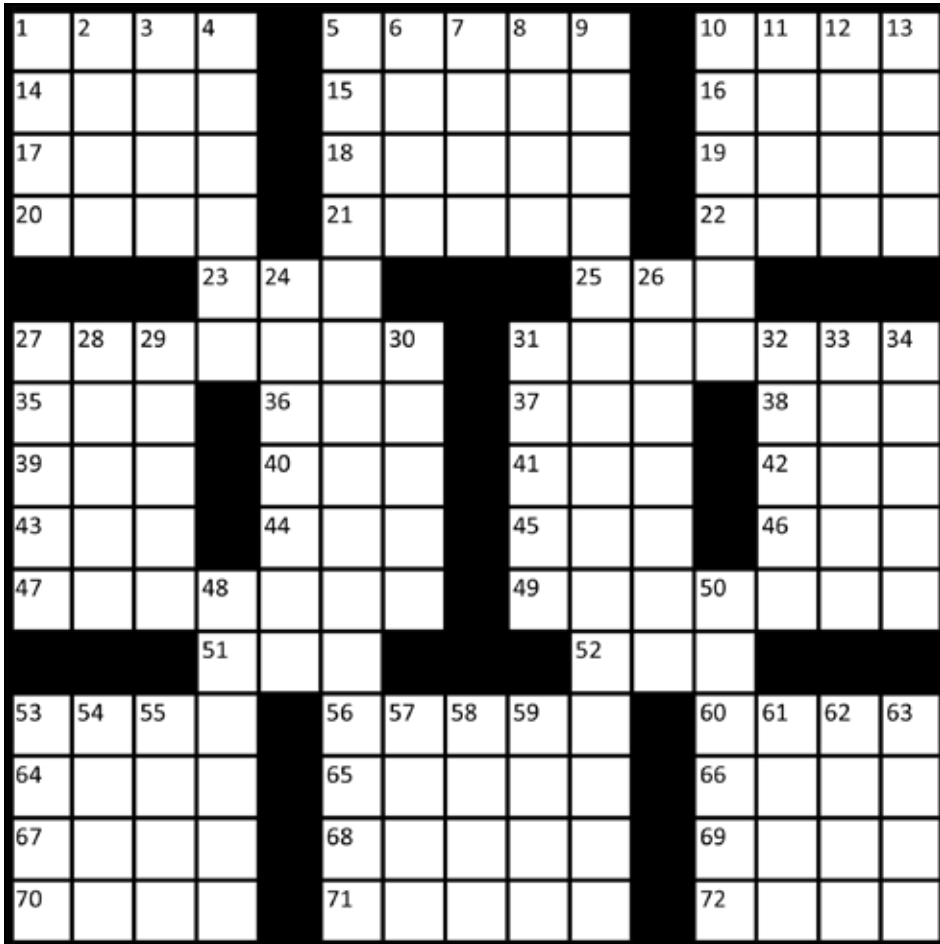
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# The Iron Crossword

Extinctions Past and Future

**CAMERON SOLTYS**  
3B MECHANICAL



**ACROSS**

- 1: Individual article, especially when part of a group
- 5: Plunge down, while in flight
- 10: Angle between a leaf stalk and its branch
- 14: Famously flightless extinct bird
- 15: Largest artery in the body
- 16: Colourful Pixar character lost in the sea
- 17: Gaze inappropriately or maliciously
- 18: Transportation devices of the sea
- 19: Latin suffix that makes an adjective of the word "fungus"
- 20: Low-class Anglo-Saxon laborer
- 21: Spanish for "they"
- 22: Top half of a sand-casting mold
- 23: Short form for Syria (abbr)
- 25: The \_\_\_ and flow of the tide
- 27: Germinated seeds for eating
- 31: Taxonomy kingdom of humans
- 35: Measure of absolute accuracy of estimates (abbr)
- 36: Police officer

- 37: Popular sheepskin boot
- 38: Once around, for instance a track
- 39: We \_\_\_ the engineers
- 40: Video game speak for damage to an area (abbr)
- 41: Twelfth month (abbr)
- 42: Adam Morrison, NBA star (nick-name)
- 43: Windows application for "ipconfig"
- 44: Toronto bus organization
- 45: \_\_\_ Needles, ex-chancellor of uWaterloo
- 46: Location of upcoming Olympics
- 47: Islamic fortresses for powerful leaders
- 49: Best solution to a problem
- 51: Small hive-mind insect
- 52: Company that provides internet service (abbr)
- 53: Seed that can be eaten
- 56: Covers a cake
- 60: Red-tailed \_\_\_
- 64: Dolphin that eats other dolphins
- 65: Endemic bird species of Waterloo main campus

- 66: Curved moulding above a window or door
- 67: Farm building for equipment or animals
- 68: Owner of great Italian restaurant at King and Columbia
- 69: Showing excess curiosity about others' affairs
- 70: Region
- 71: Liquid that can be converted to polymer
- 72: Tolkien tree-like beings

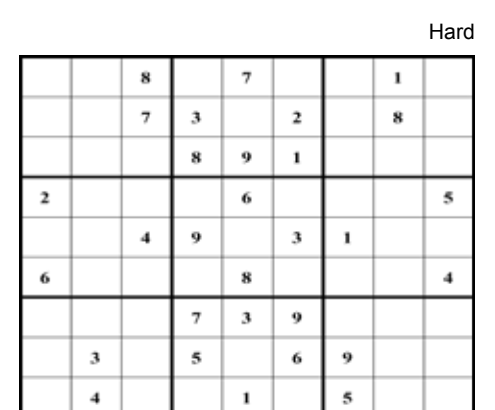
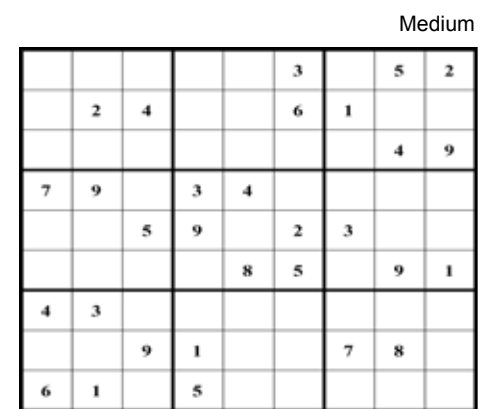
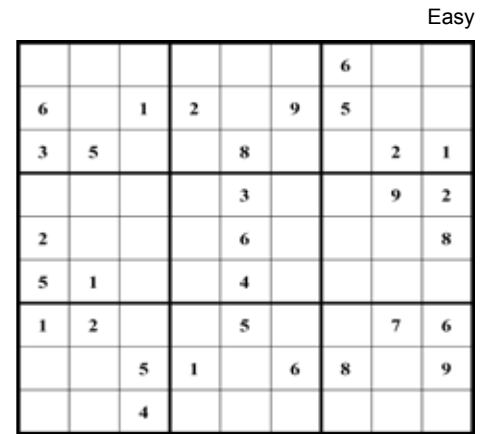
**DOWN**

- 1: Not doing anything
- 2: Digits of the feet
- 3: Biblical land of plenty and perfection
- 4: To a greater degree
- 5: Large cat that lived during the last ice age
- 6: Sheep hair, used for textiles
- 7: Relating to the mouth
- 8: \_\_\_ von Bismarck, German leader
- 9: Now-extinct bird that's flock could block the sun
- 10: A missile capable of delivering a nuclear payload
- 11: Relating to foreigners
- 12: "It's my turn!"
- 13: Car keys or glasses, for instance
- 24: Landmass where a dinosaur-killing comet hit
- 26: Lions, tigers, or 5 Down
- 27: Hit, perhaps on the rump
- 28: City famous for prosciutto and cheese
- 29: Grass-like wetland plant
- 30: Eyeglasses, informally
- 31: Relating to sound
- 32: Sound signifying danger or action
- 33: Mythological snake-human hybrid
- 34: Storage device for wire or tape
- 48: Elongated yellow fruit
- 50: Communication device sold by Apple
- 53: \_\_\_ Fett, Star Wars character
- 54: Spanish for "to plot"
- 55: Unit of measure for farm fields
- 57: Circle-based pyramid
- 58: Charged atoms
- 59: Narrabri Stellar Intensity Interferometer (abbr)
- 61: Ancient Greek for contest or struggle
- 62: Opposite east
- 63: Used to unlock doors

# Sudoku

#2016-11

**CAMERON SOLTYS**  
3B MECHANICAL



Solutions for previous crosswords can be found on *The Iron Warrior's* website at [iwarrior.uwaterloo.ca/distractions](http://iwarrior.uwaterloo.ca/distractions).

**THE IRON INQUISITION**  
Vince, Leander, Hira, Sumaita

## What is Your Dream Co-op Job?



*"Can I get paid to sleep? That'll be nice."*  
Baraa Alrawi, 2A Management



*"Zookeeper, so I can control all the geese on campus"*  
Calvin Poon, 3B Management



*"Pug Executive Officer (PEO)"*  
Sarbajoy Majumdar, 3B Management



*"Professional Sarb Trainer (PST)"*  
Awn Duqoum, 2B Tron



*"WEEF TA"*  
Abdullah Barakat, 3B Mechanical



*"Dog Whisperer (Cesar Milan)"*  
Zihan Li, 1A Nano

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