



Schiaparelli Probe Fails Mars Landing

Page 4



Opinion: Why I Don't Eat Beef

Page 4



Nintendo Announces New Console

Page 3

facebook.com/TheIronWarrior

twitter.com/TheIronWarrior

iwarrior.uwaterloo.ca

US Led Iraqi-Kurdish Coalition Launches Offensive Campaign to Reclaim Mosul from ISIL



Iraqi soldiers in Kharbardan, a village south of Mosul. Yuri Kozyrev—Noor for TIME



MEAGAN CARDNO
4A NANOTECHNOLOGY

Back in June 2014, Mosul, the second largest city in Iraq, fell to the Islamic State of Iraq and the Levant (ISIL). This marked one of the largest and most devastating feats accomplished by the terrorist organization; it threatened the entire collapse of the Iraqi state, prompting the re-entry of U.S. military activity in Iraq since their withdrawal in 2011. Following this attack, ISIL's militaristic control of the country grew much more before efforts against them drew success, reaching a peak claim of the country's territory in December of 2014.

However, since then, militaristic efforts of Iraqi and Kurdish coalition forces led by the U.S. military have made great progress— by the following April, ISIL had lost nearly 30% of the territory they had once boasted. Now, the time has come for the coalition to attempt to take back the city that was lost over two years ago. The operation is particularly crucial, as Mosul represents the last major ISIL stronghold in Iraq.

The assault, which began on October 16, is expected to become the largest battle fought in Iraq since the United States invasion of Iraq in 2003. While reportedly the offensive is advancing far more quickly than originally planned, the attack is not without its complications and risks. The Iraqi and Kurdish militants are still several kilometres away from Mosul itself, and all

approaches to the city are well guarded by many forms of dangerous weapons— roadside bombs, suicide vehicle bombs, snipers, and mines all pave the way to recapturing the city.

In addition, following the initial stages of the assault on Mosul, ISIL has also carried out several sudden, organized attacks on the nearby city of Kirkuk. Multiple civilians, including workers from a nearby power plant and TV reporters, were killed in the process. ISIL has also set fire to numerous factories in the vicinity, including a sulphur plant, resulting in the creation of large volumes of toxic fumes, which have caused breathing problems in over 1000 people, killing at least two civilians so far.

The complications only get worse inside of the city. While the reported number of

ISIL fighters vary, it is expected to be only between 3000 to 10,000— a very small number of armed soldiers to hold a city once home to over 2.5 million residents. Hundreds of families from neighbouring establishments have been forced out of their homes and taken to Mosul, an act that makes many fear the use of these civilians as human shields.

It is difficult to predict how long the siege will last, be it weeks or months until some sort of resolution is made. However, the complications will continue upon the liberation of the city, as over half a million fleeing Iraqi civilians will probably require shelter. Humanitarian efforts are likely going to be required to help sustain these individuals, as they are expected to overwhelm existing refugee camps.

A Dangerous Defect – Samsung's Note 7



LEANDER RODRIGUES
1A NANOTECHNOLOGY

As you may have heard this past week, there's been some explosive news recently, most of it directed at the major tech giant Samsung. This trusted mobile phone developer unveiled their new Samsung Galaxy Note 7 all the way back in mid-August, but reports have been coming in all October about a dangerous side effect of leaving the phone charging for some extended periods of time. The phone seems to overheat while charging, and begin smoking, before sometimes exploding into a violent fire.

There is some science behind why the phone is just exploding. The lithium ion batteries used to power the phone contains a liquid inside that is highly flammable. If it were to short circuit and make a hole in the plastic wall separating the positive and negative sides of the battery, that new hole becomes

the ideal route for electricity flow. This flow heats up the liquid around it and if this happens too quick, the battery (and the phone) will explode, without ever giving any telltale signs to the outside world.

This scary incident has happened a few too many times for comfort, with official tallies from the US, South Korea, Taiwan and Australia that totals to around 112 occurrences. There were around one million Note 7's in circulation when they began malfunctioning, of the 2.5 million that were manufactured. Even though the idea of having a bomb in your pocket when you just want to check twitter is frightening for most, the statistics released by Samsung themselves provide a good bit of comfort: only 0.01% of all the Note 7's has reported signs of the defect, meaning there's only a very rare chance of your new phone trying to kill you.

Just to be on the safe side of things, however, Samsung recently issued a recall for the phone's first wave just to make sure that they're good for the consumers to use without concern. To make up for it, Samsung started

sending their dissatisfied customers replacement Note 7's, which seems good on paper, but really only if it works if it was done properly. Reportedly, already at least 5 of the replacement phones have had the same defect and burst into flames for different people. The fact that these Note 7's are unpredictable and seem to be randomly burning up (even when the experts thought it was safe) has led to Samsung completely recalling every single Note 7 and all the replacement units as well, as well putting an end to the Samsung Galaxy Note lineage completely.

Though this is obviously the safest course of action, the compensation factor is still a relevant and costly part in this decision. Samsung can simply refund all the phones and take the loss (and to be fair, they sold firecrackers to their customers), but there are still the people who have been affected by the destructive fire caused by the phone. There are plenty of people who have been seriously injured because of the overheating/explosion, or even houses that have had serious damage due to the fire that the phones

have been starting. Plenty of lawsuits have been filed against the Samsung from families of some pretty difficult situations. A man had part of his house burn down from the phone, another family had their six-year-old son burn himself from the phone catching fire in his hands, and there's a product liability lawsuit on behalf of an Ohio man who received some gruesome 3rd degree burns from the phone literally exploding in his pocket. An even scarier situation occurred where the phone started smoking on a plane while on the runway, which resulted in the plane having to be evacuated.

This news sounds so extreme that it's already been turned to parody, with plenty of YouTube videos saying things like 'Samsung's selling bombs to their consumer base'. All the ridicule Samsung has received has led them to issue takedowns on all such videos and webpages, but unfortunately for them, fair use is a thing. The videos persist and Samsung has been on the defense for weeks, but that tends to happen when you sell bombs to your consumer base.

Letter from the Editor

Nie mój cyrk, nie moje małpy



CAITLIN MCLAREN
EDITOR-IN-CHIEF

Are your exams done? Yes? No? Are you still alive? If yes, congrats! If no, you'll make it, I promise. I'm sure after all the studying you've been doing, and haven't been doing, you've realized just how many distractions there are. It might be the internet, or the news, or the editor nagging you to get stuff done (just kidding, you writers and copy editors are awesome! I can't believe how much you all managed, despite Hell Week). Life is full of all kinds of attention vampires that prevent you from doing what you need to do.

Even if you are very self-disciplined and have a handle on how much time you spend on the internet, watching movies, etc., the biggest source of distraction is other people.

We all have that one friend who is constantly full of drama and is always talking about it. Or maybe your family is having some kind of disagreement that you find yourself getting dragged into. Your project group can't agree. Whatever the issue is, you keep getting pulled into other people's negativity, nonsense, and self-centeredness. It happens to everyone.

Is it avoidable? Most of the time, it is. However, since we are nice people, we often want to somehow fix things. We listen to someone complaining about where their poor decisions led them, or about still other people's bad behaviour. We start to become involved in other people's problems, sometimes to the point where it will affect our own lives.

When this happens, it is a good idea to remember the Polish proverb: *Nie mój cyrk, nie moje małpy*. "Not my circus, not my monkeys." Other people's drama is just that. If people can't manage their own lives, it isn't on you to sort it out for them. If your friends or family or classmates want to drag you into their unnecessary troubles, remind yourself that it isn't your circus and they most definitely are not your monkeys.

That doesn't mean you shouldn't help your friends in tough situations, or give them a friendly ear and a shoulder to cry on. Everyone needs supportive friends, and being a good person involves a certain amount of empathizing with other people and caring about their problems.

However, there are a couple of things you should keep in mind. For one thing, is your involvement in any given issue actually helpful? Is it helping to escalate or de-escalate a difficult situation? Will your presence change things for the better, or just waste one more person's time and energy? Secondly, even if you can

help, is it worth your time and energy? We are all adults, each with our own goals. Is it worth it to you to take time away from what you need to do, in order to do what other people need to you? The answer may be yes or no, and both answers are equally valid. It is your decision—don't let yourself be guilt-tripped, blackmailed, or just plain pushed into a situation you don't deem to be worth your time.

That goes for everything, not just drama. Around 50% of everything is complete nonsense. Actual proportions may vary, of course. Your time is valuable; every week has only 168 hours and every hour has only 60 minutes. Once you spend one of those, you won't get it back, whether you spent it working on an important project, regenerating with your favourite hobby, or just watching mindless videos on YouTube. You have great things you can do with your life! Most things aren't worth your attention. Don't waste your life on nonsense. Your roommates aren't your monkeys, and the fight over the kitchen isn't your circus. Celebrities aren't your monkeys, and Hollywood isn't your circus. Things that distract you from what you really want to be doing should be just ignored.

And yes, you do have the right to ignore them. Run your own circus. What that consists of is up to you. If you don't pay any attention to current events, that's fine; as long as you are doing something useful with your time, you aren't obliged to involve yourself with things just because they are loud and ubiquitous. If you don't want to pay attention to the news surrounding the upcoming election (what a circus that is, and with such monkeys!) then by all means don't. If shallow controversies of the day fail to stir any passion in you, then by all means have

no opinion. Don't get caught up in fights where you don't even have a puppy. A plague on everyone's house. You have no moral obligation to involve yourself in situations that are not your concern.

Of course, that implies that you must have some concern. You don't have the right to sit at home and let the group project or your friendships or the world fall apart. Your time is valuable because of what you can use it for. Don't just repudiate anything that doesn't immediately interest you; instead, choose what you want to focus on. Pick your priorities. You can always change them in light of new information. But don't ignore priorities just because something new comes to your attention. Don't put off important things in favour of seemingly urgent nonsense.

There are two kinds of things: things that are worthy of your attention, and things that are not. Note: your attention. Not just anyone's attention; your personal attention, the only one that matters. Learn to distinguish between these two groups quickly. The key to efficiency is organization and focus. Organize everything which comes to your attention into "worthwhile" and "not worthwhile." Focus on things that are worthwhile—that have real consequences, and that you can affect and change for the better. Other things? Well, if you want to engage with them, that's your prerogative. But when you need to cut things out of your life, "nonsense" needs to be the first to go.

When it comes to exam season, or any stressful time in your life, you'll need to decide exactly what your circus is. You are the only person taking responsibility for your life, and that should always come first. If your act isn't together, there's no time or reason to start training someone else's monkeys.



Not pictured: your problem.

Advertise With Us!

Want to reach a wide, intelligent audience which includes students, faculty and staff at the University?

We are the official newspaper of the University of Waterloo Engineering Society representing the entire undergraduate engineering student body of over 6000 students.

Our newspaper is distributed all across campus and is the perfect medium to advertise your event, employer information session, service, etc.

For more information, please visit iwarrior.uwaterloo.ca/advertising or contact us at iwarrior@uwaterloo.ca, 519-888-4567, Ext. 32693

Send your submissions for the next issue to iwarrior@uwaterloo.ca by November 4.
Fall 2016 Publication Schedule: September 28, October 13, October 26, November 9, November 23

THE IRON WARRIOR

The Newspaper of the University
of Waterloo Engineering Society

Editor-in-Chief
Caitlin McLaren

Assistant Editor
Raeesa Ashique

Layout Editors
Meagan Cardno

Copy Editors
Elizabeth Salsberg
Cameron Soltys
Raeesa Ashique
Bryan Mailloux
Meagan Cardno

Circulation Manager
Vince Magas

Web Editor
Bryan Mailloux

Social Media Managers
Anika Roller
Cecile He

Staff Writers
Meagan Cardno
Tiffany Chang
Donovan Maudsley
Caitlin McLaren
Elizabeth Salsberg
Cameron Soltys
Hira Rahman
Gabrielle Klemt
Alex Pezzuto
Anika Roller
Alina Pavel
Leander Rodrigues
Vince Magas
Will Klanac

Contributors
Adelle Vickery
Abdullah Bakarar
Jeff Gulbranson
Sarbjay Majumdar
Will Wilmot

ADVISORY BOARD
Off-Stream Editor-in-Chief
Donovan Maudsley

Executive Members
Sarbjay Majumdar
Chelsea VanderMeer

Students-at-Large
Megan Town
Maya Deen

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

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

All submissions, unless otherwise stated, become the property of The Iron Warrior, which reserves the right to refuse publication of material which it deems unsuitable. The Iron Warrior also reserves the right to edit grammar, spelling and text that do not meet university standards. Authors will be notified of any major changes that may be required.

Mail should be addressed to The Iron Warrior, Engineering Society, E2 2347, University of Waterloo, Waterloo, Ontario, N2L 3G1. Our phone number is (519) 888-4567 x32693. E-mail can be sent to iwarrior@uwaterloo.ca

Close Call in the Red Sea: Missiles Fired at US Warship



WILL KLANAC
1A NANOTECHNOLOGY

Tensions quivered this past month after several disjointed exchanges between the suspected Houthi rebels of Yemen and an American destroyer. Over the course of a week, three incidents were identified by the USS Mason, a vessel mobilized off of the coast of Yemen in the Red Sea. To probe these happenings, we require a trusty toolbox of questions to guide us: who are the Houthi, how did they rise up, and why were the Americans so far from home?

The Houthi's grassroots foundations lay in a family of the same name and a movement known as the "Believing Youth", first seen

in the early 1990's. They operated through summer education programs and social gatherings, with the purpose of promoting Zaydism, a sect of the Shia branch of Islam. The Zaydi imamate ruled various regions of Yemen from pre-medieval times until 1962, when this structure was dismantled in their receded territory of North Yemen. Its place in the North was filled by the Yemen Arab Republic, of which Ali Abdullah Saleh became president in 1978.

Houthi were first seen taking militant action in Yemen circa the summer of 2004. Preceding this was the start of the invasion of Iraq by the US; a response from the Houthi was prompted through form of protest evolving into physical conflict between the two. Following this, a six-year period filled with smaller clashes and two ceasefire agreements began. Overlapping the fighting was a resur-

gence of protest in Yemen. In the period of 2008 to 2011, discontent rose with President Saleh, who had led North Yemen and Yemen for a collective forty years to that point. This was urged on in 2011 by the protests in Tunisia of late 2010, which sparked the start of the Arab Spring series of revolutions. By the end of 2011, President Saleh had resigned; the Houthi would march over the void left by his succession in order to possess the chunk of North-Western Yemen they now inhabit.

That explains the Houthi, but what of the presence of the US? The US is currently backing a coalition of countries from the Persian Gulf area spearheaded by the Saudis. The coalition seeks to consolidate the government of Yemen following its deposition from the capital and southward areas. Movement of American naval forces into the Red Sea was driven by the destruction of a ship belong-

ing to the United Arab Emirates – a coalition member – earlier this month. The missiles used to attack the vessel were suspected to be Chinese exported C-802 missiles.

Naturally, first military contact between the US and Houthi follows the tail of this event. US Department of Defense (USDD) Director of Press Operations Capt. Jeff Davis claimed that on October 9th, "the USS Mason detected two inbound missiles" originating from Yemeni shoreline, noting that "both missiles impacted the water before reaching the ship". The ship was situated in the strait of Bab el-Mandeb, which connects the Red Sea to the Gulf of Aden. Several days later, it was revealed that the ship launched two SM-2 missiles and an Evolved Seasprow missile to intercept the threats. With no reported injuries to U.S. personnel and no pursuit of retaliation, focus on the event dwindled.

Nintendo Announces Next Generation Console



MEAGAN CARDNO
4A NANOTECHNOLOGY

Code named the "NX" for months, Nintendo finally released a video on October 20th featuring a first look at their next-generation console—the Nintendo Switch. The YouTube video was received with stunning support, with over sixteen million views at the time of writing. But unlike some other highly-viewed gaming videos, (such as Metroid Prime: Federation Force, whose like/dislike bar was disabled, or the thirty-four million views of the Call of Duty: Infinite Warfare reveal trailer, which boasts over three million dislikes), this reveal was met with nigh-on unanimous praise, as Nintendo boasts something no other main-entry console can: complete portability.

This is achieved through the console's namesake: the capability for the console to be played in a variety of ways through its

switchable controller setups. The console comes with two "Joy Con" controllers, a left and right version, which are simply a control stick and four buttons to allow for the most basic type of gameplay if used by themselves. These two can be linked together on a Joy Con "Grip" to form a more conventional dual-analog stick controller, or can be linked directly to the console's portable screen for a fully-HD, portable home console. If you are really weird you can also grip the two independently but in conjunction, like the old Wiimote and Nunchuck duo of years past, but I don't know anyone who would do that (aside from maybe those weird Smash Bros. players who use the Wiimote and Nunchuck).

Most exciting for many gamers is the plethora of third-party partners that Nintendo featured in their reveal video. Many fans rejoiced as they saw a man playing Skyrim on an airplane, showcasing fan-favourite Bethesda's partnership. Other big names featured were Square Enix, Konami, Unity, Capcom, Sega, From Software, Ubisoft, Ac-

tivation, Bandai-Namco, and several more.

However, it does come with its own questionable choices. In an interview, a Nintendo representative supposedly confirmed that the games will solely utilize cartridges called "game cards", similar in size to the SD-card like 3DS game cartridges, but unfortunately not compatible with 3DS games. Even more surprising is the lack of a disc drive, meaning no reverse compatibility with WiiU or Wii games either. This has made several gamers confused, as footage of WiiU entries such as Splatoon and Mario Kart were also shown in the reveal trailer. Does this suggest the games will be ported to the new console, or are these sequels? If they are ports, does Nintendo expect gamers to pay for the new entries again simply to play them on their Switch? Several observant fans have noticed that the footage of Mario Kart boasted new features, including a new playable character and dual item slots. This could suggest either a sequel, or an "enhanced" port to entice gamers to pay for a game they already own.

Another fact that shocked many fans is

that the second screen sported by the Switch is actually not a second screen. The previous generation of console, the WiiU, sported a gamepad that could be used a primary screen for gameplay, or as a secondary screen providing in-game information (i.e. maps, inventory, player status) while the main game is displayed on a separate monitor. Instead, if you are playing your Switch on a television, the portable screen is inactive. This is likely due to the fact that the screen must be connected to its base in order to relay information to your television or monitor. While it has not been confirmed, the Switch Screen is highly suspected to not feature touch-screen or gyroscopic properties for this reason. Many purport that this is also the reason why the game does not support reverse compatibility, but will instead have ports of WiiU entries; many games that heavily used the Gamepad (or, for the 3DS, the lower touchscreen) for gameplay will need to be re-worked for the new control scheme.

The current official release date of the console is March 2017. Its sale price is unknown.

Julian Assange's Internet Cut Off by Ecuador



HASAN AHMED
1A NANOTECHNOLOGY

The upcoming US election has caused some problems for the non-profit organization Wikileaks. Recently, Julian Assange, founder and chief editor of Wikileaks, had his internet shut down by the Ecuadorian government in light of the election.

Wikileaks is an organization known for publishing government secrets from anonymous sources for the world to see. Generally, these documents are extremely confidential, and don't necessarily see the light of day under any circumstances. It has been operating since 2006 and describes itself as "an un-censorable system for untraceable mass document leaking."

Julian Assange is an editor for Wikileaks, and his work has granted him popularity across the world wide web. However, after rape and molestation claims by two women (which he denies), Assange fled, despite no charges being laid. After applying and being granted asylum in Ecuador in 2012 after arrest threats, he has remained there ever since. If he tries to leave, he will be deported back to Sweden.

2016 has been rich in events regarding the US election, and the constant debate between Clinton and Trump. Talk has always been spread around about Hillary's 30,000+ deleted emails and how that makes her an untrustworthy candidate. Re-

cently, Wikileaks uploaded an archive of the emails for the public to read. Despite the leak, it did not affect Clinton's general standpoint in the election, since Trump's infamy appears to overshadow the emails. The revealed emails are about 50,000 pages in length, and span 4 years of content, including transcripts and leaked debate questions.

The Ecuadorian government decided that

the election date was too close for Assange and Wikileaks to uncover information that may affect the voting process, so as of October 17th 2016, they shut down Assange's internet until further notice. This was done to prevent any potential interference with the US election.

So was Ecuador right to do this? Or should Assange have been given the freedom to uncover more information about

the US government that may sway voter opinion in the coming weeks? Either way, the election is not protected from other Wikileaks members, Russian hackers, or any other people who want to get their hands on private information. It may seem pointless to cut off Assange's communication, but Ecuador also has to think about other individuals' rights in order to protect their country as a whole.

KITCHENER WATERLOO



TRAVEL
Clinic

Travel Vaccines
& Advice
by Appointment

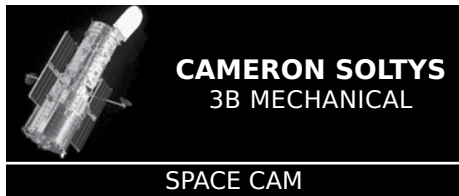
Health Canada Certified for Yellow Fever

519.570.4208

www.kwtravelclinic.ca

Physicians Certified in Travel Medicine

Schiaparelli Probe Fails Mars Landing



On Wednesday September 19, the European Space Agency (ESA) spacecraft Schiaparelli—named after Giovanni Schiaparelli, an astronomer who described many features on the surface of Mars—attempted to land on the aforementioned planet. The probe was using a new type of landing system that involved a heat shield, parachutes, retro-rockets, and a crumple zone. Unfortunately, ground control lost contact with the spacecraft during the descent. A brief analysis of the data that the lander was continuously streaming back to its parent ship, the Trace Gas Orbiter, suggests that it hit the ground at high speed after unexpectedly free-falling from a few kilometers up.

Schiaparelli

Schiaparelli was a small space probe that was designed (primarily) to test the landing system that will be used by a 2021 ESA rover to land on the planet. The landing system is complicated; first, the probe entered the Martian atmosphere at 5.8 km/s. At that

high speed, the probe compressed the air in front of it so much that it heated up, necessitating a heavy heat shield to protect the delicate lander. This is the same effect that produces flame-effects when craft re-enter Earth's atmosphere, and not friction as is frequently thought.

After losing most of its 21 000 km/hr initial speed to air drag, Schiaparelli deployed parachutes to slow down further. Both the heat shield and the parachute deployment went off without issue. Following standard procedure, the probe would detach from the parachute shortly before landing, at which point retro-rockets would fire to bring the probe to a not-quite hover at 2 m above the ground. The rockets would cut out and the probe would fall to the ground, cushioned by a crumple device. A Doppler radar altimeter, which measures the altitude of the spacecraft during descent, would be used to provide feedback to the probe and coordinate the different stages.

Unfortunately, standard procedure was not followed; the parachute released far too early, and then the retro rockets fired for four seconds, not thirty seconds as expected. It is currently believed that the probe free-fell from a kilometer or two, hitting the ground at a tremendous speed that the crumple zone could not protect against.

Even though Schiaparelli was designed to be a

trial run of the landing system, the crash is disappointing. The probe would have survived for only two to eight Martian days (or Sols), collecting previously-uncollected data about airborne dust. While it is better that the small lander was destroyed than the more ambitious 2021 rover that is to follow, it would have been nice if the landing had gone off without a hitch, leaving the team confident in their system.

This landing is also disappointing because it is the second time that the ESA has attempted to and failed to successfully deploy a probe to Mars's surface; the 2003 Mars Express orbiter came with a simple small probe named "Beagle 2." That probe never made contact with Earth after entering the Martian atmosphere. However, the probe was finally located in January 2015 using satellite images, its communications array hidden behind undeployed solar panels. This has at least allowed the ESA to boast that they have successfully joined the small elite club of organizations that have put a payload on Mars.

The Trace Gas Orbiter

The Trace Gas Orbiter (TGO) is the orbiter that Schiaparelli accompanied to Mars. It detached from the probe on October 16, after which the two crafts entered different orbits. While Schiaparelli zoomed towards the surface of Mars, the TGO has entered

a higher orbit. It will spend a few months dipping down into the atmosphere to slow down in a process known as "aerobraking." This does two things to the orbit: it slows the spacecraft down, making the orbit smaller, and "circularizes the orbit," making it less ellipsoidal. Once aerobraking brings the TGO into a circular 400 km orbit in late 2017, it will begin to perform its science activities.

Among the scientific activities that the TGO will be performing is looking for traces of methane. Methane has been identified by several craft on and around Mars, and it is possible that the gas is coming from a microbial source. However, it is also possible that the methane is coming from some geochemical process like a volcano. The TGO will look for the presence of both methane and other chemicals in order to ascertain the more likely source; methane coinciding with other hydrocarbons like ethane and propane suggests biological activity, while it coinciding with sulphur dioxide indicates geological processes are at work.

It will be a while until the TGO gets down to science, revealing exciting new things about the Martian atmosphere. Unfortunately, with the presumed loss of Schiaparelli, there won't be much news out of these spacecraft until then, except the ESA hopefully diagnosing what went wrong with the probe's landing.

My Beef with Beef



I do not eat beef. It's not because I can't and it's not because it may be bad for me, but rather because I decided to stop turning a blind eye to one of the biggest and baddest global industries. As somebody who cares for the environment, I realized quickly that I had to stop contributing to the extremely high demand for beef that society already has.

First of all, supermarket cattle is raised in completely inhumane conditions. When cows are being raised to be eaten, they are not treated like animals, but more like inanimate objects. They

are not always marked with regular tags – some companies use hot branding irons to seemingly burn a label into the cows. They are not given veterinary care, resulting in preventable deaths to far too many cows.

Furthermore, the living conditions are deadly to them. There are cattle farms in Texas and Arizona where cows die from heat stroke, and there are farms in Montana and Nebraska where cows freeze to death due to insufficient living conditions. Worst of all, they are raised in their own waste. Because of the high beef demand, these cattle farms maximize production by squeezing as many cows as possible into the farm, where they stay for days on end living in their own manure. This manure releases methane, ammonia, and other toxic gases, thereby poisoning the cows.

The demand for beef is so high that the pow-

erhouse industries, such as SuKame, require expansion. This expansion results in the plowing of land. The Prairies are the prime source of land sacrificed to the beef industry. As a result, Prairie land is now only 20% the size of what it used to be, which is unfortunate given its significant role in storing carbon. The Native Prairies are estimated to have up to 200 tonnes of carbon per hectare, equivalent to the amount of carbon that is released by 150 cars in one year. When the grass and shrubs of the Prairies are plowed, this stored carbon is released.

The cows themselves also have a significant impact on the environment. They release great amounts of greenhouse gases which eat away at the ozone layer and increase the rate of global warming. Cow manure accounts for 5% of the methane released by the industry; 60% comes from the gastrointestinal tracts of the cows. All

of this methane that is released accounts for 25% of the total methane emissions in the world. This is very significant, since methane is considered among the worst greenhouse gases for its contribution to global warming.

Significant amounts of nitrous oxide, another greenhouse gas, are also released. This gas is most detrimental in terms of global warming. It is emitted from cow manure when the cows are being fed excessive amounts of protein, and from croplands if too much nitrogen is being applied to the crops.

In summary, when I think of beef, I think of pros and cons. It tastes great and makes for a good burger, but that is short term pleasure. The only pro of the beef industry for me lasts only a couple moments while I'm eating, but the negative effects are so long term and permanent that I cannot convince myself that eating beef is worth it.

The Beauty and Its Beast



A couple of weeks ago, there was an article published announcing the death of one of Earth's wonders. The 1,430-mile-long ecosystem, what used to be the largest living being on our planet, bordering hundreds of islands, and containing over 600 types of coral. The death of the Great Barrier Reef.

Thankfully, this article was slightly incorrect in its claims, as it's not dead – it's just dying at a ridiculously fast rate.

This reef, on the coast of Australia, is dying so quickly due to a process called coral bleaching. Visually, we can see this change as the coral goes from a healthy brown to an unhealthy white colour. The source of this is climate change: specifically, bleaching happens when the temperature of the water goes anywhere from 1.8°F to 3.6°F above average. Such unnaturally high temperatures arise from 2 things – El Niño, a periodic warming in sea surface temperatures linked to large-scale ocean temperatures, and global warming.

When the temperature is too high, the algae within the coral escapes into the water. When this release of algae happens, the coral's brown pigment disappears. Without colour the coral become transparent, with their skeletons visible. Unfortu-

nately, coral depends on the algae for energy, so it will die if temperatures do not return to normal fast enough.

The Great Barrier Reef has 3 sectors: Northern, Central, and Southern, and one was thoroughly checked this past summer to see how bad the bleaching is. In the Southern sector, 25% of is not bleached and in the Central sector, 10% is untouched by the bleaching. Although these numbers do not look too good, it may not seem significant enough for us to realize that something bad is happening on the coast of Australia. However only 1% of the Northern sector remains unbleached. This is seemingly a point of no return – we have pushed the environment to a place from which it cannot recover.

The only way the reef will survive is if climate change slows down. Bleaching takes decades to recover from when there is no pollution involved, but with the wasteful ways of society, it may in fact be too late.

We all recognize that the Great Barrier Reef was a beautiful treasure of this planet and we are very close to losing it. We need to learn from this mistake and be proactive in preventing environmental tragedies. Rather than tweeting about how we need to be better to our planet and then continue living life the same as before, or sharing an informative Facebook video then forgetting about it, we must come together and change our ways. It's time to make an active effort to help the environment.

CHAINSAW
Since 2009 Until 2024
WWW.CHAINSAWLOVERS.COM

\$2 BUCK TUESDAYS
EVERY TUESDAY

\$10 PITCHERS
THURSDAYS BEFORE 11PM

PABST ATTACK
\$4.50/TALL CAN
WEDNESDAY - ALL DAY
FRIDAY & SATURDAY - BEFORE 11PM

DIRTY BURGER DAYS
\$2 BURGERS AND WINGS \$6.50/LB
TUESDAY, AND WEDNESDAY

BIGGIE-UP
ANY DAY ANY TIME
A BURGER AND A BEER FOR \$4 BUCKS!!
ADD FRIES FOR \$2
ADD WINGS FOR \$2
PRESENT THIS COUPON
AT TIME OF ORDERING
LIMIT 1 COUPON PER PERSON. OFFER DOES NOT
INCLUDE APPLICABLE TAXES. NOT VALID IF
REPRODUCED, SOLD OR TRANSFERRED.

SAWDUST AND BEER AT 28 KING ST N, UPTOWN WATERLOO • (519) 954-8660 • LIKE US ON FACEBOOK • FOLLOW US ON TWITTER

Point Vs. Counterpoint

POINT

GABRIELLE KLEMT
1B GEOLOGICAL

How many of us have accidentally used the wrong pronoun when addressing someone? I'd argue that the majority of people reading this have done so at some point, and when it happens, immediately you feel terrible. You've just questioned someone's identity because of prejudices regarding hair or clothes or body type you may not have realized you had. When it happens to you? It's even worse. I had really short hair as a kid and was called a boy on multiple occasions - trust me, it didn't make me feel more confident about who I am and how I identify.

Refusing to acknowledge someone for who they are is not utilizing your free speech; it's rude. If you feel no remorse for purposely addressing someone by the improper pronoun, you are being lazy and callous and purposely damaging. It doesn't actually matter if you "don't understand" what it means to be gender neutral; you don't need to understand, you simply need to respect another person's choice. Perhaps I don't understand why someone would get a PhD in snowboarding, but if you want to be called "Dr X", I'll respect your preference because that's the society we live in today.

What if you truly believe that as a Canadian citizen you have the right to call someone whatever you see fit? What if you believe that because your video on "political overcorrectness" is just a way of expressing your confusion over a society where people can be both male and female or neither? What if you think it's an infringement on your rights that you not be allowed to resist authority telling you what to say? Well, to you I say, freedom can only go so far.

Maybe Bill 16, which "forces" people to use others' preferred pronouns goes too far; no one should be forced to do anything when the reverse doesn't hurt anyone. But how can you be sure it doesn't? We're talking about a community that has been marginalized for so long that people refusing to acknowledge them is just considered "free speech".

Saying, "if you look like a girl, I'll call you she. I can do that because I can say whatever I want as long as I'm not threatening" is not OK. Sure, being called a girl is not an insult; it isn't a slur, and personally I am very happy to be a girl. But I also know that there are a significant number of people in the world who don't consider themselves girls and; were you to address them as such, it would be damaging. Choosing to say "Well, I just don't understand it, so I won't accept it" is really not OK.

If you're still unconvinced and consider it free speech, this is a direct excerpt from the current University of Toronto Statement on Freedom of Speech, written in 1992: "Similarly, although no member of the University should use language or indulge in behaviour intended to demean others on the basis of their race, ancestry, place of origin, colour, ethnic origin, citizenship, creed, sex, sexual orientation, handicap, age, marital status, family status, the receipt of public assistance or record of offence, the values of mutual respect and civility may, on occasion, be superseded by the need to protect lawful freedom of speech. However, members should not weigh lightly the shock, hurt, anger or

Should The Government Mandate Using People's Preferred Pronouns?

even the silencing effect that may be caused by use of such speech."

If you look closely, sex is definitely included in that list, and as far as I understand the human race and as far as I can see how people are reacting to Professor Peterson's comments, deliberately choosing not to use a person's preferred pronoun would and has caused shock, hurt, and anger. And for every student and faculty member standing up and voicing their opinions on this matter, there are going to be those who feel demeaned enough that they will feel silenced and powerless on the subject.

Yes, universities are traditionally places where you can get up and speak your mind without repercussions. You can write essays and give speeches on near well anything under the sun. But it is an entirely different matter to put your theoretical ideas and ideologies into practice. Maybe today's society is much too PC for your liking. Great! Write articles, publish YouTube videos, tell people that you don't like the world as it is today. But if you do that, and then tell the world that people who believe differently than you will have cause to be uncomfortable in your classroom, there's a problem.

Why? Because universities are not first and foremost about free speech, they're about the dissemination of knowledge. If you choose to let your political beliefs change the dynamic of your classroom, you're not doing the first thing you should, and you can't be surprised or annoyed that there are people standing up against that. A classroom should be a place where anyone, no matter how confusing their identity might be to you, should feel safe and comfortable learning.

So, if a new law saying that using the pronoun a person prefers, versus one you would assign for them, is what it takes for people to be able to focus on the important tasks of teaching and learning, I say make that law. The only possible consequence could be a more inclusive, enjoyable learning environment. And if you truly can't stand this law, and if you believe this infringes on your freedom of speech in a way that you are not comfortable with, why don't you try moving elsewhere? Canada is a country that values inclusiveness, civility, and respect.

ALEX PEZZUTTO
1A NANOTECHNOLOGY

Earlier last week, a group of students decided to hold a protest against U of T professor Jordan B Peterson. The reason: to show discontentment with Peterson's most recent online lecture, in which he criticized Bill-16 and the legitimacy of political correctness.

For those unaware, Bill-16 (proposed by Jody Wilson-Raybould of the Liberal Party), would amend the Canadian Human Rights Act and Criminal Code to include protection for gender identity and expression. Wilson-Raybould claims the bill would address a fundamental issue of equality and human rights, as well as discrimination and hate crimes experienced by trans and gender diverse Canadians.

In his lecture, Peterson did not share the same sentiment. He denounced the bill and refused to use gender neutral pronouns. "I don't know what 'neither' means," Peterson said in his video, referring to the Ontario Human Rights Commission's definition of gender identity—a person's "sense of being a woman, a man, both, neither, or anywhere along the gender spectrum." He further goes on to say that there's an idea of a phenomenon called a gender spectrum, which he doesn't think to be a valid idea, seeing as that he hasn't come across any evidence for it. He concludes by stating the idea that gender is independent from biological sex is "a politically motivated and ill-informed opinion."

So, as one can glean from Peterson's rhetoric, there doesn't appear to be any malice. He is voicing his skepticism behind the Bill's implications, which would make proper usage of someone's pronouns mandated, such that forgoing someone's preferred pronouns is considered discrimination. The premises of the beliefs behind the bill are unfounded, and thus the passing of the bill could mean the inability to question and discuss such beliefs in a critical manner. Instead, it suggests that such controversial beliefs have been verified legally, leaving such questions of its validity to be considered "discrimination" in the eyes of the law.

The human brain and self-identity are quite complex matters; however, from a scientific standpoint, only two genders are known to exist: male and female. This biological dichotomy can be observed scientifically,

COUNTERPOINT

by the sexual dimorphic traits each sex expresses. As for transgendered individuals, there are studies that indicate certain brain patterns that emulate the structures of the sex they identify as, and not the one they were born with. But not everyone who identifies as transgender remains as such—some individuals misidentify themselves, which can have disastrous consequences if doctors and psychologists are directed by law or certain societal pressures to validate an identity instead of giving you an accurate diagnosis of a patient's condition, thus potentially committing to surgery and hormone-therapy. The bill could hinder research on gender divergences by immediately accepting any opinion as truth, and thus disadvantage individuals with struggling self-identity to find unbiased opinions on the topic.

Let's just assume that gender expression should be automatically accepted just based on one's person feelings alone. What common consensus/consistency can be drawn? We can potentially have a gender for every shade of femininity, masculinity, or androgyny someone thinks they possess. Many such non-binary identities seem to have very little observable or quantitative qualities, making their assignment entirely up to the individual rather arbitrary, almost a matter of semantics. Accompanying these genders are a wide variety of pronouns, which non-binary individuals prefer instead of being referred to with the conventional he, him, his and she, and her pronouns. According to the University of Wisconsin-Milwaukee, acceptable forms include zie, sie, ey, ve, zim, zer, em, ver, zir, hir, eir, and vis. Some individuals even change which pronouns they wish to be referred by on different days, which could be beyond confusing for an individual wishing to obey Bill-16. The broad number of identities and acceptable pronouns alone makes the idea very inaccessible for much of the population to grasp hold of, especially those who do not speak English as a first language, and maybe come from a language background without gendered pronouns and verb conjugations.

The pronouns listed just scratch the surface. The amount of pronouns needed to identify every one of these genders are astronomical, and the semantics would make any sane person want to pull out their hair. It is my sense of sanity which compels me to believe that people should have the right to be skeptical of this subject. If something doesn't conform to an individual's beliefs, they should feel free to voice their disagreement without fear of facing litigation and demonization. Just as individuals who believe in such a gender spectrum should not fear persecution for discussing their beliefs in a civil manner, so should those who disagree with the phenomenon. It's my belief that it is unethical to bully someone who is unwilling to buy into a certain perspective, whatever that may be, which is what Bill-16 threatens to jeopardize if it is passed.

There is a proper way to go about having your voice heard. If the genderqueer community wants people to take them and their ideas seriously, a good place to start would be to spend less time in large, loud protests demanding pronouns to be legally mandated. Instead, they could aim for holding a calm dialogue with individuals such as Professor Peterson who disagree with their beliefs. This way, reason and evidence lead the discussion, rather than accusation and violence. This is how ideas can prevail and persist, and if they cannot find a way to hold to that standard, then they're not worth having.



Vince Talotta/Toronto Star

Both alumni and current students alike rallied in protest against one UofT Professor's comments regarding Bill-16.

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.

Highlights from the Third and Final Presidential Debate



HIRA RAHMAN
1A NANOTECHNOLOGY

With the general elections quickly approaching, the American people were recently graced with one final debate before they cast their ballots. The general consensus among the pundits is that Hillary Clinton dominated the debate, leaving the Trump campaign in ruins. In fact, Clinton is now up 7.1 points. While many issues were discussed during the debate, here is the CliffsNotes version of the third and final presidential debate:

Will Trump accept the election outcome?

As his poll numbers fall, Donald Trump has been advocating that the elections are rigged in favor of Clinton. He has continuously warned his supporters of “large scale voter fraud”. As a result, when asked whether or not he will accept the election results, Trump responded by saying “I will look at it at the time.” While during the primaries, there was reasonable evidence of voter suppression in many states, it is more likely for Trump’s loss to be a result of his self-induced implosion.

Abortion and Roe V. Wade

On the topic of abortion, Clinton praised *Roe v. Wade*, the supreme court judgement that legalized abortion in 1973, as long as the life and health of the mother is taken into account. When asked about late-term abortions,

Clinton argued that the government should not intervene in such personal and “heartbreaking” decisions. Trump responded to Clinton’s position using right-wing talking points, stating that “you can’t take the baby and rip the baby out of the womb on the ninth month”.

Securing the Border

As expected, when asked about immigration, Donald Trump called for stronger borders and again argued that “drugs were pouring in.” Trump also accused Clinton of advocating for amnesty, saying that “we have some bad hombres here and we’re gonna’ get ‘em out”. As for Clinton, she reiterated that she supported a pathway to citizenship, which will be included in the comprehensive immigration reform package she plans to introduce within her first 100 days in office, stating that “I don’t want to rip families apart.”

Clinton Foundation: “Pay to play”?

When asked about a possible conflict of interest between the Clinton foundation and her position as secretary of state, Clinton avoided the question and instead took to boasting about the charitable work her foundation does. Trump and Moderator Chris Wallace did not press her on the issue, but it’s a question that deserves an answer, seeing that emails show that some Clinton Foundation donors have gotten government contracts in the past.

Trump’s sexual assault allegations

Donald Trump’s misogyny has been known

to the public for a relatively long time. Anyone can go through the years of Trump’s interviews and public appearances, and catch all sorts of inappropriate comments directed towards women. He has made it very clear that women are only sex objects to him.

On October 7, the Washington Post released a video from 2005 featuring Donald Trump bragging to Billy Bush that he groped and kissed women without their consent. Trump’s surrogates and supporters have been quick to dismiss the video, claiming that everything said was simply “locker room talk.”

Following the release of the video, there came the reports that in 2005 on the Howard Stern Show, Trump claimed that he walked into dressing rooms while the pageant contestants were naked: “No men are anywhere, and I’m allowed to go in, because I’m the owner of the pageant and therefore I’m inspecting it. ... ‘Is everyone OK?’ You know, they’re standing there with no clothes. ‘Is everybody OK?’ And you see these incredible looking women, and so I sort of get away with things like that.”

Over the past few weeks, more than a dozen women have come forth and accused Donald Trump of sexual assault. Donald Trump had denied all allegations, insisting that he never assaulted the women accusing him of sexual misconduct since they were not attractive enough to be assaulted.

The Trump Campaign has undone years of progress for sexual assault survivors over the last two weeks. Their defense of the sexual assault allegations made against Trump consist

of decades-old stereotypes that still prevent many survivors from coming forward. All women who have made claims against Trump have been accused of being gold-diggers, hungry for fame or political tools for the Democrats to destroy his campaign. Not only do his statements belittle the women who have accused him of sexual assault and harassment, they also silence other sexual assault survivors.

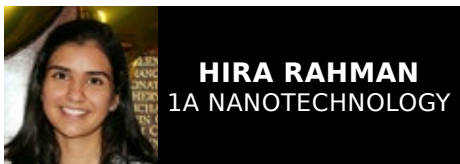
Trump accuses Clinton of doping

On October 15 at a New Hampshire rally, Donald Trump accused Hillary Clinton of taking performance enhancing drugs prior to the second presidential debate and proposed that both candidates be required to take drug tests before the final debate:

“We’re like athletes right? Hey, look. I beat seventeen senators, governors. I beat all these people... We’re like athletes right?... But athletes, they make them take a drug test right? I think we should take a drug test prior to the debate. I do. Why don’t we do that? We should take a drug test prior because I don’t know what’s going on with Clinton. But at the beginning of her last debate, she was all pumped up at the beginning, and at the end it was like, ‘Oh, take me down.’ She could barely reach her car.”

This is definitely his excuse for his poor debate performance, and we can easily dismiss it as the incoherent ramblings of a man who looks he’s about to become the thing he hates most in the world: a loser.

21 Nigerian School Girls Return Home After Two Years



HIRA RAHMAN
1A NANOTECHNOLOGY

In April 2014, 276 female students of the Government Secondary School Chibok were kidnapped by Boko Haram from their hostel. The mass abduction immediately received international attention and the #BringBackOurGirls social media campaign was launched in response.

On October 13, 2016, 21 of the Chibok school girls kidnapped by Boko Haram were released and reunited with their families. Negotiations between Boko Haram and the Nigerian government began after the group released a video showing dozens of the girls. In the video, a masked man thought to be the succes-

or to Abubaker Shekau (the leader of Boko Haram) offers to trade the captives in exchange for the release of their jailed fighters. The International Red Cross and the Swiss Government were also included in the negotiations.

Following their release, the girls and their families were hosted by the Nigerian president, Muhammadu Buhari, at the Presidential Villa in Abuja. The President also stated that “The Federal Government will rehabilitate them, and ensure that their reintegration back to society is done as quickly as possible”. The government is also assuming the responsibility for their personal, educational and professional goals and the girls will be given medical, nutritional and psychological care and support.

Unfortunately for the girls, their trauma does not end with their release, since they are not trusted by their community. As a result of the fear and hatred towards Boko Haram, the Chi-

bok townspeople fear that the former captives may be under the influence of Boko Haram and could attack the community. Additionally, the girls have become a target of hate due to the cultural stigma surrounding sexual violence. The girls are often called “Boko Haram wives”, harassed and sometimes even beaten. In an attempt to make the communities more accepting of the former captives, International Alert, UNICEF Nigeria and other local groups and helping the girls form support groups.

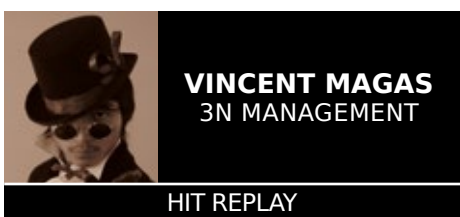
Immediately after the kidnapping, Shekau stated that the schoolgirls were kidnapped to be sold into slavery. However, since the incident has brought major media attention, the militant group has used their political value to negotiate prisoner exchanges with the Nigerian Government. A total of 57 schoolgirls managed to escape in the months following their initial capture. In May 2016, one of the

missing girls, Amina Ali, claimed that most of the remaining girls were still alive, although six had died.

At the moment, the Nigerian government is negotiating the release of 83 of the remaining 219 schoolgirls; however, previous negotiators in failed talks have stated that more than 100 of the girls appear unwilling to leave Boko Haram. The likely explanation for this is that they may be ashamed to return home after being forced to marry the fighters and bear their children.

For the time being, Boko Haram has been significantly weakened and is divided. It is likely that they will continue to expend their political capital in an attempt to strengthen their army. As more girls get released, they will inevitably require psychological and social support to help them recover from the trauma they endured while in captivity.

Record Players – Playing the Song Again



VINCENT MAGAS
3N MANAGEMENT

HIT REPLAY

Hit Replay is back again this term for another set of hits, trends and vintage love! Two terms ago, Hit Replay made its debut on the Iron Warrior featuring an article on the beloved vinyl record. As we now know, vinyl records sales have started to rise (and if you didn’t know that, time to jump online to the Iron Warrior website and checkout the latest Hit Replay article). So now Hit Replay kicks off this term with an article on the lovely record player! Where else to play your vinyl records but on one?

Modern record players, also known as phonographs or turntables are simply devices which reproduce sound that recorded on vinyl records. These are not unlike your cassette players for cassette tapes or your CD players for CDs. They are composed of three main parts: A motor-driven turntable which rotates a plate that the record sits on, a tone arm which holds

the cartridge containing the stylus, and finally the stylus itself, which follows the groove track on the vinyl record. Typically a regular record player setup would involve having the record player connected to a pre-amp which raise the low signal levels from the record player to usable levels for the amplifier. An amplifier or stereo receiver then follows next in the signal chain and finally the loudspeakers.

First a bit about the history of record players! The first phonograph was built by Thomas Edison (known as the “Edison Cylinder Phonograph”) in the 1870s and was purely mechanical. The first few versions of the phonograph operated with a large tin cylinder unlike the modern flat disk vinyl record. The phonograph was hand-cranked and produced rough reproductions of the recorded material at best. Thankfully after a few short years, Alexander Graham Bell’s Volta Laboratory made improvements on both the cylinders and styli that were being used in phonographs which improved the reproduction quality. By 1887, Emile Berliner invented what came to be the modern vinyl record which recorded material on a flat disc instead of Edison’s original cylinders.

By the turn of the 20th century, even more improvements were made to phonographs. With better audio quality and faster production times, record players dominated the market. Record players soon became a standard household item to be seen all across North America. Record players of all sorts appeared, many of them loaded with numerous features: from fully automatic turntables, disk changers, and even automatic players which allowed you to select the start track.

Dark clouds appeared over record players and analog technology in the late ‘80s and early ‘90s when there was a shift into cassettes and compact disk. The pop and scratch free CDs became the more common mode of storage for audio. With the decline of vinyl records, turntables fell out of use, save for those of us who were analog lovers. In recent years however, people hit the replay button and turntables along with vinyl records saw an increase in sales. Audio enthusiasts, Hi-Fi lovers, hipsters, musicians and nostalgic music lovers pushed turntables back into shelves and vinyls back in music stores.

One of the best things (or arguably the worst for some!) about record players is the hands-

on experience of listening to a record. A record is placed on the mat of the turntable and an adapter is used depending on the type of record being played: whether it be a 33 1/3 rpm, which came in 12 or 10 inches record; 45rpm, 7inch record or the older 78rpm, 12-inch record. The next step was to select the speed based on the record, and start the turntable drive. The tone-arm was then lifted either using a cueing mechanism, if the turntable is equipped with one, or manually with your hand. The needle is then carefully and gently placed onto the leading track of the record. As the record spins, the variations on the groove causes the stylus to vibrate a transducer then converts the mechanical vibrations from the needle into electrical signals. These signals make it through to the pre-amp, the amplifier or receiver and then finally the loudspeakers and voila, music!

Ultimately, record players are loved for their fair reproduction of music while giving it that warm sound only found in analogue devices. There’s no surprise that Hi-Fi lovers, vintage enthusiasts and music fans have a special place for them in their hearts! So why not go out there and buy yourself one!

Discover Broadway—Jekyll & Hyde



Welcome to another journey through the sights and smells of the Great White Way—better known to the rest of humankind as Broadway! I hope to share my passion for music theatre with all of us in Engineering, especially some shows that may be lesser known, or better yet, get you hooked on the catchiness of showtunes or obsessed with their reflection of certain parts of reality. Last issue took a bit of a personal twist, as I focused on life lessons that I have learned from having been involved in Music Theatre in high school. This week, we're back with regular scheduled programming—another show!

In honour of All Hallow's Eve, we'll be delving into the freaky world of Dr. Jekyll and Mr. Hyde!

Jekyll & Hyde is based on Robert Louis Stevenson's classic novella, *The Strange Case of Dr. Jekyll and Mr. Hyde*. If you've read it, you would have an idea of what goes on in the musical. But, of course, a great show needs some romanticizing, which is done through the introduction of two female characters, Emma (Dr. Henry Jekyll's fiancée) and Lucy (a kind-hearted prostitute who Jekyll meets on the night of his bachelor party).

The Plot

The premise of the story is Jekyll's obsession of understanding the cause behind his comatose father. He believes that the evil in his father's soul is behind his malady, so he is set on finding out why man is both evil and good, and how to separate the good from the evil.

Jekyll presents his research proposal to the

Board of Governors of St. Jude's Hospital, most of which is comprised of pompous, rich hypocrites in conservative, 19th century London. Naturally, his proposal to test his chemical formula on a human subject does not go through.

Determined to learn the secrets behind the human mind, he tests his controversial chemical formula on himself, despite his fiancée's concern over his obsession for his work...

The Music

The theme of human duality is reinforced by London's richest and poorest in my personal favourite chorus number of the show, "Façade". A snippet of my favourite libretti from this number pretty much summarizes it:

*"Man is not one, but two,
He is evil and good,
And he walks the fine line
We'd all cross if we could!"*

With the exception of the last line, these lyrics accurately illustrate the lot of us in society. Most of us have the tendency to behave differently based on our company, how comfortable we are with them, and numerous other reasons that make us complex beings. I'd be lying if I said that I was always good,—as seen by my lack of motivation to study during academic terms—but the majority of people—myself included—do a decent job of controlling our desires, like not loafing around all day. Did I mention that this number is a great shower song to belt along with? Because I can personally attest to this.

"Good N' Evil" is another great number that features Lucy. The lyrics are feisty, and the rhetoric is interesting, despite all the clichés:

*"But as I peruse,
This world we abuse.
It's hell that we choose,
And heaven must lose!"*

With the use of contrasting good versus evil and irony, it's evident that Lucy has resigned herself to evil—hell, she even enjoys it! Besides, if you can't beat them, join them, right?

The Cast

As always, the original Broadway cast recording is a fantastic place to start listening to this lovely musical. It features Robert Cuccioli in the title role of Jekyll and Hyde; Cuccioli also played the role in the first U.S. tour of the show in 1995. He is definitely a crowd favourite for this particular role; hence his Tony Award nomination for "Best Actor in a Musical".

Opposite Cuccioli in both productions was Christiane Noll, who played Emma, and Linda Eder, who played Lucy. In addition, Eder also originated the role of Lucy in the Houston World Premiere of Jekyll & Hyde in 1990.

Another actress who's had experience playing both female leading roles as the Broadway understudy is Coleen Sexton. She also played Lucy in the final Broadway production in

midtown-Manhattan's Plymouth Theatre in 2000, which was recorded and became the only official video recording of the musical. If you're curious, you can actually watch the entire recording on YouTube. Although David Hasselhoff doesn't do the title role justice, Emma (Andrea Rivette) and Lucy (Coleen Sexton) save the show.

The Last Word

Jekyll and Hyde lives up to my personal opinion that the majority of musicals that are based on literary works all turn out, at the very least, pretty well. If you're like me and enjoy a plot that focuses on one or two main themes, this show would likely be right up your alley.

If you appreciate a good old love triangle, it's interesting to observe the chemistry between Jekyll and Emma, Jekyll and Lucy, and Hyde and Lucy—or would that be a love square...?

Thank you for joining me on another musical adventure! Join me next issue for a not-so-secret secret corner of Broadway!



Robert Louis Stevenson's famous tale comes to life on stage.

Learn the secrets of startup success from the true insiders



\$2million
in funding available for
your entrepreneurial ventures

- How not to have ideas that suck
- Who wants what why and when
- Demystifying market #s
- Hunt problems, create solutions
- Product, market, fit

PROBLEM IDENTIFICATION: THE START IN STARTUP

October 28, 4:30-6:30pm QNC 1502

For full program information and deadlines visit:

<https://uwaterloo.ca/spectrum-28-student-venture-program>

WATERLOO
ENGINEERING

SPECTRUM 28
STUDENT VENTURE PROGRAM

Message from the President



ADELLE VICKERY
PRESIDENT

Hey everyone! I hope your term is going well; I know it's a busy time with midterms and interviews, on top of everything else, so I'll get right to it.

Elections

The election to choose our next set of Vice Presidents is happening! We are electing the positions of Vice Presidents Communications, Academic, Student Life, and Operations and Finance. Please take the time to get informed and vote in the election. Links to all the candidates platforms can be found on our website, as well as dates of the candidate forums. Voting will be from November 7th to 11th, and the results will be announced on November 12th at TalEng.

Council

Our next council meeting is coming up on November 2nd. It will take place in CPH 3607 starting at 5:30pm. Currently on the agenda are nominations for the Paul and Paula Plummer award and Q&A period with the Vice Presidential candidates. Any additional items for the agenda items can be submitted by emailing speaker.a@engsoc.uwaterloo.ca prior to October 29th. Different items that can be brought forward include:

Executive Mandates: A mandate is a defined as a command or authorization to act in a particular way on a public issue. In the case of the Society this means the general members dictating something for the Executive to work on.

Society Stances: As members, you can bring forward a stance on a specific issue encountered by undergraduate students.

Discussion Items: You're welcome to bring forward any items that you think the Society should discuss.

Meetings are open to all undergraduate en-

gineering students. Feel free to come out and join the discussions.

Updates

Syllabus Bank - After many terms, I'm happy to announce that we have received final approval from the Faculty to start an online syllabus bank! This will be a new service incorporated onto the EngSoc website and is intended to assist students when they're selecting electives. Course descriptions and reviews are already available online, but this service will provide a more in depth look at the topics covered in the course. If you have any syllabi for your past or current electives, please send them my way! I will be working with my webmasters for the remainder of the term to get it up and running.

Student Experience Survey - The last time the Faculty ran an experience survey was in 2014, and it was mainly focused on the academic side of things. While academics is the reason we're all here, it is not the only thing that affects our student experience.

This week, I am meeting with Peter Douglas, the Associate Dean Undergraduate, and Robin Jardin, the Student Relations Officer, to review the existing questions and format. During this meeting, I hope to set the groundwork for incorporating other aspects of student experiences including lab spaces and other facilities, support services available such as Engineering Counselling, and EngSoc events and services. By understanding what students think about these aspects, the Engineering Society Executive will be better equipped in the future to address student concerns and work towards improving the student experience as a whole.

If you have any aspects that you think should be included in this survey, or you have any feedback on these initiatives, feel free to email me! I am very open to hearing from you about the undergraduate experience for students and how it can be improved. Feel free to contact me at president.a@engsoc.uwaterloo.ca to give your ideas or to set up a meeting to chat!

Here Comes November!



WILL WILMOT
VP EXTERNAL

As we approach the last full month of the term... yes, that's right! School has been flying by that quickly, and I'm sure for some of you that is a good thing and for others, not so much. Here is what's on tap for the month of November under the VP External Portfolio.

Over the month of November, we are sending a delegation to represent Waterloo 'A' at both the Professional Engineers of Ontario – Student Conference in Ottawa

hosted by Carleton, and the Conference on Diversity in Engineering in Montreal hosted by McGill. The applications for these conferences are closed and the delegations have been chosen; however, keep your eyes open if you're still looking to attend a conference. Applications to attend Congress 2017 at the beginning of January will be opening soon. A link to the application should be available on the EngSoc website (<https://www.engsoc.uwaterloo.ca>) soon as well as on the Facebook page.

Next up, if you were unaware of the food being sold each week for charity on Thursdays for lunch in the CPH foyer, grilled cheese and pancakes are

sold on alternating weeks by our lovely charity directors. This will continue each Thursday until the end of term, so stop by and help support Habitat for Humanity.

Education Outreach is an opportunity to give back to the Waterloo community. On November 5th and 20th, we will be sending a group of students to the MUSEUM in Kitchener to help younger children do fun experiments relating to math and science. If you're interested in helping out, please email vpexternal.a@engsoc.uwaterloo.ca.

The Waterloo Engineering Competition (WEC) will be held this term on Nov 11-12. If you haven't heard of WEC or would like to know more about it, I encourage you to go onto the Iron Warrior website

and read my article from Issue 1 this term – or you can email vpexternal.a@engsoc.uwaterloo.ca or wec.a@engsoc.uwaterloo.ca. Registration and volunteer links will be available very soon if not by the time this is published.

Finally, we have two pictures that lead us into the holiday season. On November 19th, we have the Santa Claus Parade, which there will be a sign up for as the event approaches; and on December 1st, we have pictures in POETS with Santa and the Tool.

If you read about something that you weren't clear about or would like to help by getting involved, please email vpexternal.a@engsoc.uwaterloo.ca

The Ways EngSoc is Here to Serve You



ABDULLAH BARAKAT
VP FINANCE

Hello everyone! I hope you are all having a wonderful term so far (I mean, EngSoc is a thing, so how could you not?). In this issue, I would like to provide some information and updates on a key part of the VP Finance portfolio—the Engineering Society commercial services. As you may or may not know, the Engineering Society runs a number of services in and around CPH where you can make purchases—coffee, donuts, snacks and meals at the C&D; swag, merchandise and other apparel at Novelties; electronic components and hardware at RidgidWare; and printing, binding and ticket sales at the EngSoc Office, to name a few. The management of each of these areas is a very important part of what I do as your EngSoc VP Finance. Recently, we have done a lot of brainstorming in these areas, and came up with some cool ideas on how to improve them. A lot of people may view these as being stores, where you come, you pay money, and you leave with something. However, since the Engineering Society is here first and foremost to represent and serve you, the engineering undergraduate students, I like to think of each of these areas as a service.

Sure, we take in money, but as a not-for-profit, the only place that money goes is back into the service, which means we can expand to better serve students. I think this is an important distinction, and as we look to expand and grow in future years, something that we need to keep in mind. Why call them a service, though? What makes the C&D

any different than a coffee shop in the plaza? Why should I buy from RidgidWare instead of ordering the parts myself online? When you look at these questions on the surface, there isn't much of an obvious distinction. For me, the difference is what the goal of these services is. I can tell you that when it comes to EngSoc commercial operations, the goal is not to be able to say we've sold more coffees than anyone else. The goal is to offer students the best products that we can,

at the best price, and make it convenient and accessible. We want to make them into more than just stores.

There's RidgidWare, which is still relatively new; we only opened 2 years ago. This is our biggest up-and-coming service, and we are continuously brainstorming ways to improve and expand. Last Winter we got Square into RidgidWare, meaning that we were able to start accepting credit card payments. We are starting to reach out to compa-

nies and try to work out some deals to have a pre-order system going, as well as trying to get better deals on our stock in order to further benefit students. We've started bringing in robot kits and running workshops in collaboration with our Student Services Commissioner in order to provide something new for everyone. Have a cool idea for something you would like to see? Let us know!

Continued on Next Page

WIN CASH EVERY WEDNESDAY

LE SHIN SWAH
TABLE TENNIS LEAGUE

Join our Le Shin Swah Table Tennis and Foosball League.
Register at www.leshinswah.com

Services

Continued from Previous Page

Then there's Novelties—one of the only places to get cool UW Engineering Swag. How can this be a service? We are looking at expanding to offer the items that students actually want, and also doing things like helping to coordinate class orders of swag. Once we clear some of our existing inventory in Novelties, we can start looking at cool new items you want to see.

To summarize, the Engineering Society commercial services are here to serve you. We are constantly looking at ways to improve and better serve the students at Waterloo, whether it be new methods of payment or new merchandise options. If you ever have any suggestions on what you would like to see available in any of these areas, or a question about them, please don't hesitate to ask me. Email me at vpfinance.a@engsoc.uwaterloo.ca or drop by the EngSoc Office (CPH 1327), and we can chat!



**SARBAJOY
MAJUMDAR**
VP INTERNAL

Hey everybody, this is your friendly neighbourhood Sarb here again, and here is another dose of my updates. Hope you all have had a great reading break so far, and hopefully the stress of Hell Week is not getting into you too much. If it is, then hopefully this update can help cheer you up a bit.

Upcoming Events

First off, EngHack tickets have been sold and we are currently accepting people onto the waitlist. There has been a growing support for EngHack and I first would like to apologize to everyone who was unable to get a spot. Location booking has been difficult this fall, and the largest room we could get was RCH 301, and the capacity is limited—hence, we have to cut down the numbers. However, please do not be discouraged

Fun INTended

from participating in EngHack, as your support has given us further reason to find bigger rooms in future terms.

Next, we have Semi Formal, happening on November 4th. All early bird tickets are sold, and there are only regular tickets being sold at \$15 per ticket. We have had a trio of amazing directors (Jacquie Hutchings, Hala Al Jamal and Kayli Dale) as well as their shadow directors (Tiffany Szymanski and Josie Eshkenazi) working really hard to set up a great Semi Formal event for you. You can buy tickets from the Orifice on any weekday from 8.30am to 4.30pm.

Finally, we have a First Year Mentoring Bonfire Event happening in the beginning of November where first years and their mentors alike can forget about the stresses of midterms and interact with each other for a final time before we wrap up the first year portfolio for good. More details about that will come out via Facebook.

Future Initiatives

As mandated by council, I have been exploring the option of combining Women in Engineer-

ing First Year Mentoring and our EngSoc First Year Mentoring programs in future years. A big reason why this possibility was explored was because many past mentors and mentees have been part of both mentoring programs. Members of EngSoc council, as well as Women in Engineering have noticed that there is significant overlap between programs. Hence, along with my First Year Commissioner, Mariko, I visited the Outreach Office and met with Lyndia Stacey, who is the main Outreach Coordinator for Women In Engineering. We discussed the strengths and weaknesses about our respective mentoring programs. I will be relaying this information to Chelsea Vandermeer, my B Society counterpart, and we'll see how all societies and organizations can work together in a big mentoring initiative for future years.

As always, I am approachable, and would love to talk to any of you, so feel free to reach out to me via email (vpinternal.a@engsoc.uwaterloo.ca) or stop by the Orifice (CPH 1327) on Mondays 2.30pm-4.30pm, or other time you are free, and I will help you to the best of my abilities.

Update from VP Education



JEFF GULBRONSON
VP EDUCATION

Welcome back to another edition of the Iron Warrior! If you're in first year, I hope midterms went well. If you're not, I'm honored you're tearing yourself away from studying to read this article. First, a moment of silence for the Toronto Blue Jays postseason.

And now, on to the article.

Council Mandate

At the first EngSoc meeting of the term, I was mandated by Council to present the following stance to the Faculty:

The Society believes that the Faculty of En-

gineering should adopt policies discouraging and/or restricting professors' ability to reuse old exams.

Last Thursday I had a meeting with Peter Douglas, Associate Dean Undergraduate to do just that, which was positive overall. I'll be setting up a second meeting with him discuss possible outcomes, and would love to hear student feedback. If you have an opinion on what you think profs should be able to reuse from old exams, please reach out to me at vpeducation.a@engsoc.uwaterloo.ca.

Course Critiques

Starting November 14th, course critiques will be open for the term. More information will be available in the coming weeks, so keep an eye out for that. Like last term, they'll be done online, with a few exceptions (some profs are able to

opt for written critiques). As always, we'll need volunteers to help review the written comments to remove the inappropriate ones. This term it'll be happening from 11:30 - 2:30 on December 1st. It's a lot of fun to see what students write, as there are usually some pretty funny ones. If that's something that interests you, keep an eye out for the call for volunteers in mid November.

WaterlooWorks Update

And finally, a WaterlooWorks update. All data from Jobmine will be switched over to WaterlooWorks in early December. From that point on, all functionality such as workterm evaluations, applying to jobs, and scheduling interviews will take place in WaterlooWorks. It will have some interesting new features, such as:

- 24/7 access
- One free "no-rank", where you can sign

off on a job after an interview, no questions asked

- The ability for employers to provide feedback to students after an interview. This is a feature that companies have been using with Architecture, and sounds like something that will benefit students

If you have any questions about WaterlooWorks, don't feel free to shoot me an email or stop by the Orifice. I'd be happy to answer them, or I can pass you along to someone with answers.

Wrap-Up

That's all for now, but keep an eye out in my next article for information on Co-op 2.0. It will offer more flexible work terms, co-op specializations, and more! Until then, good luck with classes!



Want to **solve real-world problems, get paid** for doing research and **shorten your Master's** degree by up to one year... all while completing your undergrad?

Check out the undergraduate research opportunities that allow you to do just that!

- 1 Undergraduate Student Research Award (USRA): Full-time position conducted on a co-op term
- 2 Undergrad Research Assistantship (URA): Part-time position conducted during an academic term

To learn more, check out Undergrad Research Opportunities at uwaterloo.ca/engineering/current-undergraduate-students

Heading in the right direction

A look at concussions in major league sports



DONOVAN MAUDSLEY
3N MECHANICAL

For all that we humans know about the world around us (how high the sky goes, how deep the ocean is, how many twinkies the average person can fit into their mouth) we still don't understand how we're able to know these things. How does the brain work? Off the top of my head, I know that given lots of rest and nutrients that the brain can perform better. I also know that getting hit in the head continuously can cause long term damage to it.

A concussion is an injury to the brain caused by the brain cells stretching and bouncing around inside the skull. This is often the result of a hit to the head or the body. The physical damage caused by a concussion is not actually the worst part, though. During the rapid changes in position within the skull actually cause changes in the natural chemicals in and around the brain cells. These changes cause the brain to be more susceptible to damage until the concussion has fully healed. The common changes in chemical makeup also make the brain more sensitive to stress.

Concussions can cause both short and long term health problems. The most commonly associated symptoms include memory loss as well as nausea and vomiting. Many also feel confusion, as though they are in "a fog". Technically every person is at risk of concussion every day. Missing a step on a staircase, slipping on the sidewalk, or a minor car accident could all lead to life changing injuries. The risk for concussion greatly

increases during any type of physical activity and, as is to be expected, greatly increases during contact sports. The increased physicality of professional sports further increases the risk of concussion.

Professional sports leagues all have guidelines and protocols surrounding injuries and concussions, but the first priority of the league is to make money. More people are going to pay top dollar to see a team with an amazing player, even if he has been recently injured, than a nobody. In recent years this issue has come to the media forefront regular occasions. The list of ex-NHL enforcers who have died of causes related to chronic depression caused by frequent head trauma is far too long, and many players quickly find themselves back on the injured reserve list after returning too quickly from an injury. Players also typically see a drop-off in production when returning from concussions.

On New Year's Day 2011 while playing in the NHL Winter Classic, All-Star Sidney Crosby left the game with a head injury. No blood on the ice, no cracks in any x-rays, and no way to know how serious it might be. Crosby however didn't take much time off, and ended up taking another big hit four days later. It wasn't until flying to Montreal that his symptoms began to pile up and he was officially diagnosed with a concussion. Three months later he returns to the ice in a practice setting, and stops days later when his symptoms return. Crosby did not return to regular games until the 2011-2012 season. He missed the first twenty games before returning (and quickly scoring two goals). Seven games later his symptoms returned, and although he was able to pass all league

mandated concussion testing he decided to sit out and "listen to [his] body". Sidney returned later in the season and led his team to the second round of the playoffs.

The story of Crosby's injury outlines a few things I've touched on so far. The combined effects of the separate hits he sustained likely worsened the state of his injury. The concussion protocols of the league failed in protecting the player from further injury.

The NHL is employing a brand new concussion protocol this season. Impartial concussion spotters watching the game both in the arena and remotely can choose to pull any player from the game, given cause. This player is unavailable to return to the game, even if cleared by team trainers. The league and player's association are making it clear that they're serious about this policy. A \$25,000 fine to the organization follows the first offense of not removing a player, but the fine increases significantly after that.

The protocol was enacted during a game in Edmonton on October 16th. Goalie Cam Talbot had struggled all game and was replaced with Jonas "The Monster" Gustavsson. Gustavsson had only played for minutes when he collided with his teammate Adam Larsson. Gustavsson's neck snapped back and he lay on the ice for minutes while he was examined by trainers. Play then recommenced until a concussion spotter in the arena said Gustavsson needed to be pulled from the game. He was, and the struggling Talbot went back into net.

The NFL also employs a Sideline Concussion Assessment Test (SCAT) which assesses fine motor skills, problem solving and general IQ. Each player takes a baseline test, to which the results of their

SCAT are applied against to determine the seriousness of their potential injury. This is a fairly advanced testing strategy and is recommended by most experts except for one problem; some players have admitted to purposely doing poorly on their baseline tests to avoid being pulled from a game.

The NFL has even more strange points in their concussion protocols. A new feature this season is the addition of a non-team affiliated concussion expert to the sidelines for each team. The reasoning behind this is that the unbiased professional will make the correct medical decision no matter what. The problem I see with this strategy is that this impartial advisor doesn't make the final call. The team's concussion specialist is responsible for whether or not a player can return to the field.

Moving on from the NFL, we come to the MLB. This season found the league implement a new 7 day injured reserve for potentially concussed players, with the ability to retroactively change this to a 15 day injured reserve. This change allows the injured player and their physician time to properly monitor symptoms and diagnose injuries.

Surprisingly, one of the leagues with the best track record when fighting concussions is the UFC. UFC fighters sustain heavy head trauma during each bout, but are always allowed the proper amount of time to recover from their injuries. Bouts are scheduled once a month, and the scheduling is not done that much in advance. This allows the league to give fighters time to fully recover from any injuries. Fighters also go through rigorous physical testing before signing on for a match, allowing the league to determine if they are indeed fit.

Jays Fall Short in ALCS, Require Offseason Upgrades to Advance



ELIZABETH SALSBERG
4A NANOTECHNOLOGY

THE BENCHWARMER REPORT

Jays fans—as you are undoubtedly painfully aware, the Jays dropped the ALCS to the Cleveland Indians in just five games about two weeks back. The games were close, with Cleveland taking the first two games by a score of only 2-0. With the exception of game 4, neither team scored more than four runs in a game. Both teams' starting pitching was excellent. The killer for the Jays was their lack of hitting and Cleveland's shutdown bullpen.

Looking back on the past two years, the Jays were most successful when they hit a lot of home runs. Case in point: sweeping Texas in the ALDS. In a sport where it's considered good to get a hit around 30% of the time, this is really not ideal. If you hit home runs for all 30%, but don't get on base the rest of the time, there's going to be a big problem. This is of course, to extreme and simplistic to describe the Jays, so let's extend it further. Suppose you get men on base, say first and second, a couple base hits. But then you fail to knock 'em in. This was consistently a huge issue for the Jays all season. They'd get a couple guys aboard on first and second and then hit into a double play. Or they'd finally get guys aboard, but with

two outs. The ability to "manufacture" runs and come up with timely hits is essential, particularly in the playoffs when facing your opponent's best pitching.

With this in mind, the Jays require some offseason upgrades to advance beyond the final four. Heading into next season, the team has several free agents, including big names Jose Bautista and Edwin Encarnacion. During spring training, rumour has it that Bautista (age 36) hinted at a five-year deal worth \$250-million over five years to stay with the Jays. Though he is arguably the face of the franchise, this is simply unreasonable for a player beyond his prime. Shapiro seems to think so too, following the signing of Melvin Upton at the trade deadline. Bautista's production fell off considerably this year, with a .234 batting average and only 22 home runs (compared to 40 and 35 over his last two seasons).

As for Encarnacion (age 33), he made it crystal clear that he wanted a deal before spring training. Shapiro et al. failed to do to get it done. As a result, Edwin will likely take his reliable bat elsewhere. This is a body blow for the Jays, since Justin Smoak is currently the only 1B/DH alternative. Finding a replacement for Eddy won't be easy, particularly since Rogers and Shapiro are so unwilling to open their precious fat cash coffers. I'd be willing to bet they'd pay more for an equally good hitter now than they would have to re-sign Eddy at the beginning of the year.

Finally, it is unlikely outfielder/DH Michael Saunders (age 29) will return to the Jays next year. After an impressive first half, hitting just shy of .300, he slumped badly after the All-star break, hitting only .178 over the second half. For a team with "a small budget" Saunders is not considered worth signing. Another team (with an actual budget) will though, but likely for more than he's actually worth.

Position-player wise, the Jays need 2 outfielders, a reasonably well-hitting first baseman (or short-stop—in which case they would move Tulowitzki to first) and a DH. That's a long wish list given the allegedly small coffers at Rogers, unless Ryan Goins has a career year at the plate of course. Dalton Pompey will likely occupy one of the outfield positions. But inevitably, one is still empty and hitting is an issue. Open the coffers, Rogers.

As for pitching, the starting rotation is pretty much set. R.A. Dickey and his liability personal catcher Josh Thole will not return next year. Do not fear though, as Francisco Liriano was signed at the deadline for the same money to take his place. Between him, Estrada, Happ, Stroman and Sanchez, the Jays are set.

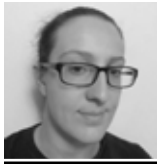
The bullpen, however, is an area of improvement, as shown in this year's playoffs. After Roberto Osuna, there's not much there. Brett Cecil (Mr. Gasoline, 2016) is a free agent. After a phenomenal year in 2015, Cecil failed to repeat that performance in 2016. Expectations were

tough since he was the only decent lefty in the 'pen, but the decision on whether to sign him is a tough call. That being said, it would not surprise me to see the Jays sign him for one or two years at around the same amount he got this year, 3.8 million. Jason Grilli (age 39) likely will not return, despite a good stint with the Jays over the second half. He makes only \$250,000 next year, and barring a surprise, will get bought out. The Jays are likely to re-sign offseason acquisition and free-agent Joaquin Benoit, who provided solid sixth and seventh inning relief before getting injured.

Still, the Jays need an eighth-inning set-up man, and another good arm on top of that wouldn't hurt. The Indians clearly demonstrated the critical role of a shutdown bullpen to win in the playoffs, signing Andrew Miller at the deadline—and he wasn't even their closer. Now they're off to the World Series. Go figure.

Overall, Rogers will need to open the coffers or get really creative. It is difficult to get anything good without giving up anything good, and the prospect shelf is pretty empty right now. The Jays still have most of the core of the team, and could feasibly contend next year and even the year after if they patch up some of these holes. It would be a real waste to start losing with reigning MVP Josh Donaldson, Troy Tulowitzki and Russell Martin all signed through the next two years. All we can do now is wait and see...

Scary and Not-So-Scary Monsters



CAITLIN MCLAREN
4A CHEMICAL

5 THINGS YOU DON'T WANT TO KNOW

Happy Halloween, everyone! It's time for everyone's favourite creepy holiday, while we all gather around campfires and tell each other scary stories. However, everybody has different phobias. Lots of us are scared of clowns, while others get the shivers from zombies, vampires, and other kinds of revenants. Some people are most scared of the things they can't see.

Through all of history, people have come up with monsters. Some monsters from around the world are disgusting, spine-chilling, or existentially nightmarish. Others are hilariously un-intimidating. Let's run through a few absurd monsters that might jump out at you this Halloween.

Half-Man-Riding-On-The-Worse-Half-Of-A-Lame-Horse (Bulgaria)

Be careful when you go wandering in the backwoods of Bulgaria; you might accidentally wander into the territory of the fearsome monster, Half-Man-Riding-On-The-Worse-Half-Of-A-Lame-Horse. Then, you will be in his power, although what he can do to you (besides bleed on you) is unclear. Also unclear - how this whole "half" thing works. Is it the top half? The front half? The left or right side of the horseman? Some weird cut along a diagonal axis? No one knows.

He is also described as hideous and skeletal, but he likes to kidnap and marry princesses. However, you can ward him off pretty easily by digging a trench, which he can't get over, due to the "half" situation.

The Ovda (Finland)

The Ovda are monsters that lurk in the backwoods of Finland. They look like attractive naked people of your preferred sex, except for the fact that their feet point backwards. That can't be convenient. They will try to lure you into dancing, wrestling, or other activities. As you can imagine, being lured by them is a terrible idea, because they will then either dance you or tickle you to death before eating you - and that's if they are in a playful mood. If not, the Ovda will pick you up in a whirlwind and spin you to death. It does have a weak spot, however; if you poke it in the left armpit, it will be instantly paralyzed.

The Mora (Poland, and Ontario, yay!)

The Mora is a pretty average vampire-like creature - usually female, she puts people to sleep before choking them and sucking their blood. She will also give you nightmares while you sleep, just to be a jerk. If you get a rare male one, he will have really bushy eyebrows (common in supernatural creatures in Slavic folklore). These originated in among the Western Slavs, but there was a large settlement of Polish Kashubian people in Ontario in 1858, and they brought the Mora stories with them. This means that, of all the creatures on the list, the Mora is the one you are most likely to

meet!

However, the Mora never confronts people directly - if you happen to wake up while she is attacking you, she will quickly transform into an apple or a ball of yarn. Or possibly just a tangled ball of hair.

Always play it safe: if you wake up and see the half-finished scarf your roommate is making, better ram a stake through their yam. It might just be a sneaky vampire. However, if you see an apple, better eat it - maybe you'll get your blood back!

The Tupilaq (Greenland)

If you are a shaman from Greenland, and someone has offended you, you can create a monster called a Tupilaq, which will go after your enemy to avenge you. How do you make one? Well, they are generally made of bones, as well as other bits of animals or even bits of human children. Gather the bones you are going to use. Then, put your coat on backwards, covering your face with the hood, and have sex with the bones while singing magical songs. Continue to do this for several days, until the monster is ready. Then, dump it into the ocean; it will come to life and track down your enemy. But be careful - if your enemy is better than you at magic, they might send it back after you. In that case, there is only one way to escape - by making a public confession of everything. You'd better exhaust all your other options first!

The Hand With The Bell (Siberia)

The story of the Hand With The Bell comes from the Khanty people in Siberia, and the fact

that the monster is a disembodied hand holding a bell is probably the least weird thing about it. It starts with a story of a brother and sister who live together, and while the brother is away hunting, something grabbed the sister by her hair and dangled her from the ceiling all day. It only let her down when the brother came home, and this continued for three days. By this time, the pair were sick of the whole thing, and the brother sneaked back in early and cut off whatever was holding his sister in the air. It turned out to be a hand holding a bell, and the siblings logically decided to preserve the weird hand and keep it in a box. The next day, the hand's sister came knocking at their door to complain, saying that her brother was dying. The brother decided to kidnap the hand's sister (who looked like a human woman) and force her to marry him. The pair had a child, and when the boy grew to toddler-size he asked to play with the hand. His aunt gave him the hand to play with, because everyone knows that severed hands holding a bell make great rattles. Of course, the hand's sister then picked up the kid and the hand and ran away. That night, the brother almost made it home, but when he was still on the wrong side of the river, the Hand With The Bell suddenly killed him with a magic arrow, turning him into stone. However, the story doesn't end there. When the kid grew up, he pulled the arrow out of his father's body and killed his mother with it, before running off to his aunt's place. Although the aunt was happy to see him, the story ends with her fatalistically declaring that the Hand With The Bell would kill her next. Dun dun dun - or should I say, ding ding ding?

Learning from Animals



ALINA PAVEL
1A NANOTECHNOLOGY

It seems like the key to curing diseases such as cancer may be closer than we think - maybe even in our own backyard.

Over the past few decades, many of life's complex problems have been solved using biomimetics (also known as biomimicry); the process of using the properties of nature to develop new technologies or to even cure diseases. Examples of such technologies include Velcro, where the inspiration for the system came from the burr plant and its tiny hooks; or the Japanese Shinkansen "bullet train," which was aerodynamically altered to mimic a type of diving bird so that it would not cause loud sonic booms when entering tunnels.

Researching animal behaviours could potentially solve the world's biggest problems, such as climate change or finding a cure for cancer.

While it is true that cows make a significant contribution to climate change with their methane "emissions," research done on the digestive tracts of cows has determined that there are more efficient cows that can produce about 30 percent less methane than their more wasteful counterparts. Selectively breeding the more efficient cows would help to reduce greenhouse gas emissions, which would be beneficial considering animal agriculture is responsible for more pollution than the transportation industry.

Kangaroos are also among methane-producing animals, and until recently, were thought to possess a special gut microbe that allows them to expel virtually no methane at all. Unfortunately, this has been proved false, but

ongoing research may reveal more secrets about animal digestion in order to help curb the effects of climate change.

More recently, scientists have been researching naked mole rats as they have a very high pain tolerance - even being able to withstand pain from acid burns. Figuring out what exactly causes this might unlock the door to understanding more about pain, and maybe how to stop it entirely. Scientists have determined that this ability is caused by a pain receptor called TrkA, which we possess as well. Does this mean we can have superhuman pain resistance as well? Not exactly. This receptor works differently in the naked mole rat compared to the human version - probably due to how the naked mole rat evolved. This rodent expels CO₂ when it breathes, like us, however this carbon dioxide reacts with water from the rat's mucus membranes to produce carbonic acid. Since naked mole rats spend their days in

small underground tunnels, being resistant to this acid is crucial to their survival.

These ugly little creatures have also been found to be highly resilient to cancer, offering scientists a method to find out how to better treat it, or prevent it altogether. The most promising research so far has come from a team at Rochester University, who found that naked mole rats produce an abundance of special "goo" which inhibits tumour growth by making cancerous cells self-destruct. This mysterious goo is known as hyaluronan, which all mammals possess between individual cells. The good news? Hyaluronan can be grown in labs, so scientists may soon be able to introduce this substance into mice, and further down the line, humans, to potentially eliminate cancerous cells and tumour growth.

Thanks to research done using biomimetics, humankind's problems may be eliminated, with help from our animal friends.



**Professionalism.
Leadership.
Communication.**

There's more to an engineering education than engineering.



Debates

For the last several years, the University of Toronto has won the debating contest at the Ontario Engineering Competition. This shall not pass. If you like to argue with your classmates for fun, even if you've never debated before, then you need to come and try to argue for the pride of Waterloo Engineering (and for cash prizes). Only by entering the SFF debate competition can you prove that Waterloo engineers will never be content to be second place. You must sign up to compete.

The SFF debate competition will be held in October. Cash prizes will be awarded to First, Second and Third place teams. The top team is eligible to represent UW at the annual Ontario Engineering Competition. The debates will be in teams of two, so please register your teams by emailing sff@uwaterloo.ca. Questions regarding policy and format can be addressed to atrivett@uwaterloo.ca. Let's make it so, number 1.

Technical Speaking Competition

Do you have a passion for engineering design, communication and public speaking? The SFF Technical Speaking Competition is a great way for you to show off your technical speaking skills and personal projects, and to win cash prizes for it.

The Technical Speaking Competition will be in November. Students wishing to participate must send a 100 to 200 word abstract and a preliminary deck of slides in pdf, pptx or ppt format. Six students will be selected for the competition, based on submitted material.

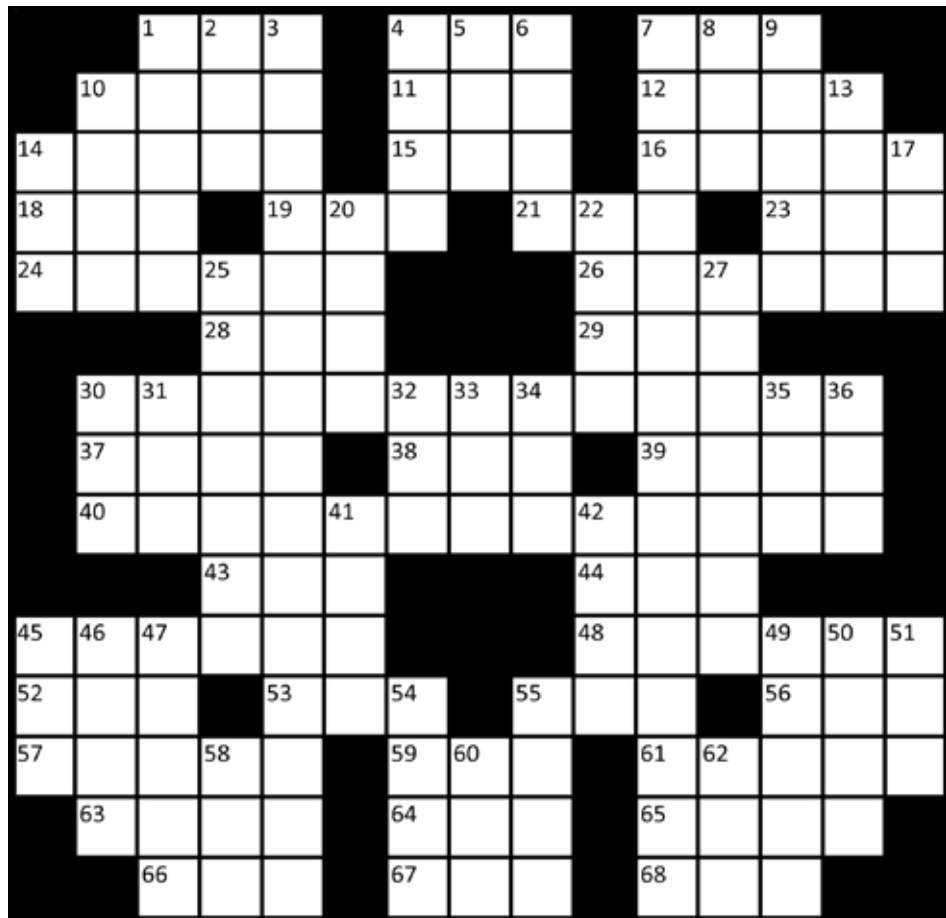
Questions about competition rules can be addressed to the coordinator, Jason Grove, at jason.grove@uwaterloo.ca. Prove your mettle in the SFF Technical Speaking Competition!

Sandford Fleming Foundation
E2-3336, Extension 84008, sff@engmail.uwaterloo.ca
www.eng.uwaterloo.ca/~sff

The Iron Crossword

Halloween Costume Ideas

CAMERON SOLTYS
3B MECHANICAL



ACROSS

- 1: 60 per min
- 4: Call for aid, especially in a plane or ship
- 7: Short for "Stuart"
- 10: Metric prefix meaning 10e-18
- 11: Internet speak for "I think that..."
- 12: Informed or instructed
- 14: Male reproductive cell
- 15: Short for "Vietnam"
- 16: Relation between too numbers
- 18: Gorilla or chimpanzee
- 19: Used to hold tea or coffee
- 21: Orator of "The Gettysburg Address"
- 23: Single-stranded biological information
- 24: Another name for "The Eggman"
- 26: Handles roughly
- 28: Organic chemistry suffix indicating carbon double-bonds
- 29: On-target earnings (abbr)
- 30: Paper that gives you money for owning stock

37: Deploys

- 38: Don't you dare (abbr)
- 39: Prefix meaning "containing"
- 40: American hero of "Duck and Cover"
- 43: "Start Me Up" Rolling Stones song (abbr)
- 44: Largest reef in the world (abbr)
- 45: A moose on the loose
- 48: Old Faithful, for instance
- 52: A garland or wreath
- 53: Religious woman living under a vow of poverty
- 55: American electronic intelligence organization
- 56: Official name of a political riding (abbr)
- 57: Small structure that sells newspapers, for instance
- 59: Are required to pay back
- 61: Curiosity, Spirit, or Viking
- 63: ___ of Green Gables
- 64: ___ Rail, Canadian rail company
- 65: 2, 4, or 158

- 66: Having a cunning nature
- 67: Breathed by humans and others
- 68: Moved quickly on foot

DOWN

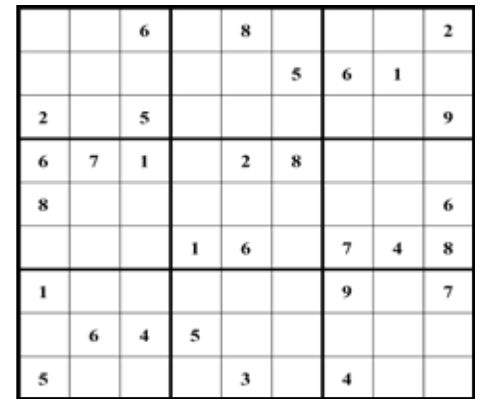
- 1: Iron-carbon alloy
- 2: 407 ___, the official name of the 407
- 3: Antagonist in "Duck and Cover"
- 4: Make music with ones voice
- 5: German for "Grandmother"
- 6: Drug used in "Brave New World"
- 7: Medic who retrieves wounded from a battlefield
- 8: SOH CAH ___
- 9: prefix meaning "very"
- 10: Flying giant for "Avatar: The Last Airbender"
- 13: Dent
- 14: Looked at
- 17: Old Age Security (abbr)
- 20: Secondhand, particularly for cars
- 22: The other Engineering Society
- 25: Also known as Othello
- 27: When a spacecraft returns to Earth
- 30: Confer knighthood on
- 31: "___ the B'y" Newfoundland song
- 32: 100-card Magic: The Gathering variant
- 33: Bill ___ the Science Guy
- 34: Insecticide that effects bird eggs
- 35: Commercial driver's license (abbr)
- 36: Kevin ___, 2016 World Curling champion
- 41: Costume worn by a ballerina
- 42: Sheepskin boots
- 45: Another name for "Moose" in Europe
- 46: Luke Skywalker's sister
- 47: Big cats of the savanna
- 49: Six is afraid of it
- 50: Mythical garden in the Bible
- 51: File type opened by WinRAR
- 54: PBS science show
- 55: Not far
- 58: Late Night NBC comedy show (abbr)
- 60: First major motion-control game system
- 62: Female reproductive cells

Sudoku

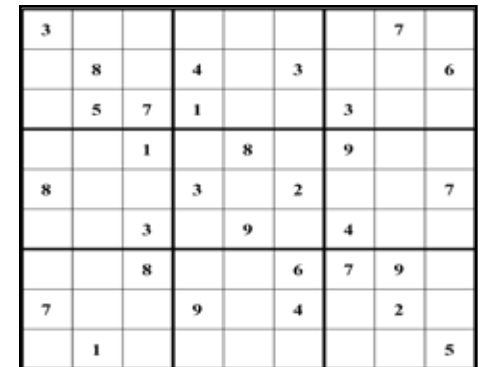
#2016-12

MEAGAN CARDNO
4A NANOTECHNOLOGY

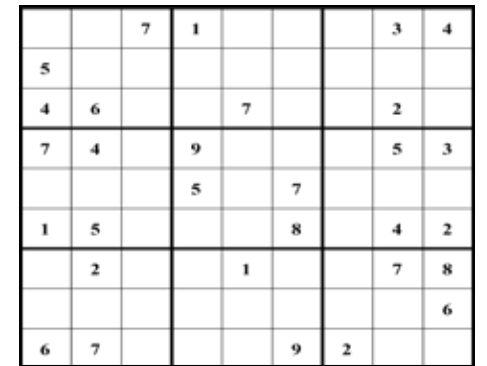
Medium



Hard



Very Hard



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

THE IRON INQUISITION
Meagan Cardno, 4A Nanotechnology

"What is your worst nightmare?"



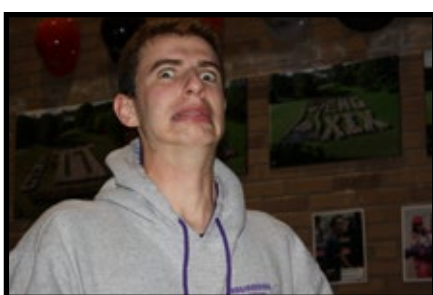
"When I assassinated Mozart in a dream."
Hilbert Li, 3T Mech



"Bears. Mind Bears."
Simon Grigg, 2B Mech



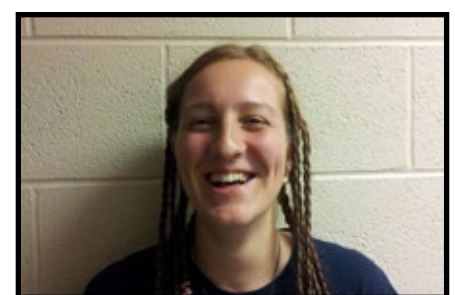
"My slow but inevitable death."
Jeff Watchorn, 4A Nano



"Research at Harvard."
Jared Gour, 4A Nano



"Getting my photo taken."
Brian Howe, 4A Mech



"Realizing an assignment is due in an hour."
R.I.P. this student