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THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY

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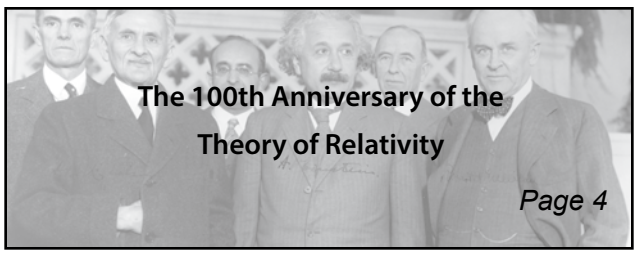

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Multiple Paris Attacks Leaves World Reeling

Aurélia Joly

Aurélia Joly

Thousands gather in Paris following the November 13 attacks that left over a hundred dead.

CAITLIN MCLAREN
3B CHEMICAL

Late Friday night, Paris was hit with a number of coordinated attacks that left over a hundred dead and many more injured. A friendly football match between France and Germany, attended by French President François Hollande, was one location targeted by gunmen and suicide bombers. There were shootings in multiple locations, and deadliest of all, a hostage situation at the Bataclan concert hall that left at least 80 people dead. There were many more injuries, many of which left victims in critical condition and the exact casualty toll is still uncertain.

The three explosions at the football match were relatively less deadly than the other attacks, with only a few people killed. This was thanks to the security measures at the stadium; at least one of the attackers had a ticket to the match and intended to set off his explosive vest inside the stadium. Had he succeeded, not only would the explosion have taken place in the middle of a dense crowd, killing and injuring many more, but the ensuing panic may have been even more deadly. However, security officers caught the attacker at the entrance and discovered the explosive device; the bomber then set off the device outside. Minutes later, two more bombers detonated themselves nearby the stadium. Those watching the match were not immediately aware that they were under attack as fireworks explosions are a fairly common occurrence at European football matches. President Hollande was immediately evacuated without incident. However, that was the end of the good news from that night.

Almost simultaneously, gunman opened fire on several restaurants in the 10th arrondissement of Paris, an area known for its nightlife. Within minutes, there were more shootings at restaurants and bars in the 11th arrondissement, and a fourth explosion went off in the area.

However, by far the deadliest situation of the attack took place at the Bataclan, where an American band, the Eagles of Death Metal, were playing to a crowd of 1,500; several attackers stormed the building and held much of the audience hostage for more than two hours. The gunmen sprayed bullets sporadically into the audience, allegedly while shouting "Allahu Akbar" and claiming that they were motivated by France's actions in Syria and Iraq. A little after midnight, French forces pushed into the building; one of the terrorists was shot, while three more triggered their explosive belts.

Later on Friday night, a refugee camp in the French port town of Calais caught fire; it is unclear whether this was a tragic accident, an unrelated crime, perhaps in retaliation, or a part of the same attack.

As of now, the French authorities believe that all of the actual attackers are dead; however, the authorities are searching for possible accomplices. Only two of the attackers have been identified at the time of writing: Abdul Akbak B., surname still unknown, and Omar Ismaïl Mostefai, a French citizen who had been identified as a radical before the attacks. Mostefai's father and brother are in police custody; the brother is reportedly assisting the police voluntarily. There have also been a number of arrests in Belgium, along with several police raids. The investigation is, of course, still in its early stages.

In the wake of the attacks, President Hollande declared a state of national emergency; public places such as schools and universities were closed, and curfews were imposed. The military was also called into Paris. One disturbing discovery is that of a Syrian passport with the body of a dead gunman; the passport indicates that he had recently passed through the Greek island of Leros, claiming to be a refugee. French Prime Minister Manuel Valls declared "We are at war…in France and in Europe, we'll chase the authors of this act, and also in Syria and Iraq."

The Islamic State, frequently referred to as ISIS, are the obvious suspects in this attack, and have indeed claimed responsibility. Experts believe that the attacks were carried out by three separate teams, and that the attacks required a great deal of coordination and planning.

This terrible attack intensifies the debate regarding the refugee crisis; many argue that allowing thousands of people from a volatile part of the world to enter their countries is an unacceptable security risk, citing the abovementioned passport in particular as evidence that, at the very least, militants are using the refugees as a smokescreen to enter Western countries. Others respond that the refugees are fleeing the exact group that carried out the attacks, and that the priority is to attack the organization responsible rather than their victims. Canadian Prime Minister Trudeau's government states that these attacks have not changed Canada's plan to accept 25,000 refugees.

President Rouhani of Iran, who was scheduled to visit France this week, cancelled his visit due to France's tragic situation; he also condemned the attacks on Twitter and said, along with millions of others, "Our thoughts & prayers are with you." The entire world is rallying to support France; major world leaders have given sympathetic statements. Notable among these are American President Obama, who called France "Our oldest ally", British Prime Minister David Cameron, and German Chancellor Angela Merkel.

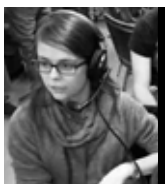
On social media, the French colours of red, white, and blue, are becoming popular, with many changing their Facebook profile pictures to support the French people. Major landmarks around the world are lit with these same colours in a show of solidarity; the Empire State Building, instead, is dark in mourning.

The French themselves reacted quickly, with the hashtag #porteouverte, meaning "open door", trending as Parisians opened their homes to those fleeing the violence. The German national football team, who were playing the friendly match against France that was cruelly interrupted, feared to go back to their hotel due to an earlier bomb threat; it is not yet known if that was related to the attacks. Instead, they elected to stay in the stadium overnight; the French team refused to leave without them and remained in the Stade de France throughout the night. They were also accompanied by many fans, who left around midnight singing "La Marsellaise", the national anthem of France.

After the attacks were over, many held vigils in honour of the victims; famously, one musician brought a piano to the Bataclan, the site of the deadliest attack, and played John Lennon's "Imagine" for the crowd of mourners. The entire world grieves with them.

Letter from the Editor

Meagan's Adventures in Competitive *Super Smash Bros.*



MEAGAN CARDNO
EDITOR-IN-CHIEF

Lo and behold, issue four is ready! This term is already nearly over, but we wont mention the inals-fay just yet. The second half of term should hopefully run a lot more smoothly than the first, as you find yourself surprisingly adjusted to the regime of having three assignments due in one day (maybe even, gasp, getting some assignments ahead of time? Is this real life?).

In this issue, we have several rather serious topics discussed, including the devastating attacks on Paris that we featured on the front page, as well as discussions regarding the abolishment of China's one-child policy, the lives of social media stars, and the horrifying health effects that you never knew a tapeworm could have on you.

Alas, the seriousness continues in the columns as well, as Nina discusses the unfortunate malpractices of Tim Hortons and Starbucks in *Leafy Thoughts*, while Caitlin discusses some grotesque body modifications in *Five Things You Really Don't Want to Know*.

But don't worry, Donovan has a couple of more light hearted columns— I would particularly like to highlight this issue's edition of *From Page to Page*, in which he discusses some of the greatest nemeses of everyone's favourite web-slinging masked vigilante. Elizabeth brings the first news of the new hockey season in *The Benchwarmer Report*, and Ashlyn brings the inside scoop on Bob McKillop's professional and personal life in *Prof Personalities*.

Again, I'd like to thank the wonderful Leah and Nina for their continued support during production weekend, as well as Caitlin for her first venture into the wonderful world of layout.

Now, for those of you who have been talking with me at all in the past eight months, you would have discovered my new passion for eSports— particularly, competitive *Super Smash Bros*. Yes, *Super Smash Bros.* That one game where you can make Link wield a beam sword against Mario and Donkey Kong atop a mid-race car from *F-Zero*.

Except, I mean competitive *Smash*, where we play with specific rules: a certain number of stocks, on only certain (so called "legal") stages, for a given amount of time… and yes, no items. Sorry to break it to you, but *Smash* tournaments aren't focused around which lucky player's Pokéball had a Moltres inside it.

You'd be surprised at the size of the scene, if you aren't looking for it— you can find smaller, more accessible tournaments almost anywhere, even here at the University of Waterloo, where we hold two tournaments a week for two different entries in the *Smash* games. Then, bigger events with even bigger prize pools are held less frequently, with some events attracting international competitors, such at the upcoming Genesis 3 in January.

This very weekend I myself will be travelling with a few others to Oshawa to represent the Kitchener-Waterloo region in a regional tournament, LANWAR X. There I will be entered in both the singles and doubles event— singles typically being the more popular of the two events, as they feature the typical mano-à-mano action and grudge matches of players, and whose competitive 'meta-game' is far more explored. Doubles, on the other hand, features a two-versus-two dynamic, where co-operation and synergy can matter more than individual player skill. My own partner is a music student studying a Laurier university— an interesting connection for someone I likely wouldn't have met otherwise.

Bigger tournaments like this are incredibly fun events. Not only do you get to meet and reunite with players from different regions, such as Toronto, London, Ottawa, and even Montréal. Sometimes these players are even nationally or internationally famous… which, of course, will mean absolutely nothing to the common person, but can be quite exciting for someone like me to finally meet, talk to, and maybe even play some matches against some of the greatest players in the world.

Okay, so you might be laughing right now at the idea of a bunch of people— ranging in age typically from high school to post-grads, but typically in the 19 - 25 year old demographic— playing everyone's favourite party game competitively, but you might be surprised at the level of technical and mental skills that you need in order to even hope of doing well at a tournament.

Of the four present entries in the *Smash Bros.* franchise (well, technically five, but that's another story), the two most popular games right now are *Super Smash Bros. Melee*, the second instalment, and *Super Smash Bros. for WiiU and 3DS*, the most recent instalment with a horribly long and awkward name that most people refer to as *Smash 4*, since it is indeed the fourth entry in the series (and doubles as somewhat of a snarky reference to the "for" in the official cumbersome title).

While *Melee* was originally released back in 2001, it is still to this day played and preferred by many in the competitive community due to its fast, complex, and highly technically driven gameplay. In the community, this translates to a large amount of "tech skill"— actions that are typically not intuitive and sometimes incredibly difficult to perform, but vastly improve your own gameplay.

Perhaps most impressive is that the majority of these so-called "techs" are actually fan-discovered exploits of glitches or the fundamental physics of *Melee*. For example, the technique known as "wavedashing", a means of moving in which a character can slide forwards or backwards even while attacking which is now paramount at even the lowest of competitive play, takes advantage of the mix of physics that occurs when a character air-dodges into the ground. This means that the complicated and precise nature of high-level Melee play was something that the developers hadn't even intended to be possible.

Smash 4, on the other hand, is criticized by some members of the community for having a far lower skill floor for competing (especially when compared to *Melee*). However, it has its own charms and unique gameplay elements that make it attractive for people to both play and watch competitively— including myself, as it is my game of choice.

My own adventures into the competitive *Super Smash Bros.* scene started during my previous work term. I spent about half of of my free time during eight months of the long Ottawa winter exploring the city and surrounding area, and the other half recovering from the time spent out in that bone-chilling cold. During this recovery time, I often found myself snuggled up beneath a blanket with a cup of coffee, tea, or hot chocolate, and my 3DS in hand playing some of the newest *Smash* game I had received as a Christmas present

Most often, I would play online with strangers or friends, but I became curious about ways that I could get better at the main character(s) that I played (known colloquially as "mains").

Online, I discovered resources aimed at doing just that on YouTube, Reddit, and particularly a forum dedicated towards improving at *Smash* on a competitive level, known as Smashboards. While I learned many details about the fundamental, technical, and mental skills needed in order to… hmm, shall we say… "git gud" at *Smash*, the biggest repeated advice that I saw from every source was the absolute importance of attending offline tournaments.

Perhaps I could have taken advantage of my time in Ottawa better during my co-op, but lack of familiarity with the area (particularly the university-aged community) held me back from exploring the possibility of attending tournaments there (a decision I now regret).

But once back in Waterloo for my 3A term, I heard about a tournament being held in Uptown Waterloo. I went, got my tail whooped, and made a few new friends, who told me about our weekly tournaments.

From then on, I've actually been decently

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Voltera Wins James Dyson Award

BRYAN MAILLOUX
2A MECHATRONICS

I hate to begin with a saying that we all know all too well, but it seems that ideas really do start here at Waterloo. Not only that, but the University has a lot to offer in terms of transforming those ideas into the basis of successful start-up companies, as so many Waterloo alumni have done before. One such group of four Nanotechnology and Mechatronics Engineering graduates founded Voltera, a start-up that is bound to revolutionize the Printed Circuit Board (PCB) industry with its product, the Voltera V-One. And they even have the James Dyson award to prove it.

Traditionally, circuit designers would design their circuits, then send the schematic off to a printing company that could print the boards for them. The board would then come back in a couple of weeks, ready to be tested by the designer. Imagine the frustration (and not to mention the cost) of discovering the board you've been waiting for for several weeks doesn't do what you expect it to. Voltera plans to change all that: the Voltera V-One, essentially a 3D printer for circuit boards, allows a PCB to be created in minutes, drastically reducing the time needed to design and test PCBs. In addition, it is a solder paste dispenser, allowing designers to quickly and easily add components to their new boards.

The James Dyson award, on the other hand, is an international award that "celebrates, encourages and inspires the next generation of design engineers." It is awarded by the James Dyson Foundation, whose illustrious founder has his own fair share of inventions under his belt, including the Dyson Airblade (a hand dryer now ubiquitous in highway rest-stops across Ontario) and a whole array of different vacuum cleaners. The award itself offers $3,500 USD to national winners, $7,500 to international runners-up, and $45,000 to the winner as well as $7,500 to their school.

It seems appropriate for Voltera to win the James Dyson award; as Dyson himself put it, "[Voltera's] solution makes prototyping electronics easier and more accessible – particularly to students and small businesses. But it also has the potential to inspire many more budding engineers. Something I am very passionate about indeed." Runners-up for the award include Wei-Lun Huang, creator of Green Fairy, which is a system of biodegradable cell beads that introduce microorganisms to polluted water to consume the nutrients needed for certain harmful types of algae to grow; as well as Cathal Redmond, creator of Express Dive, an incredibly small, light, and inexpensive improvement on scuba gear.

This win comes at the perfect time for Alroy Almeida, Katarina Ilic, James Pickard and Jesús Zozaya, the four co-founders of Voltera. As Zozaya puts it, "We're at a critical point with Voltera. […] The $45,000 we've been awarded as winners of the James Dyson Award will help us to ramp up production and enhance testing." Dean of Engineering Pearl Sullivan is also very proud of her students, saying that, "It is an excellent example of what our students are capable of when they graduate from Waterloo Engineering. […] The future of technology innovation in Canada lies within brilliant teams like Voltera." Voltera has set the bar high; now it's up to current and future Waterloo students to set the bar even higher.

France Attack Aimed at Quieting Acceptance of Diversity

MATTHIEU COURT
1A MANAGEMENT

With the six simultaneous attacks that paralyzed Paris and neighbouring St.Denis on November 13, the "Fraternité" of a Republican Society was shivered, and the efficacy of its secular ideals rent. Indeed, the complex machinery of the French administration boasts a sophisticated network of government officials and civil servants - these press ideology to the end; darkening rather than promoting understanding. The cold, strafing shots of the Bataclan massacre echoed throughout the world - and understandably so. However, these echoes should not be reduced to tricolor Facebook filters. The chilling specificity of the locations targeted (The Stade de France on the Northern fringes of Paris, and the city of Light's 11th Arrondissement) call into question to what extent there can truly be a place of multicultural harmony such as our uWaterloo campus.

The specificity of the attacks reflect a malignant familiarity with the city's social habits. In the most sinister of ways, the terrorists were singularly educated not to attack the touristic areas around the Eiffel Tower, or community enclaves such as the gay "Marais" neighbourhood, or the Chinese XIII Arrondissement. The 11th Arrondissement is in full Hipsterization, where Vietnamese restaurants and Pakistani cafés coexist, where mosques and synagogue are face to face. It is a place where urban youths meander the streets at night, periodically enjoying a beer on one of the many patios. It is a neighbourhood wrought with an amalgam of cultures, ages and religions. In the words of historian and Middle-Eastern specialist Pierre-Jean Luizard: "In the attacked neighbourhoods, we can see youngsters, cigarette and glass in hand, socializing with those going to the local mosque."

The Charlie Hebdo slaying of January 7th 2015 targeted those with a sense of defiant comedy and France's insolently secular, but aging, left (the Maoist youngsters of May 1968). The Bataclan shooting was an attempt to dampen the hearts and plant a seed of fear in a globalized, progressive and multicultural youth.

The youthful demographic targeted is not unlike the globalized crowd at uWaterloo. They are the "Ideas Start Here" of French society. In the wake of these shootings numerous high school students have organized, "Day against terrorism" events. Unfortunately, these event banners often feature far right cartoons often suggesting that revenge is the best response, to the effect of a muezzin being stomped on by a French G.I.. In the end warmongering is no solution to this attack on diversity. Islamophobia is as much of a virus as the one that struck Paris. In this same vein, it would be senseless to close previously open doors to the refugees whose lives have been irreversibly stamped by the same violence that France witnessed on Friday. The community targeted in France was not bound by government ideals, but rather by common interests and a desire to learn. It takes more courage to echo with conviction a Humanist voice amidst the tumult of bullets than to remain as slightly nervous, talkative, mildly cultured, somewhat alcoholic and hyper-sexual youths.

Such attacks aim to make us succumb to a folly parallel to that of the perpetrators. Fortunately, I have no doubt that on this side of the pond, the Bataclan massacre can only tighten the weave of the vari-coloured fabric that is uWaterloo's student core.

Aurélia Joly

"J'être humain" (a grammatically incorrect play on "Je suis Charlie, translating roughly to "I be human") hung at the Place de la République.

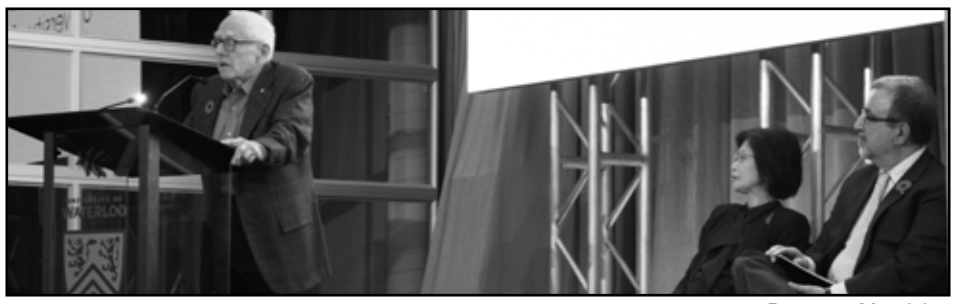
E7 Groundbreaking Ceremony

DONOVAN MAUDSLEY
2B MECHANICAL

On a cold, rainy Thursday afternoon in November, a large crowd filed into the Sedra Student Design Centre in E5 for the groundbreaking ceremony for Waterloo Engineering's next step in expanding: Engineering 7. E7 will be the second half of the already built E5, and officially broke ground on November 12. Students will be able to use the new facilities when it opens in Fall 2018. E7 is one part of Waterloo's larger "Educating the Engineer of the Future" initiative, which also includes enhancing the student experience, establishing chairs in emerging technologies, and supporting additional graduate scholarships.

Waterloo Engineering is one the premiere engineering programs in Canada, and to maintain this status the department needs to constantly evolve. Dean Sullivan described the faculty as "Hard to get in to, harder to get out of," but as students, we already knew that. The department has allotted over $11 million to enhance the student experience, which will go towards adding incubation spaces across multiple departments, creating a new student machine shop, and a central atrium space for students to study and socialize. Another new facility in E7 is the RoboHub, an experimental robotics laboratory which will work closely with industry partners to further robotics research.

E7 is still fighting for funding. The department has raised over $50 million towards its $70 million goal for the whole project. A daunting task for any organization, the department has had many helping hands to reach their goal. GM of Canada, Toyota Motor Manufacturing of Canada, Magna International, and the Famille Jacques Lamarre Family all donated more than $1 million, and two anonymous donors gave $10 and $25 million respectively. The contractor EllisDon has been awarded the contract to build E7, and will likely start very soon.



Donovan Maudsley

Dean of Engineering Pearl Sullivan and President Feridun Hamdullahpur watch Douglas Wright recall his memories of the University of Waterloo

During his speech at the ceremony, the president of the University of Waterloo, Dr. Hamdullahpur recounted how Dean Sullivan convinced him within the span of a few minutes that E7 needed to be built. She described the building as a place where hearts and minds can meet, and innovation can prosper. Former Dean of Engineering Douglas Wright also spoke. He reminisced about fall 1968, his first term on campus, as if it was just the day before yesterday. There were even members of the first graduating class of Waterloo Engineering in attendance.

The groundbreaking ceremony itself was a unique event. Instead of congregating outside, the onlookers watched as Dean Sullivan and President Hamdullahpur walked outside to the site. They were followed by a multi-camera system developed by a Waterloo start up company. They rode to the site on an autonomous self driving golf cart built by a Waterloo start-up company. Their shovels were even delivered to them by a robot built by a Waterloo start up company. A little over the top, but fitting for a building that will help develop the best and brightest of the future.

100th Anniversary of the General Theory of Relativity

SARAH CHAN
2A NANOTECHNOLGY

If you didn't already know, this month marks the 100th anniversary of the General Theory of Relativity and the four lectures Albert Einstein gave regarding this theory. The General Theory of Relativity is one of the most revolutionary theories in all of science and is certainly something we should all be celebrating. In honour of this monumental achievement, let's take a few moments to discuss how Einstein's greatest work, the General Theory of Relativity, came to be.

The General Theory of Relativity is the creation of Albert Einstein and came to him from a series of thought experiments. Einstein had run away from school in Germany because he hated the emphasis on memorized and rote learning rather than imagination and creativity, and instead enrolled in a Swiss school that focused on visualizing concepts. During this time, his first thought experiment occurred as he wondered what light would look like if you travelled so fast that you were moving at the speed of light as well. If moving next to and at the same speed of light, he wrote, "I should observe such a beam of light as an electromagnetic field at rest", or in simpler terms, the light wave would not look like it was moving. However, this thought did not agree with Maxwell's equations and caused Einstein something he called "psychic tension".

The next thought experiment came to Einstein while he was working in a Swiss patent office, where he would examine applications for devices that synchronize clocks, generally involving the use of electromagnetic waves. Einstein visualized what it would look like if you sent a signal from one clock to the other and observed the signal while travelling at the speed of light in the same direction of the signal versus what it would look like if you were travelling at the speed of light in the opposite direction of the signal. Confused? So am I. Einstein simplified this idea with another thought experiment. Imagine there are two strikes of lightning, a certain distance away from each other. Now suppose there are two people – one is standing on the midpoint between where the two bolts of lightning hit and the other is riding a train passing by this point. The lightning strikes simultaneously and the two people are asked what they see. The person in the middle will say that the two strikes occurred at the same time because the light from both bolts reaches him at the same time. However, the person riding the train is moving and will be slightly closer to one of the bolts. They will say the lightning bolt in front struck first. How can this be so? Didn't the lightning bolt strike at the same time? This led to the idea that time is relative, and later to the Special Theory of Relativity, from which Einstein showed that space and time are not independent but instead form a "space-time" fabric.

Einstein's third thought experiment involved a person free-falling in a chamber with no windows and where you can't see the floor. The person would not know they are falling until they hit the ground. The person would feel weightless, and if an object were placed next to them, the object would fall at the same speed and would look as if was floating relative to the falling person. Einstein would later write that this was the happiest thought of his life.

Einstein then wondered what would happen if there were a person and an object — take a spaceship for example — in outer space where there is no gravity. Now if the person steps on the spaceship while attached to a hook, they will feel as if there is gravity. Einstein wrote, "The man in the chamber will come to the conclusion that he and the chamber are in a gravitational field", even though they are not. From this, Einstein postulated that the effects of gravity and acceleration "are both produced by one and the same structure".

In the General Theory of Relativity, the fabric of "space-time", from the Special Theory, is not just a container of objects but actually had two-way dynamics. This means that not only do the objects affect the fabric of "space-time", but the fabric of "space-time" affects the objects as well. This was visualized with another thought experiment. Imagine a bowling ball on a trampoline. The ball curves this fabric. Now roll some billiard balls on the trampoline. These balls will move towards the bowling ball because of the curves in the fabric. Einstein was able to imagine this in the four-dimensional "space-time" fabric.

A hundred years ago, Einstein gave his four lectures on the General Theory of Relativity to the Prussian Academy of Sciences. In his final lecture on November 25, 1915, he gave the equations that describe the gravitational-inertial field. One of these equations is $R\mu\nu - \frac{1}{2} Rg\mu\nu = 8 \pi G T\mu\nu$, where the left side describes how objects affect the fabric of "space-time" while the right side describes how the warped fabric of "space-time" affects the moving objects.

With another thought experiment, Einstein noted that if gravity and acceleration are one and the same, then gravity should bend a light beam. Try imagining being in a room that is accelerating upwards. There is a pinhole in the wall of the room and a laser is being shone through. When it hits the wall, it will appear lower than where it came in because the room is moving upward. If we tracked the trajectory of the laser, it would appear curved. Therefore, when light crosses a gravitational field, it should bend. This idea was proven true in May 1919 during an eclipse, during which a group of scientists led by Arthur Eddington measured how the light from a star was bent as it passed through the gravitational field near the sun.

The last of Einstein's thought experiments related to the General Theory of Relativity is really the simplest. Einstein explained how he came up with his theory to his son using an analogy of a blind beetle. A blind beetle crawling on a curved branch will not know it is curved and Einstein said that he "was lucky enough to see what the blind beetle couldn't". Yes, the General Theory of Relativity is one of the most important concepts in science and has stood the test of time although many have tried to disprove it. However, it is not Einstein's theories and equations that are the most important pieces of knowledge that we gain from him. If there is one thing that we should learn from Einstein, one of the greatest minds in all of history, it is that ideas and new concepts come from creativity and imagination, not from rote memory, and, as he once said, "Imagination is more important than knowledge". In celebrating the General Theory of Relativity, we are celebrating the power of creativity and imagination.

The Rise and Fall of Theranos

SARAH CHAN
2A NANOTECHNOLGY

Theranos is a blood testing company that incorporates microfluidic devices for cheaper blood tests and is valued at about $9 billion. The company claims that they can run several tests with one drop of blood. Incredible, isn't it? Just a few months ago, Fortune magazine featured founder Elizabeth Holmes on their cover, and people everywhere started talking about it. The story is an inspirational story: Holmes dropped out of Stanford in second year to found Theranos, which she believed could revolutionize health care technology. In her words, she founded Theranos "because systems like this could completely revolutionize how effective health care is delivered. And this is what I want to do. I don't want to make an incremental change in some technology in my life. I want to create a whole new technology, and one that is aimed at helping humanity at all levels regardless of geography or ethnicity or age or gender." Rapidly, the charismatic Holmes became a Silicon Valley celebrity and a powerful voice for women in STEM, inspiring girls to pursue their dreams in STEM and encouraging women to help other women. However, in recent weeks, Theranos has gotten itself into hot water and is starting to fall as quickly as it rose.

Theranos' problems started on October 15, 2015, when the Wall Street Journal ran an exposé of Theranos. The WSJ accused Theranos of not using its own technology to run most of the tests, questioned the accuracy of the blood tests' results, and implied that Theranos cheated on lab proficiency tests. Holmes responded to the allegations saying in an interview that she was shocked that the Journal would make such claims and that she had sent a thousand pieces of documentation proving them false. "This is what happens when you try to change things," said Holmes. "First they think you're crazy, then they fight you and then all of a sudden you change the world."

The next day, the Wall Street Journal published a report that the U.S. Food and Drug Administration (FDA) pressured Theranos into halting its collection of blood via finger pricks for all but one of its tests, as well as the use of the company's 'nanotainers,' which were deemed unapproved medical devices. Theranos later released a statement saying that the facts were misconstrued, and that they have been working with the FDA proactively. A couple days later, Jean-Louis Gassé, the head of Apple engineering during the 1980s, wrote that the results of his blood test with Theranos were significantly different from the traditional blood test taken from Stanford Hospital.

On October 21, Holmes was interviewed by John Carreyrou, the journalist for the WSJ who ran the exposé on Theranos. She again disagreed with the claims and insisted that the exposé was false. Two days later, Theranos' woes continued to grow, when the Financial Times raised new questions regarding the accuracy of Theranos' tests and took issue with an earlier New Yorker profile of Holmes stating that she had "earned income from large pharmaceutical companies." The next day, Walgreen's, who has a deal with Theranos and had begun opening Theranos wellness centres, announced that they would not be opening any more Theranos centres until the controversy has passed.

Theranos' problems only continue to escalate from there. On October 27, the FDA published two lab inspection reports, finding the nanotainers to be 'uncleared medical devices', and that Theranos had poor record keeping, mishandled complaints, and missing quality audits. Theranos then gave a very ambiguous response, saying, "We believe that we addressed and corrected all the observations at the time of, or within a week of, the inspection and have submitted documents to FDA that say so." Another problem with Theranos is that none of its data has been peer-reviewed, although, according to their website, all their technology has been "vigorously tested." Dr. John Ioannidis of the Stanford Prevention Research Centre says, "I applaud their going to the FDA for approval on so much and hope other labs will follow their example, but their results need to be checked out (by the broader scientific community in peer reviewed journals). Is it reproducible in the scientific community? This is a major deficiency. We have been misled many times about innovations in medicine before." Why hasn't Theranos allowed peer-reviewal until now? They claim that as any good business would, they need to keep their technology secret from their competitors.

The Theranos story is far from over and there is no clear ending in sight. Theranos could prove critics wrong and revolutionize the healthcare industry, as their charismatic leader Elizabeth Holmes aims to achieve. Or, Theranos could continue to fall until it crashes and burns, if it is found that their technology doesn't work. The one thing that is certain is that Theranos will not go down without a fight, and that we will continue to hear about Theranos for a while.

On the Joys of Conferencing

TIFFANY CHANG
1A CHEMICAL

I'm pleased to say that my weekend began a day early the week of November 2-6. I missed some lectures and two tutorials, but it was well worth it.

I attended two conferences that weekend – one on Friday, and the other on Saturday. Friday's was the Eastern Canada Student Energy Conference (ECSEC), and Saturday's was the first-ever Waterloo Undergraduate Nanotechnology Conference (WUNC).

Being in chemical engineering, it's probably unsurprising – probably even expected – that I would attend ECSEC. WUNC, though, I admit that I went to on a whim and out of pure fascination. I am positive that one day, nanotechnology will upturn and revolutionize our lives.

A common element of both conferences that I enjoyed were the "Think-a-Thons". Essentially, we were put into groups of approximately eight at ECSEC and eleven at WUNC to come up with some sort of conceptual solution to a particular problem that the real energy and nanotechnology industries hope to resolve. The problem statement provided at ECSEC was much more open-ended than the one presented to us at WUNC, for the latter conference's organizers had already narrowed it down to a specific area of nanotechnology's application. Did I mention that we had a time limit, too?

At ECSEC, we filmed a one-minute sales pitch, whereas at WUNC, we shared a six-minute, summarized presentation. From my perspective, the latter was more information-based and the former intended to be more persuasive – more along the lines of a sales pitch, if you will.

I have certainly learned a lot more about these two very different fields by attending both conferences. Regardless of the engineering discipline in which you're majoring, here are some points that every Waterloo engineering student should consider taking to heart.

To paraphrase Dr. Adrien Côté, Senior Research Scientist and project manager at the Xerox Research Center of Canada, develop a "T-shaped skill set." In other words, be a jack-of-all-trades who specializes in one or two areas. Think of your specializations as your core in the personal solar system of your life and the rest of your knowledge as your satellites. You never know when knowledge of those bits and pieces will come in handy, but you need that specialization or two to keep yourself grounded.

Kerry Margetts, General Manager at Shell Canada Ltd., mentioned the term "added value." I had heard it uttered numerous times, but I hadn't understood its full power – until Friday.

Canada is known for extracting natural resources and exporting them to other countries. What we as consumers do not realize is that many of the petrochemical by-products that we purchase are manufactured by foreign entities – with the (cheap) oil that we produce. Without further refining, Canada is not only not making a profit – we are losing money and potential jobs. Margetts was very passionate in selling the dream of a strong Canadian refinery industry, and I believe that this would be a wise direction towards which to steer the country. More domestic manufacturing would contribute to less dependence on foreign entities and create a an ample number of jobs. Needless to say, this could balance out the oil and gas rut.

At WUNC, the guest panelists emphasized the difference between "entrepreneurship" and the "entrepreneur spirit." Undoubtedly, at Waterloo, most of us will be enraptured by the idea of running a start-up company. But it's necessary for us to remember that not everybody is meant to be an entrepreneur – just as how we can't all be Steve Jobs, Bill Gates, or Albert Einstein. That isn't to say, though, that we cannot have the entrepreneur spirit, which they defined as having the courage to make mistakes (just not major ones!), challenging yourself, and asking for help when it's required. After all, we are our very own products, so we ought to sell ourselves effectively.

The speakers of ECSEC and WUNC did just that with a high degree of effectiveness – they were all such eloquent storytellers. I know that engineering students will most likely never take another English course again, but communication is as important to our learning as calculus or physics is. In the future, there's a decent chance that we won't be working alongside strictly engineers. We need to be able to tailor our communication to a variety of different audiences. What's a good idea if you cannot make it understandable to relevant parties who maintain the power in transforming your idea into action?

Finally, it's important for us to realize that successful people, such as all the speakers, don't purposefully seek success. Yet, they do everything to prepare for that one moment in time to seize a good opportunity and maximize their benefits from it. Obviously, everybody wants to be successful, but before you can become successful, define what success means to you. Keep that in the back of your mind, but don't let it control your life. Work hard to achieve your personal pillar of success. Make mistakes along the way. Take a break when you need it. Don't be afraid to dream big. Despite what bumps you may encounter along the way, savour all the tastes that life has to offer – the sweet, sour, bitter, and spicy! Enjoy the journey!

It doesn't matter what we know; what matters is knowing that what you know is relatively insignificant compared to all that is out there for us to discover. That is the epitomizing beauty of attending conferences, so I'll be sure to attend more of them in the

Coral Reefs – Not so Natural Selection

DEVIKA KHOSLA
2A NANOTECHNOLOGY

A group of scientists at a research centre in Hawaii are experimenting with assisted evolution. They are attempting to grow "super coral" that is able to withstand hotter, more acidic ocean conditions, expected as a result of global warming.

As the concentration of carbon dioxide and other greenhouse gases in the atmosphere increases, the acidity of the ocean increases as well. Stressful conditions such as changes in pH or fluctuations in temperature can cause coral to bleach. When this happens, coral releases all of the symbiotic algae it contains, becoming white or bright yellow in the process. This in itself isn't a death sentence: if the coral is kept away from things like pollutants, overfishing, and other strains, it can recover. However, bleaching does makes coral more susceptible to disease, and can increase the likelihood that the coral will die.

Bleaching has only happened a few times. Before 2014, the last time coral in Hawaii bleached was 1996. However early this October there was a global bleaching, which the National Oceanic and Atmospheric Administration described as extensive and severe. That event was the second consecutive bleaching of Hawaiian coral in the last two years, which does not bode well for the coral. It may not recover for decades, if at all.

In order to prevent coral from dying in the future, researchers at the Hawaii institute of Marine Biology have been taking samples of healthy coral back to their lab and slowly exposing them to water that is slightly more stressful. The theory is that over time the corals can become physiologically primed to tolerate additional stress. They are also selectively breeding resilient strains of coral that they find in the ocean, in hopes of perpetuating the resilient genes in offspring. The researchers are then going to transplant these resiliently designed corals into the bay, and monitor them to see if they are able to grow normally and reproduce, even in stressful conditions.

At the University of Miami in Florida there is also research being done on different strains of algae; some strains of algae are more prevalent in corals that are heat stressed, which suggests that they are better able to survive stressful conditions, and can help the coral survive as well. These researchers are looking into the possibility of intentionally putting certain strains of algae in coral reefs to help them survive, although as of yet it is unclear whether this would be possible, given that wild environmental conditions may cause corals to favour certain types of algae.

Nevertheless, not everyone agrees that tinkering with nature is the best way to help the coral. For one, selective breeding could narrow genetic variation and thus potentially reduce the capacity of coral to adapt in the future. While it might enhance specific traits, this could come at the expense of other traits. For example, higher resiliency could lead to slower growth. There are even some who say that assisted evolution is ethically not sound; that it is like "playing God".

Whether or not they agree on assisted evolution, scientists do agree that the coral must be protected, and emphasize the importance of reducing destructive human activities that are leading to pollution, overfishing, and global warming.

James Woodford

Scientists hope selective breeding of coral can help improve their survival rate in the growing presence of human-introduced pollutants.

The Unexpected Heath Risks of Tapeworms

RATAN VARGHESE
1A ELECTRICAL

Tapeworms: they sit in your intestine, suck your nutrients out of you, and kill you slowly from the inside out. What could possibly be worse than a worm-infested intestine? The unfortunate answer: a worm-infested brain. Yes, just this month, there have been multiple high-profile worm infiltrations of human brains.

Luis Ortiz went to hospital in his home town of Napa, California with "the worst headache of his life." A brain scan revealed the sordid truth: a tapeworm larvae was growing in a cyst in Ortiz's brain, cutting off vital water flow to other areas of his brain.

Without medical attention, Ortiz would have had just 30 minutes to live. Luckily, doctors were able to remove the worm just in time. According to Ortiz, "The doctor pulled it out and he said it was still wiggling, and I'm like 'Ugh, that doesn't sound too good.'"

Ortiz is not alone. In fact, this situation is common enough to have a name: neurocysticercosis. It is the most common parasitic disease of the nervous system, and is the main source of epilepsy worldwide. Neurocysticercosis is endemic in several parts of the developing world. In the US it is less prevalent: there are about 1000 cases per year. In Canada it is pretty uncommon. Anyone who ingests the pork tapeworm could potentially get neurocysticercosis; this usually requires consuming feces, or eating pork from pigs that have consumed human feces.

We so often think of tapeworms as nasty parasites that it is easy to forget that tapeworms themselves can fall ill. Unfortunately, in this case the enemy of our enemy is definitely not our friend. A 41 year old Colombian man (now deceased) was admitted to hospital in 2013 after suffering fatigue, fever, cough and several months of weight loss. This was especially unsettling, as he had been diagnosed with an HIV infection back in 2006. The patient had tumours in his brain, as well as his lymph nodes and lungs. The tumour cells were clearly the result of uncontrolled cell division as they invaded tissue, crowded, had a disordered growth pattern and had very little structural variation. However, these tumour cells were too small to be human.

Instead, these cells originated from the tapeworm Hymenolepis nana, which (unlike the pork tapeworm) only rarely leaves the intestines. The cells were able to thrive partly because of the patient's HIV-battered immune system. According to the New England Journal of Medicine's study of the case, the cells may have also co-opted H. nana's cellular level mechanisms for invading host tissue and evading the immune system. It is unknown if the cells were cancerous before being ingested, or if an interaction with the victim's body led to their sudden growth.

This case may sound uniquely grotesque, but in areas where both H. nana and HIV are common, worm-derived cancer could be misdiagnosed as human-derived cancer. Even calling this condition "cancer" is not yet considered appropriate among medical professionals: the preferred term for now seems to be "an infection with parasite-derived cancer which causes a cancer-like illness." We can only hope that the knowledge of these bizarre conditions can lead to improved diagnosis and treatment in the future.

A Little Bit of Oxygen Goes a Long Way

TIFFANY CHANG
1A CHEMICAL

On October 28, 2015, the European Space Agency's (ESA) Rosetta spacecraft detected large quantities of molecular oxygen in situ as it outgassed from Comet 67P/Churyumov-Gerasimenko's coma ("tail") for the very first time.

The Rosetta mission dates back to March 2004, where the spacecraft has travelled to and fro about the inner solar system, circling the Sun nearly four times in its quest towards Comet 67P.

Since over a year ago, Rosetta has discovered an abundance of various gases pouring from Comet 67P's nucleus, the most abundant of which are water vapour and carbon monoxide. However, other compounds containing nitrogen, sulphur, carbon, and even noble gases have also been observed.

According to Andre Bieler, a scientist of the University of Michigan, the discovery of oxygen came as "a big surprise" to the Rosetta team. This discovery challenges mainstream theories about our solar system's formation, so it undermines all that we know – or think we know – about the genesis of our known planetary objects.

Rosetta's measurements of the comet suggest that the oxygen molecules in Comet 67P/Churyumov-Gerasimenko's gassy tail must have existed "before or at" its formation. In Bieler's words, they believe that "this oxygen is primordial," meaning that "it is older than [the] solar system."

Kathrin Altwegg of the University of Bern in Germany, another scientist tied with the Rosetta mission, admitted that her team "all went a little bit into denial." After all, oxygen is not an element expected to be found in a comet's coma since it is a highly reactive element.

For instance, in the presence of ultraviolet light, an oxygen molecule splits, forming a free oxygen. Then, the free oxygen can combine with another O2 molecule to form ozone, O3. Oxygen can also react with hydrogen from cold dust grains in outer space to form water – according to all current theoretical models of the solar system's formation.

From September 2014 to March 2015, the group of Rosetta scientists analyzed over 3,000 samples collected from the spacecraft's vicinity to isolate and identify the O2. Relative to water, oxygen had a presence of 1-10% and "an average value of 3.80 ± 0.85%", which is higher than predicted values in accordance to theoretical models describing the chemistry in molecular clouds.

Interestingly enough, the amount of O2 detected by Rosetta showed a strong correlation with that of H2O at any given moment. With this finding, scientists believe that there is a connection between water and oxygen's origin in the comet's nucleus and the mechanism by which the comet releases them.

Ultimately, not only does Rosetta's sighting of molecular oxygen from Comet 67P call into question our theoretical model for the solar system, but it could also change the present method with which scientists use to detect for signs of extraterrestrial life.

Presently, oxygen and methane are two "chemical signatures" that supposedly indicate signs of life; however, both gases have been detected on Comet 67P, and yet the comet supports no life itself. Thus, Altwegg evaluates that "[oxygen and methane are probably not] very good biosignature[s]."

Even though the relevance of Rosetta's discovery is rather distant to our daily lives, I personally believe that it serves as a gentle reminder: What we think we know may not be reality as it is. Just because an idea or concept is accepted to be true by society at large doesn't necessarily mean that it is correct.

We as humans produce our finest work when we embark on the journey to seek the truth. The more we question our surroundings, the more we'll learn, and the closer we'll arrive at genuinely understanding the world in which we live. The results of the Rosetta mission serve as a true testament to this philosophy.

Prof Personalities

Bob McKillop

ASHLYN LOW
2A NANOTECHNOLOGY

PROF PERSONALITIES

Every Civil, Environmental, or Geological Engineering student will probably know who you are talking about when you mention the name Bob. Professor Bob McKillop is a well-respected professor from the Department of Civil and Environmental Engineering who never fails to make his love for teaching evident during his lectures. Completing both his undergraduate degree and PhD at the University of Waterloo, Bob soon made the transition into becoming a full time lecturer for many of the first and fourth year civil, environmental, and geological engineering courses.

This issue, the Iron Warrior took some time to learn more about this famous professor.

Which courses do you teach?

I have taught CIVE 125 (Civil Engineering Concepts 1), CIVE 126 (Civil Engineering Concepts), CIVE 221 (Advanced Calculus), CIVE 280 (Fluid Mechanics and Thermal Sciences), CIVE 381 (Hydraulics), CIVE 583 (Design of Urban Water Systems), CIVE 486 (Hydrology), and ENVE 320 (Environmental Resource Management). I teach five courses a year, and then the other duty I conduct at the university is that I share the role of Examination Promotions Officer. So I work with our admin team, and a big part of my role is working through our Examination Promotions Committee, and when the students come in to difficulty, such as students who are in academic jeopardy of having to repeat a term or failed a term or whatever, then I'm able to do that. So that's my service component of the job.

Why did you choose to pursue a career in Engineering?

I actually went to college first and completed a degree in Civil Engineering Technology. Then I went out to work for a couple years at the Grand River Conservation Authority, and one of my bosses there was an alumni from Waterloo. He helped mentor me and steer me back in to engineering. So I quit what I thought was the best job of my life to come back and become an undergrad and go through the whole process again here. So it wasn't a great big plan to become an engineer, it just kind of happened. There was an opportunity, and sure enough I came back here and did my undergraduate degree, and I loved all of it.

What was your most memorable experience as an undergraduate student?

My memory at the beginning was how overwhelmed I was about first year. Like I said, I had gone to college, I had worked outside, I was very rough with my math, and so my memory of 1A and 1B was just the shock of the workload and how much was going on. The other memory I have is when I'm working on a co-op job, and then go back into the classroom and see the same material, I just remember seeing the linkage between co-op and the education, and that has always stuck with me.

What are your research interests?

I don't conduct research anymore, but I did my PhD in the 1990s in wetland hydrodynamics, and I did some post-doc work here as well. We had an early retirement package, and a large amount of our faculty took that retirement, so there was a teaching shortage and I was offered a teaching position while I was doing my PhD and postdoc.

What is your favourite part about being a lecturer?

I'm very lucky, I teach about 240 students in the fall and they are all 1As. So I teach the environmentals, the geologicals, and the civils. And I see them again in 1B, and I don't see them again until 4B. So I get to see when they come in here walking and talking like a high school student, thinking like a high school student, and I get to see them when they are in 4B and they are walking and talking like an engineer. And I think that is one of the coolest parts of being a teacher, just being able to see the growth that they develop here.

Bob McKillop teaches first and fourth year Civil, Environmental, and Geological Engineering courses. He also loves cats, kayaking, and Killarney.

What is the most challenging part about being a lecturer?

Again, I'm dealing with first years, so the students don't have the skill sets that I'm accustomed to with the 4B level, so patience is definitely a challenging aspect. Students still have to learn to transition from a high school student to a university student, and it can be very frustrating and taxing. But everybody gets it done, it's just that some people get it done quicker than others.

Can you describe your teaching philosophy?

I think I can be no-nonsense and a little bit too honest sometimes, but I still see my teaching as coaching. And sometimes you have to be a director, you have to sit there and make sure that the students understand what your philosophy is, what your expectations are, and you have to coach. I think my strength is in the coaching, and I think if you talk to my students, I hope they say that my course notes are one of my strengths. I spend a ridiculous amount of time making sure my course notes are complete and thorough and clear, and my wife also knows that I'm constantly tweaking and fiddling with my course notes.

My philosophy is to make sure that my material is really clear and organized, laid out, and hopefully I challenge my students with the deliverables and the assignments and the labs that I design for them. So there's a knowledge, there's a comprehension, and then there has to be an application.

When I get to the fourth year students, their skill set is completely different. They have a problem solving skill set, they can distinguish between nice-to-know and need-to-know, and my philosophy in fourth year is to simply keep giving them the things they need to know, give them their assigned homework, and then get out of their way. Then just let their imagination and problem solving go off and impress me.

Do you have any advice for your students?

The advice I have for the new students coming in is pretty traditional. I think the students we get are very good in knowledge and comprehension, they are just probably not as developed in their time management skills yet, or in their problem solving and critical analysis skills. So when coming in, if you can stay on top of your work, if you try not to fall behind and you really manage your time, 1A will be a lot more doable. At the 4B level, when I'm talking to my students, it's really more like professional advice. It's really about where they want to go in life, where they see themselves in 10 years, which is a hard question to answer. But students at the 4B level hopefully have a job opportunity that excites them, that's what I'm hoping.

Do you have any hobbies?

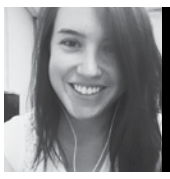
I'm getting a little old now, but we used to do a lot of kayaking. So for my wife and I, our fun is going camping up in Killarney Provincial Park, packing up the truck, putting a canoe on the top, and off we go for two weeks. So that's really where we go to decompress at the end of term. My wife works at Western so we both end our academic year in August and we just camp for a couple weeks. I've been going to Killarney for about 12 years non-stop, and that is where you will find me during the last two weeks of August.

Any interesting facts you would like to share?

There's a well-known lecture I do, which I just conducted this week, and it involves a Bernoulli equation. I had named one of my cats Bernoulli, so every civil, environmental, and geological student for the last 5 years knows that there is a Bernoulli McKillop and have seen his picture in my lecture. When I first started dating my wi fe, she warned me she was a cat person and I said ok. So now our house is run by four cats, and Bernie is the one that all my students know about for sure.

Disclaimer: This is not Bernoulli, but it is a cat which we understand to be at a similar level of fluffiness. Much more adorable than a distribution, a principle, an equation, or anything else named after Bernoulli.

Presidential Update: Meetings and More!



HANNAH GAUTREAU
PRESIDENT

Hi Everybody! This has been a busy couple of weeks of events and meetings, so here's what I've been up to since my last update.

The Committee of Society Presidents met to discuss a number of things, including the new Societies Agreement, and other issues that are affecting other student societies on campus. We are really close to signing the new societies agreement, which is a document that outlines the relationship between all of the student societies and FedS. Maaz Yasin, the VP Internal of FedS, will be scheduling another couple of meetings so that we can finalize all of the terms of that agreement.

We also had a discussion about school spirit on campus. Everyone agreed that we have great faculty pride but there is a lack of University of Waterloo pride. Evidently, there were a lot of mixed opinions on how to fix this problem, or even if the problem should be fixed. If you have any ideas about this, please come talk to me!

I also had a meeting with Chris Lolas, the president of FedS, and Cheri Bilitz from counselling services. We discussed the current state of counselling as well as ways to improve their services for students. They are currently looking at how they are using their counselors as well as their customer satisfaction, to find ways to improve the current service as well as to maximize their capacity. Chris and I brought up the fact that there is currently no data about student's perception of counselling services, and they were very receptive to getting that information.

I have also been doing a lot of work on Mental Health advocacy over the past couple of weeks. Kristine Meier and I made a presentation to the Chemical Engineering department, and I hosted a session at the Conference for Diversity in Engineering (hosted by the University of Waterloo!) about managing your mental health as a student leader and being a successful advocate.

We also got a lot of great feedback at our fourth council meeting last Wednesday, so I wanted to extend a huge thank you to everyone who provided feedback. If you have any additional feedback or even just want to chat, please shoot me an email or come talk to me. I would love to hear your ideas about how we can make EngSoc better!

Best of luck with the next couple of weeks!

Council Meeting 4

Also, we had our third EngSoc council meeting on Wednesday, November 11. In it, Wayne Parker, the current Acting Dean of Engineering, came to introduce himself to council.

Council discussed possible places for an ATM if one were to be put within our Engineering buildings. They also voted to approve over $10,000 in sponsorship allocations. Furthermore, Council also gave their feedback to the Executive and they provided feedback on the current council structure.

For more information about council meetings, make sure to check the EngSoc website, and subscribe to the mailing list! If you have any questions about our council meetings, please contact *executive.b@engsoc.uwaterloo.ca* and we would be more than happy to answer your questions. The next meeting will be held on Wednesday, November 25 at 5:30 pm in CPH 3607.

Hope to see you there!

Thinking About Plans Tu Upgrade RidgidWare

DON TU
VP FINANCE

Don Tu here with another fantastic update! The past two weeks have been relatively quiet for me in terms of Engineering Society business. The Sponsorship Committee and I managed to secure ratification for this term's sponsorship allocations last Wednesday, but other than that, I don't have a lot of events to bring to you from the recent past.

However, I have recently found myself thinking deeply about both my own future and that of the Engineering Society. So, why don't we talk about that?

On November 12, the University of Waterloo proudly broke ground for the newest addition to the family of Engineering buildings: Engineering 7. (Incidentally, it was my birthday – what a fortuitous occasion!) Along with a massive amount of dedicated teaching space for students of numerous departments, E7 will also be the future home of RidgidWare, the Engineering Society's electronics component shop.

If you are currently familiar with RidgidWare, you'll know that it is open on Mondays and Fridays in the CPH foyer. More importantly, it is currently located in a closet in the CPH foyer. It's not a very glamorous or illustrious set-up right now, and the Society is definitely excited to move the operation into E7 as soon as possible. However, E7 is slated to be ready for 2018, which means almost three more years of operating out of a closet.

Furthermore, I will admit that RidgidWare has not been very high up on my list of priorities this term. Although I have a team of four fantastic directors, I have not established any main directives, initiatives, or goals for RidgidWare as a service. Because of that, I feel as though the shop has simply been languishing for the better part of the term.

Although there's not a lot of time left in the term to do anything very big, I would like to create some more definitive plans for RidgidWare over the Winter co-op. However, I am a chemical engineer with very little in the way of knowledge of DIY electronics. In light of this, I would like you to think of this rambling article in one concise sentence:

What should RidgidWare be?

We're working on restocking the shelves, but other than that, I am at a bit of a loss. Should we stick to simply selling the components that we have? Should we expand our inventory? Should we move from strictly inventory into a position where we offer services, like workshops? I would love to hear your ideas.

Let me know what you think! As always, you can reach me at *vpfinance.b@uwaterloo.ca*. I hope you got something out of this rant!

Upcoming Events Calendar

Wednesday November 18	Thursday November 19	Friday November 20	Saturday November 21	Sunday November 22	Monday November 23	Tuesday November 24
AutoCAD Workshop 6:00PM - 8:00PM, MML, CPH 1346 Recovering from Midterms and Surviving Finals Workshop 6:00PM - 8:00PM	**Enginuity** 12:30PM - 1:30PM Semi-Formal 8:00PM - 1:00AM, Turret Nightclub	First Year Fridays WEC Day 1 9:00AM	D&D 3:00PM - 6:00PM	WEC Day 2	FYM - Board Game Night 6:00PM - 9:00PM Change for Change Week POETS	Charity Grilled Cheese 12:00 - 1:00PM, Outside POETS Tye-Dye Workshop 6:00P M - 8:00PM, POETS Change for Change Week POETS
Wednesday November 25	**Thursday November 26**	**Friday November 27**	**Saturday November 28**	**Sunday November 29**	**Monday November 30**	**Tuesday December 1**
EngSoc Meeting 5 5:30PM - 7:30PM, CPH 3607 Student vs. Prof Ice Hockey Game 7:00PM - 9:00PM, CIF Coffee House 7:30PM - 11:00PM, POETS Change for Change Week POETS	Pictures with Santa and the Tool 11:00AM - 1:00PM, POETS EngProv 6:00PM - 7:30PM, POETS WiE Workout 6:00PM - 7:30PM Change for Change Week POETS	First Year Fridays Holiday Gift Exchange 6:00PM - 7:00PM EngPlay 8:00PM - 10:00 PM Change for Change Week POETS	Day at THE MUSEUM THE MUSEUM D&D 3:00PM - 6:00PM EngPlay 7:00PM - 9:00 PM			Charity Grilled Cheese 12 - 1PM, Outside POETS

Check out up-to-the-day event postings on the EngSoc website at *engsoc.uwaterloo.ca/event-calendar*

NEW FEATURE: CCA events being offered by CECA. See *uwaterloo.ca/career-action/* for details and to register

Work Reports, WatPD and Transparency

ANSON CHEN
VP EDUCATION

Q: What's universally known to be difficult to start, exhibits a high variability in marking and should probably not be included in term averages?

A: Work Term Reports!

Hey everyone! It's been a busy last two weeks as always, and I'm here to give my regular education updates. A couple of topics of interest today.

Work Term Reports in Averages

The biggest buzz this week is that the faculty is currently considering including work term report marks in our term averages. For those who haven't written one yet, a work term report is a ~20-30-page report you create during (typically) your third to fifth work term as part of your graduation requirement. The type and technical content required for the report varies by department, but typically, a student is required to come up with a problem statement related to their co-op term, find and assess multiple solutions to the problem, and determine the optimal solution.

Why is this such a big deal? Well, work term reports can be challenging to start and complete for a number of reasons. Most students find that the topic of the report depends highly on the nature of their work term – it can be a scramble to find a synthesis topic for those not in design-related positions. Access to data is also usually hit-and-miss; some organizations provide their students with report-quality data, while others do not. Granted, self-study reports are an option, and it all comes down to whether students can find topics they are truly interested in.

Currently, with the exception of Management Engineering, departments do not include work term report grades in students' term averages. Work term reports are essentially pass-fail assignments, although the numerical mark is indicated on transcripts. The faculty is considering changing this practice on the basis that they think students are not taking work reports seriously enough, and are consistently submitting low-quality, last-minute work for faculty to mark.

The discussion is in the preliminary stages right now, with the Associate Dean of Co-operative Education and Professional Affairs looking to gather data regarding the variability of marking, marking process and typical grade distributions within each department. Many students have spoken to me regarding the challenges of finding topics they are interested in, a trend of inconsistency between markers and contradicting or missing guidelines. The next meeting with this committee is on November 30; if you have anything additional you would like me to voice regarding work term reports, just send me an email at *vpeducation.b@engsoc.uwaterloo.ca*!

WatPD Improvements

I met with Erin Smith, the Associate Director of Program Improvement for WatPD. We discussed whether student feedback from end-of-course surveys has been used to improve the Professional Development program and in what way. Erin graciously showed me a summary of the typical types of PD feedback students give, and provided some interesting insight on the process of creating PD courses at Waterloo.

I will be summarizing the findings of this meeting in a blog article later in the week, as there is a lot to say and not enough space in this IW article; look out for it at engsoc.ca!

Other Meetings: FEDS, Senate Undergraduate Council

Council asked me this week to provide more updates on the other meetings I attend, so here I am, dutifully relaying information. Truthfully, most of this was not of interest to the average student.

The FEDS Education Advisory Committee met last week to discuss a few campus-wide issues such as Learn down-time during midterms, whether students should pay instructors' field trip travel fees and pre-enrollment policy. In general, there were no decisions items to update anyone on.

The Senate Undergraduate Council consists of various professors and associate Deans across the different faculties, and decides on items to send to Senate. Most of these items were related to curriculum wording, and there was discussion on flying practice in the Aviation program and a new joint Biology program between Conestoga College and UW.

Well, that's it. Ciao for now! On to better and less wordy things.

Clearing Up Some ConfusIN

TERESA LUMINI
VP INTERNAL

Hi everyone!

Wow! Half-way through November already? This term has been going by so quickly, but the cool events are not slowing down. We've had some great feedback on our Arts events, such as finger painting and perler beads, and from counselling services saying they are glad we are running so many small de-stressing events, so we'll do our best to keep things like that going for you guys. We also have a couple of bigger events coming up still, like Semi-Formal on the 19th at Turret Night Club. Time to get fancy with your friends and take pictures with the Tool! If you're looking for laughs and some drama, EngPlay is also coming up in the last week of November from the 26th-28th, so don't miss out on seeing some of your fellow engineers perform!

Licensing and the Engineering Society

The last event I would like to discuss is the last Coffee House this term. It will take place in POETS following the last EngSoc meeting of the term, which will be licensed. The reason I would like to highlight this one is that part of my platform was to try and cater to all students, including both first years and upper years, and to bring the fun back to the Engineering Society. Part of this initiative was to begin to license POETS for at least a few low key events, like board game nights and coffee houses, to try and encourage students to come to some of these events. This does not mean that we are promoting that alcohol is required to have fun or that it is the only way to get students involved, because it's not. However, if the past couple of terms have showed us anything, there is a correlation between licensing some events and participation.

Back in the day, when we still ran three term parties in POETS, they would be licensed and so many people would come out to them that there was a line out the door and WATcards had to be checked to make sure you were in engineering. Then a policy was passed by the university that required that "high risk events" could be licensed, but had to be zoned to separate the alcohol from people who are underage. Trying to avoid segregating first years from everyone else, the Engineering Society Executives decided to stop licensing events so that first years could feel included. On top of that, whenever EngSoc licenses POETS, there is a mandatory minimum we have to sell. When we do not meet that minimum, EngSoc must pay the difference to bar services. POETS used to be licensed every Friday afternoon, but because we were not meeting the minimum very often, EngSoc was losing a lot of money to this and had to stop the weekly licensing.

So why is Coffee House being licensed this term? Well, the policy that requires zoning for "high risk" events does not require zoning for "low risk" events. This means that we are able to license events that are low key without segregating those who can drink from those who can't. Things like coffee houses and talent shows and chill low-key events are low risk, whereas things like dance parties are high risk. In terms of POETS, the easiest way to differentiate is to look at the couches: if it's an event where you'd leave all the couches out cause people are expected to sit and relax, that's low risk. If your event requires you to move all the couches out of the way, like to make space for dancing, that would be a high risk event.

If anyone has any questions, comments or complaints, please feel free to contact me at *vpinternal.b@engsoc.uwaterloo.ca* or any of the other exec as well. We are also trying to be in the Orifice as much as we can, so feel free to come see us there as well ☺

Scheduling and Events

You may have noticed there were just so many events this term. There was always something going on, which was great, but also overwhelming! We introduced a lot of new events this term to try and test the waters and see what people were interested in. This included things like new Arts events, hardware skills workshops, Dungeons and Dragons, and more mental health related discussion events. As the term is coming to a close, the results are in, and we will be going through them and weeding out the events with low attendance for the spring term, so we can just focus on running the awesome events you all loved and making room for new events you guys want to see!

All in all, this has been a great term so far and I hope to see students applying to be directors and commissioners for the spring term so we can make the spring term even better.

Engineers. Engineers Everywhere.

KIERAN BROEKHOVEN
VP EXTERNAL

Hey all,

I'll be giving an update on how conferences have been coming along, since fall involves a lot of running around to schools across the country.

I spent the weekend of November 13-15 at the Professional Engineers of Ontario Student Conference at the University of Ottawa. This is a conference intended to "bridge the gap between graduating with an engineering degree to becoming a licensed professional engineer in Ontario". The theme of the conference this year was sustainability in engineering, as it's something that Ottawa U takes very seriously. The sessions varied from different aspects of sustainability to professional skills such as job hunting. Our delegates found each session really beneficial; if you're interested in hearing about the conference and some of the things we learned please shoot me an email! I'd love to talk about the conference.

The same weekend, Waterloo hosted the Conference on Diversity in Engineering. This was a national conference run by the Canadian Federation of Engineering Students (CFES) with a rather self-descriptive purpose. I was obviously unable to attend, but the delegates enjoyed the networking opportunities and got a lot out of the sessions. If you'd like to hear about CDE, feel free to email our wonderful EngSoc president.

Coming up in February we'll be attending the Engineering Student Societies' Council of Ontario's (ESSCO's) First Year Integration Conference at Ryerson University. FYIC is a great conference that helps first years learn how to get involved and be a strong leader within their Engineering Society and school. Finally, we'll be heading to Calgary for CFES Congress in January. It'll be a week long conference where we attend sessions all day, meet great people, and try to make a difference in engineering on a national level.

I want to highlight that advocacy is an important part of ESSCO and CFES. Both fight to make sure that the concerns of students about engineering in the province and country are heard. For example, Allyson Francis, our past EngSoc president, is currently the academic commissioner for CFES. This includes attending meetings for the Canadian Engineering Accreditation Board and voicing student opinions. This means that if you feel passionately about an issue in engineering that goes beyond Waterloo, I would love for you to bring it to me so that I can talk about it at ESSCO or CFES, depending on what level it goes up to.

You can also ask me about getting involved with ESSCO and CFES if you'd like to make a difference in engineering in Canada.

Thanks for reading! You can get me at *vpexternal.b@engsoc.uwaterloo.ca*. Enjoy the rest of your term!

The Art of Cabinet-Making

GABRIELLE KLEMT
1A GEOLOGICAL

It must be stated that being Prime Minister is a tough job; everyone and anyone is watching your every move and judging every misstep. Very rare is it that a PM can manage to satisfy almost everyone. Just considering Trudeau II's first job in office, however, it looks as though he's headed where few can go – and his Cabinet might be considered a work of art…

On November 4th Justin Trudeau unveiled his Cabinet, the first ever gender-balanced Cabinet in the history of Canadian politics. This long-awaited Cabinet has 31 positions, 15 of which are held by women. Some may question why gender equality in such a public powerhouse is important, but I think Trudeau answered this question best: "Because it's 2015". Spoken like a leader.

The 2015 Cabinet isn't just being praised for its gender equality though; it contains a very diverse crowd who will be in charge of leading the direction of public policy for the next four years. This includes the first Afghan-Canadian to be elected to parliament, a woman who was also a refugee from the Taliban when she was only ten years old. As well, 18 of the 31 Ministers are rookie MPs, including Bardish Chagger.

Bardish Chagger, the first-time MP from this University's riding of Waterloo, was named Minister of Small Business and Tourism. In this fall's election, Chagger beat out the Conservative Party incumbent with 50% of the popular vote – I credit this with the ease of voting offered to students this year. Chagger might be a rookie MP, but she definitely has the qualifications for Cabinet. Both her volunteer work with community organizations and her previous work with politics make her a great fit for her position.

Waterloo born and raised, Chagger even studied at this top-notch institution, achieving a Bachelor's of Science degree. We hope she meant it when she said "Science matters to this government and there is something that we are doing differently that we have not seen for a long time. Not only are we looking forward to speaking with media. We're looking forward to working with Canadians and that's what we'll be doing". Finally government scientists are going to be un-muzzled? About time.

To top it off, Trudeau's decisions, for the most part, fit their positions like a glove. Take the new Minister for Sport and Persons with disabilities, Carla Qualtrough, who is a three-time Paralympic Games medalist and has worked for many years as an advocate for people with disabilities. Amarjeet Sohi is the well-appointed Minister of Infrastructure and Communities. As a former city bus driver, he probably understands better than most the importance of infrastructure and transportation that's up-to-par.

One of my favourite picks was Jane Philpott. She is one of few physicians to hold the position of Health Minister. It seems like common sense that a person who has worked first-hand in hospitals and with Médecins Sans Frontières should be in charge of making decisions about where government money should be dispensed to benefit Canadians. Sadly, this is not the way things are normally done; kudos to Trudeau for doing it right.

Lastly, and I'm not going to get into his qualifications, Harjit Singh Sajjan, Minister of National Defense is also one of the most bad-ass in the Cabinet. If you have five free minutes you should 100% look him up.

Personally, I'm excited for the next four years of politics in Canada, and I hope you are too. Can't wait to see what this Cabinet will accomplish.

MAVEN Mission Reveals Fate of Martian Atmosphere

NINA FENG
4A ENVIRONMENTAL

NASA's MAVEN (Mars Atmosphere and Volatile Evolution) probe, which has been orbiting the red planet since September 2014, has uncovered more evidence pertaining to the disappearance of the red planet's atmosphere. A team of scientists from NASA, the University of Colorado's Laboratory for Atmospheric and Space Physics (LASP), and the University of Iowa, announced their findings in a live broadcast on November 5.

Scientists have long suspected that Mars had once been a habitable planet like ours. Recent missions have thus focused on finding evidence of water – the prime ingredient needed for life. Their findings have included visual and mineral evidence of water, meaning that, in ancient times, Mars likely had enough of it to support microbial life, and would have had a warmer and thicker atmosphere. Geological studies have estimated that water may have been abundant even 3.7 million years ago. Nowadays, the planet is cold and dry, with an atmosphere so thin that liquid water cannot be sustained; it either evaporates or freezes.

So, what happened then? A number of theories have been presented over the years, but essentially, the atmosphere either went up or went down. It may have dissipated into space over time, or otherwise gases such as carbon dioxide may have crystalized into carbonates that could potentially now be found in the soil. However, not enough carbonates have been found to account for the amount of atmosphere that has been lost. With new research, it now seems that the verdict is in: ions in the atmosphere were stripped from the planet by solar winds, travelling at 1,000,000 miles/hour from our central star. These winds, made of electrically charged particles following magnetic fields from the sun, have contributed the most to the depletion of the atmosphere.

The MAVEN probe, which monitors the top of the atmosphere where this takes place, has estimated an escape rate of about 100 grams of matter (mostly oxygen and carbon dioxide) per second, as a lower limit. This rate can increase ten or twenty-fold during solar storms, as documented during a flare event in March 2015, in which 3 flares in a row created more intense atmospheric stripping. The findings also imply that some additional challenges may be encountered in the mission to send humans to Mars, a goal that NASA hopes to achieve in the 2030s. Terraforming the planet by taking carbon dioxide from the crust may be less feasible, as the majority of the gas is no longer on the planet.

The next big topic of discussion is what the findings mean for Earth, and whether or not our own planet is headed for the same fate. NASA scientists say that, while the Earth does experience some degree of atmospheric loss, we won't be experiencing a phenomenon quite as dramatic as Mars' for a number of reasons. For one, solar storms used to be much more intense, and are tamer in recent times. The Earth is also protected from the effects by its own, much stronger magnetic field in comparison with Mars. As the red planet grew older, its internal core temperature decreased and as a result its magnetic field was greatly weakened, leaving its gaseous particles more susceptible to solar winds. While Earth does experience more particle escape from the poles and is particularly vulnerable during geomagnetic reversals (in which the position of the north and south magnetic poles exchange positions), it will not become like Mars unless our planet also cools and loses its magnetic field.

These findings unlock more information about our solar system, and the effect of the sun on the planets. It also gives us something to think about when it comes to our own planet, and what may become of it in the future. Perhaps someday it, too, might look like Mars.

The Abolishment of China's One-Child Policy

RAEESA ASHIQUE
1T ELECTRICAL

China's current Communist Party announced at the end of October that they would be getting rid of their one child policy. It was introduced in 1979 in an attempt to stifle the rapidly growing population, to reduce the demand for water and other natural resources. Couples of the ethnic Han group were limited to one child, while minority groups were allowed two. The policy was later amended to allow rural couples a second child if their first-born was female.

At the time, the population was just under one billion, and has now reached 1.4 billion earlier than projected; it is still increasing, although the government estimates that the policy has prevented 400 million births.

The traditional preference for boys over girls has led couples to give up their daughters for adoption, abandon or kill the newborn, or have sex-selective abortions, which unfortunately can be difficult to monitor. China now has between 32 and 36 million more men than it should have naturally, and this gender imbalance has led to sex trafficking, kidnapping, and other crimes as young men are unable to find wives.

The government used a number of preventative and punitive measures to enforce the policy. They hired over a million workers to encourage sterilization, abortions and birth control use. Women were often denied anaesthetic while giving birth, to reduce the desire to have another child. Offending urban couples were fined an amount proportional to their income, and their salaries were reduced by 15% until the child reached seven years old. Rural families had their livelihood or other property confiscated.

All couples are now allowed to have two children to "improve the balanced development of population", and to deal with the aging population. People are living longer but having fewer children, which will result in a huge loss to the workforce in the next twenty years as 67 million will retire – doubling the number of seniors – without enough young people to fill their shoes.

The population problem will not be easy to fix. Fertility rates are believed to be lowering, and more importantly, so are the number of women willing to have children. A study from the Central University of Finance and Economics in Beijing says that the number of couples who wanted a second child decreased from 59% to 15% between 1980 and 2011.

Day Donaldson, via flickr

China announced the end of the notorious 'one-child policy' at the end of October, which still raises concerns about population stability.

In 2013, the government amended the policy to allow a second child if one of the parents was also an only child, but it yielded only 470,000 additional newborns in 2014 rather than the two million expected.

It is unlikely that the new rule will cause a "baby boom"; on the contrary, "a future population decline is inevitable" says Liang Jianzhang, a professor at Peking University's Guanghua School of Management. Population control was a popular debate topic in 2000, but interest seems to have decreased significantly since then; the health commission official comments that, "In retrospect, it might have been better to drop the one-child policy back then". It is hard to predict the amount of work which will have to go into reversing the damage this policy of over three decades has caused; only time will tell.

Broskies on Brewskies

Hopcity Brews

DONOVAN MAUDSLEY & TRISTAN KEUHN
2B MECHANICAL & 2B SYSTEMS

Tristan and Donovan are two friends from humble beginnings in London, Ontario. Off and on roommates and general guys who like beer, the following article follows them through a journey into the sometimes overcrowded world of craft beer where they will try to find the best that Ontario has to offer. For this issue we wanted to review three Waterloo-made craft beers, but we were only able to find two at the LCBO so we went with the three craft beers with the coolest logos.

This issue of Broskies on Brewskies, we're covering three different beers for Hopcity brewing company in Brampton, Ontario. All of the Hopcity brews are affordable and come in different brightly coloured cans.

First up is the Hopcity Hopbot IPA. The Hopbot is nicely bitter and malty. First thoughts were not terrific, but after a few sips, everything melds nicely together. Hoppier than mainstream IPAs, Hopbot is a strong beer, at 7.1%. As expected, the dominant taste is hops, but at the bottom of the glass, many flavours working together make it one of the better IPAs we've had. We give this one three stars out of five, would try again but would not go out of our way to find.

Second is the Hopcity Big Mouth Tap Room Pale Ale, which is quite a mouthful. After a few mouthfuls we were pleasantly surprised. We like it better than the Hopbot IPA, but it is a little bit bland. It is smooth and really rolls over the tongue. It was more subtle, and not in a great way. On its own it might have been a good beer, but following the Hopbot it was underwhelming and not very flavourful. We give it three out of five, and are not sure if we'd have it again.

Last up is the Lawn Chair. A classic wheat beer, it is also nothing to write home about. Its rides the line between being so bland that there's nothing to taste, and having enough flavour for us not to like it. It's a very similar beer to the Big Mouth, just with a less pale taste. We once again give out a three out of five, and are not wholly satisfied with the Hopcity brewery. It seems that its beers are either too hoppy, or too flavourless.

Horrific Body Modifications

CAITLIN MCLAREN
3B CHEMICAL

5 THINGS YOU DON'T WANT TO KNOW

As readers will remember, my guiding philosophy is that all humans, regardless of colour, creed and kind, are idiots. One of the very biggest forms of lunacy that we exhibit is an overwhelming desire to gain attention – and the ridiculous measures we take to achieve that goal. Oh, the things we do to ourselves. The following are real procedures that people have undergone, at one time or another, for reasons that presumably seemed adequate to them.

Genital Beading

This is exactly what the title says – the practice of inserting beads in your genitals. Not into the *ahem* orifice, but implanting them beneath the skin. This is a traditional practice in parts of Southeast Asia. In pre-colonial times, men and boys would not just implant a bead into their penis: they would get full-on piercings with pins made of gold or ivory that were so big that they could not actually fit properly into the vagina. They would have to be very carefully inserted in by the woman herself, and the couple would remain attached together until the deed was done.

The Yakuza are comparative wusses (a sentence that will probably never again see the light of day) and merely insert a round glass bead under the skin. The beads symbolize a year in prison each.

Before you shake your head, "old people back in the day", this practice is still alive and well. However, considering that its unselfish goal is increasing one's partner's enjoyment, it is rather laudable.

Forehead Implants

I'm really not mincing words with the titles today, am I? This one is all on us, today – the ancients had more sense.

There are a variety of people who stick things in their foreheads. Some are relatively sane (congratulations!) and use saline injections to create three-dimensional shapes in their head. Normally (and I use the term "normally" very, very loosely), this is shaped like a bagel. Why? Because who doesn't want to have a bagel-shaped lump on their forehead, that's why. Fortunately, this procedure only lasts a day or so before the body absorbs the saline. Incidentally, this started in Canada. Shame on us all.

So who is relatively insane? People who get horns implanted into their head, that's who. There are even fewer of these people, for obvious reasons, but there have been a handful of people who have had studs, metal spikes or subdermal horns implanted into their foreheads. This may be due to low self-esteem, or as a backup weapon. It's a good thing Zidane never heard of this.

Infibulation

In ancient Greek times, people, and by "people" I mean dudes, would exercise naked. This makes a certain amount of sense in a warm climate, and if it is the norm, no harm done.

However, athletes realized that there was a slight problem: namely, flopping. While weaklings these days wear a nice pair of compression shorts, athletes back then realized that the only sensible solution was to pierce the head of the penis and use a string to tie it back. For added comedy, vase paintings show that they would sometimes tie it in a bow.

In fairness to the Greeks, some would only tie the penis in a circle, rather than piercing it. This also became a symbol of modesty and self-restraint; it was low-class and shameful to show the tip, although the rest was alright. Those classy guys who infibulated themselves showed that they were restraining themselves from lust. Also, peeing.

The Victorians, who were somewhat odd, revived this practice for similar reasons (abstinence and self-control), although athletes occasionally wore clothes by then.

Eyeball Tattooing

Standards of beauty are pervasive and do apply to the eyes as well, so it is understandable that some people are dissatisfied with their eye colour. There are a few cases where eyeball tattooing is performed for medical reasons, i.e. albinos who have little pigment in their eyes, and are thus more vulnerable to light damage. This is not to say that it is logical or reasonable to tattoo your eyes for vanity reasons, to tattoo them entirely black, or to tattoo them bright blue to look like characters from Dune. All of the above have happened.

What is more surprising is that this is an ancient practice, along with the rest of tattooing. The Roman doctor Galen described eye-dying: he possibly used copper sulphate, because toxicity was not particularly well understood. It is doubtful that he was attempting to look like a Dune character, though.

While, as above, there are legitimate reasons to tattoo your eyes, there is no good reason to have sparkly things implanted into them. This is a thing, however, in the Netherlands. We at the Iron Warrior would never, ever, stereotype the Dutch as drug-addled; however, they are not making it any easier on us.

Genital Mutilation

You thought I was done with the genitalia, didn't you? Turns out people will go even further.

Penis subincision refers to the practice of cutting the lower half of the penis along the urethra. Reasons for doing this vary. Some people do it to enhance pleasure, as there are apparently many nerve endings on the inside. After a thorough cost-benefit analysis, scientists conclude that this is dumb.

Some Australian aboriginal tribes as well as Amazonian tribes do this for religious or cultural reasons, although the practice is dying out (duh). The Australians did this on the basis that after the procedure, the penis looks more like a vulva. It is not clear why this was desirable, as there are plenty of working vulvas around.

On the other hand, there are many people around today who object to functional vulvas. In fact, in widespread parts of Africa and Asia, girls have their genitalia cut. While there are varying degrees of severity, the worst involve almost complete removal of the exterior genitalia, and the area is then stitched shut, leaving only a small hole for menstruation and peeing. In many cases, the purpose of this is to prevent the woman from enjoying sex, because that will make her less likely to have it. People suck.

This obviously carries serious health risks: there are fatalities from bleeding and infection, as well as possible long-term complications in childbirth. The practice is usually illegal, but it goes on anyway due to social and cultural pressures.

The moral of the story is people will do anything to fit in, and also anything to make themselves stand out. As a world, we really need to find a happy medium.

Meagan's Adventures in Competitive *Super Smash Bros.*

Continued from Page 2

involved in our local KW scene, and even made my way to a few bigger provincial tournaments (where I at least like to think I've been performing better as a player). I've fallen in love with this game— particularly, with the competite aspect of the game. Not without reason, either.

As I've mentioned before, there are both fundamental, technical, and mental skills that are required in order for anyone to succeed. These can include pure knowledge, such as the specifics of strength, speed, and mechanics of your character as well your opponent's (considerations that are all factors into that particular "match-up"), as well as far more abstract matters, such as observing your opponent's own offensive and defensive habits in order to essentially "read" their movements before they even happen— something which, if done correctly, can mean the difference between winning or losing.

If I had to akin the complexity of the metagame of *Smash* (and really, to many FGC-style competitive metagames) to anything, it's to the strategy that exists in the different levels of baseball— yes, I'm going to akin this to another of my passions. It's easier that way for me.

Just as you can pay attention to each pitch, each at-bat, and each game with respect to both the batters and pitcher in order to make adjustments over the season (or even multiple seasons) and developing particular batter-pitchers match-ups,' a good *Smash* player will observe their opponent's habits based on each move choice during each game and each set, in order to begin to develop match-ups against each other. Take, for example, how some overly aggressive players can be shut down by very defensive play styles, which in turn can be countered by a very bait-heavy play style.

On YouTube, there is a fantastic video by the channel Innuendo studios called "Things of Beauty: *Super Smash Bros.* as a Spectator Sport", which I recommend heartily for its description and analysis into what I find most illustrious about the competitive game, as a player, spectator, and member of the community.

And, for those of you vaguely interested, I go by the tag "Paradigm" and main Shulk from the *Xenoblade* franchise, who is a low/mid "tier" character, meaning that he is not considered especially competitive to play at high level. However, I find him incredibly fun and interesting to use and will enjoy representing throughout my competitive *Smash* career.

This is Shulk. He's a scientist, wields a big magic sword, and has "visions" of the future.

Starbucks, Tim Hortons Not as Environmentally Friendly as they Claim

NINA FENG
4A ENVIRONMENTAL

LEAFY THOUGHTS

In a culture that seems to run on caffeine, a prominent environmental issue surrounding coffee chains is the colossal amount of paper cups that is generated on a daily basis, many of which end up in the trash instead of the recycling. While both Starbucks and Tim Hortons are careful not to claim to recycle at all locations and communities, they both assert themselves as displaying great environmental stewardship. However, it's been found that their recycling programs may be even less developed than previously claimed.

A CBC investigation has found that a large number of these stores just wind up mixing all their waste, recycling and compost included, to be destined for landfills. Interestingly enough, some of the trash was even mixed immediately, in front-of-store customer waste bins. The news team found that oftentimes, waste-separating bins with separate holes for different types of trash tended to contain only one bag. In the study, 28 cups were outfitted with tracking devices and placed in recycling containers at several locations. 14 of the cups ended up in the garbage instead, and the remaining 14 could not be found.

Employees at each of the chains have reported concerns about company environmental management, citing lack of support for proper waste management and dubious environmental policies. For example, consumers using travel mugs may be disappointed to know that there are some locations where their coffee is first poured into a regular paper cup for measurement purposes, which is then discarded after the coffee has been transferred to the reusable mug. Private contracts are often needed for proper recycling, as the coffee cups often cannot be recycled at smaller facilities due to the plastic lining which is relatively difficult to separate from the paper, increasing the cost and time for processing.

Due to the sheer number of coffee cups being used at ever-increasing rates, the issue needs addressing. A 2010 study estimates that Canadians use more than 1.6 billion coffee cups in a year, meaning that between 300 to 500 million trees are used, and about 400 millions gallons of water. Perhaps work should be done in the development of easier-to-dispose coffee cups, or more resources should be provided to recycling facilities for their processing. In the meantime, it wouldn't hurt for more people to try to use reusable mugs instead.

Both chains have declined to divulge much information regarding this issue though they have since stated that they are still committed to implementing recycling programs. Hopefully, this study, and the backlash they've experienced since, will encourage better enforcement for environmentally responsible waste management.

Putin Refurbishes Nuclear Arsenal, Makes Provocative Comments

CAITLIN MCLAREN
3B CHEMICAL

Russian President Vladimir Putin announced last Tuesday that Russia plans to deploy new missiles capable of penetrating the North Atlantic Treaty Organization's (NATO)'s missile defense shield. This comes as Russia's relationship with America and much of the West is at a low point, as Russia has come under heavy criticism for both its actions in the Ukraine and for its support of Syria's Bashar al-Assad.

Putin states that NATO's missile defense system, which is largely American-led, is an attempt to neutralize Russia's nuclear deterrent and thus to increase the United States' military clout worldwide. NATO and the U.S. deny that this is the purpose of the missile shield, instead stating that it is intended to fend off attacks from smaller countries, and that it would not be capable of handling Russia's current nuclear capabilities. Russia's missiles number in the thousands.

Putin claims that this is a smokescreen that covers the U.S.'s true intentions. He points to the fact that they are still working on the defense system despite the recent nuclear negotiations with Iran, a state frequently mentioned as a possible threat that the system was built to combat.

While Russia intends to work on a missile defense system of its own, it will focus far more on offensive missiles. Putin has in fact been making similar remarks for some time, as well as strongly discouraging European countries from joining the missile shield. He notes that NATO could potentially use the shield to launch offensive weapons, and not simply for defensive purposes.

U.S. Secretary of State John Kerry says that Russia's actions go against the Strategic Arms Reduction Treaty, which states that Soviet-era nuclear arms should be reduced. It should be made clear that the new missiles are replacements, not additions. Still, the announcement is one that has gained plenty of attention internationally.

NATO Secretary-General Jens Stoltenberg condemned Russia's "sabre-rattling" as "unjustified, destabilizing, and dangerous." He declares that NATO is, as a result, "increasing the readiness and preparedness" of their forces, should they be needed.

Many feel that Putin's statement was a form of psychological warfare: an act of muscle-flexing intended mainly to intimidate. This is very likely to be the case, as Putin is well known for his posturing, and has done so previously as somewhat a display of strength. However, that certainly does not mean that he is weak. Whether or not this act is simply an act remains to be seen-- Putin, long in the world's eye, remains an enigma.

Point Vs. Counterpoint

Are Majority Governments Stronger Than Minority Governments?

POINT

ALEXANDER LEE
3B NANOTECHNOLOGY

Canada's political structure allows for a multi-party system. A consequence of the fact that we have more than two parties is that two types of government can be formed: a majority government occurs when the winning party has more than half the seats in parliament, while a minority is formed when the winning party has less than half the seats. There are many benefits to the majority form of government.

First off, by nature of the numerical requirement, majority governments are harder to form. If my math is correct, and you should probably double check, it is easier to win less than half the seats than it is to win more than half the seats. Thus it is harder to make a majority government. Then, by hipster logic, they're better right? Check. Yup. I see absolutely nothing wrong with that train of thought.

All joking aside, though, a big advantage that majority governments have is that they avoid deadlock. One of the chronic problems that plague minority governments is inability to pass bills and laws. This is a natural consequence of the fact that to pass a bill, it needs to have the support of over half the seats in the House of Commons. This can often be difficult for minority governments, as the governing party needs to compromise with other parties. This is often easier said than done, especially considering that many times the other parties would rather overturn your government so that they might have a chance to take your place. On the other hand, a majority government avoids this problem altogether, by virtue of the fact that to be a majority government, you must already control over half the seats in the House, which means all your bills will pass without issue. While this means that parliament cannot be used as a regulatory check against the government, there are plenty of other checks already, such as the Constitution and the Charter of Rights and Freedoms. One of the defining aspects of the era we live in is rapid change, and our government needs to be able to respond quickly to new ideas and problems. Political deadlock in minority governments can only very rarely do this, while majority governments can.

The other significant advantage that majority governments have is stability. Minority governments are constantly at risk of being ousted. They can be defeated in a vote of no confidence on a number of important bills, most notably the budget. This then forces an election, which could result in a change in ruling party. Every year, a minority government runs this risk if it cannot please the other parties. Imagine a Canada where compromise cannot be attained. In such a world, a minority government would be toppled every year, and an election would happen, possibly electing another minority government. Any long-term plans, such as infrastructure projects, that any of these governments would attempt to implement could never become reality; the incoming government would sweep all those plans away. While we are fortunate to live in a country where dialogue is still possible between opposing parties, such a scenario is very possible. To implement any lengthy project, stability is necessary, and so minority governments will always have a difficult time implementing long term projects.

Majority governments, on the other hand, are never at risk of being toppled. They are guaranteed four years to be able to carry out projects before an election is forced. Thus majority governments are capable of pushing forward much larger, big-picture projects than the typical minority government. Stability is often undervalued today, but it is important to have. It gives majority governments the security they need to do something memorable that will benefit the country in the long term.

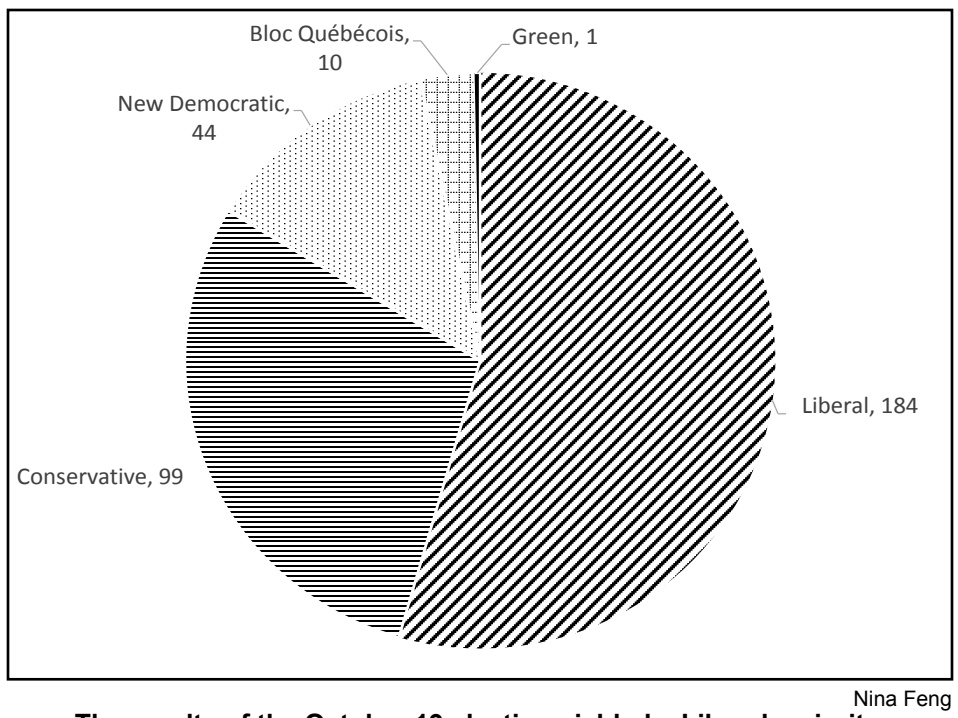
Democracies have a plethora of advantages over other authoritarian forms of governments like monarchies, but one of the few advantages authoritarian governments have is that they are better and more effective at carrying out long term projects such as industrialization and development. Majority governments co-opt these advantages from authoritarian forms while maintaining the advantages of a democracy, such as the choice of the people, and regulation of power.

Majorities also tend to happen under strong leaders. Most of Canada's strongest, most influential Prime Ministers held majority governments for most of their time in power. John A. MacDonald, Wilfrid Laurier, William Lyon Makenzie King, John Diefenbaker, and Pierre-Eliot Trudeau are all among Canada's most celebrated historical leaders, and they all held successive majority governments which allowed them to enact their visionary ideas.

While the majority government is caused by the strength of leader rather than the other way around, this shows that if you can trust your prime minister, then he can accomplish more with a majority government than a minority. Majority or pseudo-majority governments à la unity governments were necessary during both World Wars to ensure the smooth running of the industrial total war machine. There are some instances, mainly wars, where a government simply requires absolute control to ensure the safety of the nation.

To sum up, majority governments have a number of advantages over minority governments. They are able to avoid partisan deadlock in parliament and can thus get more done and react to changes faster. They are also able to enact long term projects that minority governments cannot due to the stability and guarantee that a majority government brings. In times of crisis, a majority government is absolutely necessary to ensure the safety of the public. While a majority government is not always the right choice, it has several advantages over minorities, and can ensure that a good government can accomplish their goals and lead a country to success.

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.



Nina Feng

The results of the October 19 election yielded a Liberal majority. But what are the implications of such a government?

COUNTERPOINT

DONOVAN MAUDSLEY & CAITLIN MCLAREN
2B MECHANICAL & 3B CHEMICAL

We currently have a majority government in Canada. Majority governments are able to push almost any legislation that they choose through the House of Commons, meaning that they can essentially do what they want. At this point in time when Canada needs reform in many sectors, having a majority government is a good thing. However, I generally support minority governments, in which the governing party has less than half the say in the governance of the country.

Last fall, after the attack in Ottawa where Corporal Nathan Cirillo was fatally shot, the Harper Conservative majority created Bill C-51, an anti-terrorism act which grants many powers to CSIS. This bill, which is very controversial in the power that it grants, passed with the support of two major parties, but the Conservatives would still have been able to pass it without any support. Other controversial bills were passed solely by the Conservatives. The Liberal party, which now forms Canada's government, previously supported C-51 but have now pledged to amend the bill, which of course they can do without any other party's support.

A majority government can and does act more quickly and decisively, but this does not necessarily mean that it will act correctly. It is easy to say that a decision should be made quickly in an emergency, but a rash decision often has worse effects that a better-considered, if slower, one. Moreover, if opposing parties have staunch, clashing opinions on important issues, changing from majority government to majority government (as has just occurred) can result in rapid 180-degree changes in policy that are controversial, confusing and may result in a disaster far worse than either plan carried out alone.

Another benefit of minority governments is that there is no fixed length of their term. A majority government lasts a full term before an election is called, but in a minority government the term can be ended by a vote of no confidence which happens when more than 50% of the MPs vote that the current government is no longer fit to govern. Votes of no confidence can happen at any point during the term, meaning that if the opposition disagrees with the general direction of the government at any point, they can vote to call for an election. The advantage of this is that it makes the governing party more willing to compromise, meaning that their decisions are more likely to be supported by all Canadians.

Having a mechanism in legislature that ensures that no minority government outlasts its usefulness proves that votes of no confidence can be a good thing, but it also has its downsides. If the total opposition disagrees with the results of an election they can vote against it and plunge the country into another election. This can lead to long periods of time without an actual government in power and large amounts of taxpayer money spent on running another election.

A minority government can also lead to more seamless changes in power. If the opposition parties find that they have more similarities than differences, they might band together and form a coalition government. Coalition governments are multi-party endeavours that form a majority against the former minority government. Coalitions can shift the power around throughout the term of a parliament, keeping direct power out of the hands of one party. For example, if the public decides that the party in power or a specific leader is not fit to continue as Prime Minister, the leader or party in question can be removed from power without drastically changing the composition of the current parliament, thus respecting the wishes of the voters.

Furthermore, a plurality of parties represented in Parliament means that there are a number of different viewpoints contributing to the government at all times. Consider that a single-party system is an Orwellian nightmare and a two-party system notably fails to represent all views and the subtleties thereof. More parties with significant representation in Parliament means more views are heard. Of course, there is the danger that too much representation will cause the government machine to degrade into pointless bickering, and this is the main objection leveled against minority governments. However, this merely means that a balance must be struck.

In a majority government, there is a very real danger that the input of other parties and thus voters will be only nominal. With a minority government, it is necessary to listen to everyone. This fact is emphasized further by the shortcomings of Canada's current first-past-the-post electoral system, where Prime Ministers are frequently elected with less than half of the popular vote, even forming a majority in this way. This is how our last two governments were formed; however, it is possible that it may not remain this way, as Prime Minister Justin Trudeau has stated that he intends to change the system. Nonetheless, this issue has existed up until now and is seen by many as a serious flaw in Canada's democratic system. A minority government helps to mitigate the effects of flaws in the election system.

Both majority and minority governments have their own advantages and disadvantages. In emergencies, majority governments are able to act more quickly and decisively; however, under ordinary circumstances, minority governments are able to act in a more balanced, fair and considered manner. Because by definition most situations are ordinary, these circumstances prevail, and if an emergency situation is derailed by partisan politics, there are deeper problems than the exact composition of the government.

Instagram Star: "I had it all, but I was miserable."

RATAN VARGHESE
1A ELECTRICAL

For some people, YouTube is for Stephen Colbert clips and cheap animation, Instagram is for wishing the Nexus 5 could actually take a photo, and Facebook is (perhaps unfortunately) a news channel. Not so for everyone. There are social media role models, adored by hundreds of thousands for their glamorous lives, striking figures and deep connection to nature. Even their view-counts and like-levels are goals to aspire to.

Consider Essena O'Neill, an Australian teenager with 800,000 followers on Instagram, and many more on other social portals across the Internet. She uploaded thousands of images of herself relaxing on beaches, eating, smiling, wearing the latest outfits, and even fishing. She started marketing products to her followers, earning as much as $2,000 AUD per post. To most naive onlookers, O'Neill's life seemed like a parade of beauty and comfort. This made it more surprising when she quit.

O'Neill has totally denounced social media. She renamed her Instagram account to ''Social Media Is Not Real Life' and deleted over 2000 photos "that served no real purpose other than self-promotion". What photos remained had drastically warped captions; a picture of O'Neill in a bikini was once accompanied with this: "Things are getting pretty wild at my house. Maths B and English in the sun". The caption was replaced with a self-referential, cynical message: "see how relatable my captions were – stomach sucked in, strategic pose, pushed up boobs. I just want younger girls to know this isn't candid life, or cool or inspirational. It's contrived perfection made to get attention".

The details were laid bare in O'Neill's final, tearful YouTube video. "I had the dream life", she said. "I was at a pinnacle of success in what I thought it was". O'Neill claims that she "had one of the biggest agencies in America want to sign [her] for modelling", and "was surrounded by all this wealth and all this fame". The problem was that her fame consumed her. "Everything I was doing was edited and contrived", said O'Neill. "Everything I did was for views, for likes, for followers". Her supposedly spontaneous photos on Instagram were the results of many hundreds of shoots, and even the finest details were planned by behemoth corporations. According to her, "Companies will email you with dot-points of what you should say, times of the day to post, with what you should do in the photo, with how you should hold the product or where you should have it in the background".

Apparently, it all began when she was twelve years old. In those days, she was herself a follower, feeling "worthless" and envying the models and Instagram stars before her. She compared her body to models, centimetre by centimetre. She dreamed of having thousands of likes, follows and views, and left behind all her creative endeavors. Once the ball started rolling, she says, "It was never enough". Finally, O'Neill felt that her life was deprived of genuine human connections. She made new celebrity friends, some more "successful" than her. It turned out they were all depressed. Now, O'Neill is preaching the virtues of the unplugged, "3D" life. "Go outside, go to a park, go to a beach, go somewhere there are people around you".

Obviously, not everyone is convinced that someone who fabricated her whole reality can now be trusted. Some other similarly famous Instagram stars feel that O'Neill is generalizing her experience to the whole of Instagram, encouraging a negative view of their supposedly positive pastime. There is also the cynical take on O'Neill's turnaround: that it is simply another celebrity stunt. After all, O'Neill has gained significant press coverage from this exodus. She is also encouraging her fans to check out her new website, letsbegamechangers.com which is "aimed to inspire constant QUESTIONING". She explores "veganism, creative imagery with purpose, poems, writing, interviews with people that inspire [her], and of course the finical [sic] reality behind deluding people off Instagram". In a recent video titled "Love Gets Likes" (uploaded to her new site and to Vimeo) she claims that a male supermodel approached her for a relationship as a business move to boost both their popularity. He even referred to other couples that pulled off this maneuver. With a story like that, it can be difficult to see where the fabrication actually starts.

The dishonesty in social media was never a total secret. Indeed, Instagram stars became so formulaic that they were parodied. One prominent social media satire was the Instagram account "Socality Barbie", full of photos of Barbie dolls in "inspirational" selfies with snarky captions. Throughout the year, it satirized the supposedly perfect lives of Instagram stars. The account was also discontinued recently: the woman behind the doll, Darby Cisneros, "never intended on it being a long term project", and felt she had run out of things to say.

While we are still in a "QUESTIONING" mood, it is worth asking whether the medium really is to blame. On the one hand, back in the dark ages of fax and snail mail, communicating with hundreds of thousands was impossible for commoners. On the other hand, the server farms and corporate deals are just enablers, just tools magnifying our fundamental need to belong. Even before the push to develop our personal brands, we had a bit of conformity and image-shaping in all of us. Perhaps the quest for bigger follower counts is just an outgrowth of our fears of being ignored and alone. As Essena O'Neill admitted, "I did everything in my power to prove to the world that hey I'm important, and I'm beautiful, and I'm cool".

A Good Old Nostalgia Trip

TINA YAO
2T CHEMICAL

ON REPLAY

Alternative in the early 2000's had a distinct flavour. It was an era of sprawling garage bands, gritty synths, anthemic choruses, and leather jackets. Here are some of the genre's defining songs that you might remember from back when you were just starting to discover music.

Matchbox 20- "Unwell"

The banjo intro and memorable chorus declares "obvious hit", and it is possibly the most radio-friendly song about angst. The self-deprecating voice immediately gives the image of a misunderstood protagonist in a young adult rom-com. However, the musings on mental health might deem the song darker than the melody suggests.

Yeah Yeah Yeahs- "Maps"

The charismatic female lead Karen Orzolek puts her flippant attitude on pause to deliver one of the most intense ballads of period. The steady urgency in the drums makes it sound as if Orzolek's own heart is hammering as she tries to piece together the right words. Her voice seems on the verge of breaking with the final plea "Wait / They don't love you like I love you". The word "maps" stretches out in the chorus, cryptic without context. Allegedly, it stands for "My Angus please stay", referencing her companion Angus Andrew, on tour with his band "Liars" at the time.

Weezer- "Beverly Hills"

Before the stylish Fun glamorized not fitting in, there was Weezer that made unkempt awkwardness their gimmick. The self-appointed geeks wrote the immensely satisfying chorus that appeared in the back drop of many childhoods at some point or another. Incidentally their best-selling single was also the worst reviewed by critics. The lyrics can probably be seen as ironic wit, although it can also do without the shrill "gimme"s.

Death Cab for Cutie- "Soul Meets Body"

The song that propelled DCC into the limelight, where they eventually became a staple in alternative music. The haunting lyrics and vocals paired with jangling guitars gives the song a dark and sophisticated feel. Ben Gibbard is practically relishing in his solitude when he sings "But if the silence takes you/ Then I hope it takes me too." The song occupies a tasteful middle ground between international hit and obscure indie, which is where DCC has contently remained since then.

The Knife- "Heartbeats"

An edgy piece of electronica where its bright synth tones are at odds with the aching lyrics. Karen Dreijer instills details of an intimate affair with a sense of loss, regret, and maybe even existentialism. The chorus "To call for hands of above, to lean on/ Wouldn't be good enough for me, no" sound as if she renounced a faith she never had.

The Strokes- "Hard to Explain"

The Strokes were on top of the world once. They were known as a group of leather clad boys from NYC that revamped 70's garage rock with a modern sound, and garnered hype from critics and fans alike. "Hard to Explain" is arguably their best written single to date. It features Julian Casablancas' most effective version of rascal charm, where he sounds almost apologetic in his restless rant: "I missed the last bus/ I'll take the next train/ I'll try but you see/ It's hard to explain." Lamenting the woes of youth was hardly new territory in the alt-rock world, The Strokes just happens to be one of the few that can pull it off.

The Five Greatest Spiderman Villains

DONOVAN MAUDSLEY
2A MECHANICAL

FROM PAGE TO PAGE

I've always been a fan of the web slinging hero from Manhattan, but the thing that really makes the adventures of Peter Parker terrific is his rogue's gallery. Spider-Man has gone up against a long and diverse list of evil doers, and hasn't always come up on top. I've rated my favourite Spider-Haters based off of three factors: their general power level, how original their creation was, and how linked to Spider-Man they are. My list contains only villains who mainly tango with Spider-Man, so others like the Juggernaut or Kingpin didn't make the list.

Number five on the list is Dr. Curtis Connors, known as the Lizard. A gifted surgeon serving in the U.S. Army, he lost an arm to an explosion and was sent home. Connors began experimenting with the DNA of animals around his Florida home, particularly alligators, in an attempt to re-grow his arm. His experimental serum did indeed re-grow his arm, but it imbued him with many other characteristics of his subjects. His first tussle with Spider-Man in The Amazing Spider-Man #6 marked the first time Parker left Manhattan in costume. The Lizard is a brutally powerful foe who can use his counterparts' work for his evil plans. A polished and updated version of the Lizard was shown in The Amazing Spider-Man (2012).

Coming in at number four is Flint Marko, who terrorizes civilians as the Sandman. While fleeing police for theft and general bad-guyiness Marko is exposed to irradiated sand and gains the ability to transform his body into a similar substance at will. He is also able to make constructs out of his sand, like turning his sand hands into hammers. While not completely intertwined with Parker's life, Sandman has been a staple of Spider-Man's A-list rogue's gallery for decades. A very creative foe who knows how to use his powers extremely well, the Sandman was a high point of the fiasco that was Spiderman 3 (2007).

Perhaps Spider-Man's best known villain comes in a number three. Norman Osborn was a magnate of industry and world renowned scientist before he tried to become the king of New York City's underworld. In his first appearance he was stopped by Spider-Man, but not caught. Over his next few appearances Norman began to experiment with supersoldier-esque formulae to gain an advantage, eventually becoming mutated and insane. The Goblin reigned supreme among the web crawler's foes for a long time before eventually falling. Through government sanctioned rehabilitation, Osborn once again gained political power and even became the director of H.A.M.M.E.R., a replacement for S.H.I.E.L.D.. Of course, he was totally evil and becomes the evil Goblin King in the end. Some people just can't change. The Goblin is responsible for the death of Gwen Stacy, and many other allies and friends of Spider-Man.

Sam Raimi's Spider-Man 2 (2004) still reigns as my personal favourite super hero movie. One of the parts that make it great is its antagonist, Doctor Otto Octavious. During an experiment gone wrong, the good doctor had four mechanical arms fused to his body, and with a powerful AI on board the arms began calling the shots. While just trying to finish his experiment, Octavious assumed the identity of Doctor Octopus and began terrorizing the city. Eventually Octavious, realising the error in his ways, sacrifices himself to stop his experiment. A genius level intellect combined with incredible power, Doc Ock in his many forms is my second favourite Spider-Man villain.

Venom is the absolute powerhouse of the Spider-Man rouge's gallery. His origin was a many step process over a few years. During a cross-over event, Marvel decided to change the colour of Spider-Man's costume to increase action figure sales. To tie it in to the series and make him able to go toe to toe with larger opponents the costume became an alien symbiote that bonded with Peter Parker, granting him even more power. Eventually this got a little boring and the writers needed to spice thing up again. The suit began altering Parker's personality, making him short tempered and brutal. It reached a point where Peter realized he needed to rid himself of the suit. The symbiote sought out a new host, and found Eddie Brock, a disgruntled former journalist with anger issues. When Brock bonded with the symbiote he gained spider-like abilities gained from Parker's DNA and became a new life form. This new creature assumed the name Venom and quickly became one of Spider-Man's deadlier foes. The mass destructive abilities of Venom, as well as his ruthless nature, make him my favourite one of Spidey's rouges.

Marvel Comics

Doctor Otto Octavious ("Doc Ock") learned the dangers of powerful AI the hard way.

Honourable mentions go out to Carnage, Kraven the Hunter and Electro. Carnage is a symbiote similar to Venom, except that instead of bonding with a disgruntled ex-journalist, it bonds with a serial killer named Cleatus Cassidy. In Carnage's first appearance it took a team up by Venom and Spider-Man to stop him. Kraven is a former big game hunter who decides to hunt the world's most dangerous prey: Spider-Man. During the storyline Kraven's Last Hunt, he actually puts Spidey into a death like state and dons the tights to prove he is a Spider-Man. Last up is Max Dillon, a former electrical engineer who gains control over electricity. Electro never caught my eye until The Amazing Spider-Man 2 (2014), where he was played by Jamie Foxx.

Canadiens Set High Bar Early

ELIZABETH SALSBERG
3B NANOTECHNOLOGY

THE BENCHWARMER REPORT

Hockey fans! Welcome to the first hockey installment of this term's Benchwarmer Report. With the Leafs mired in their sad yet somehow hopeful rebuilding state, we explore the more exciting Canadian hockey goings-on in the form the much-loved (or much-hated, depending where you're from) Montreal Canadiens.

The Habs won their first nine games in regulation—an NHL record. Superstar Carey Price had a .961 save percentage over that streak, picking up right where he left off last season. The offence has also gotten some upgrades from last season. Most notable of these is former Washington Capitals 30-plus goal scorer Alex Semin. The Canadiens are hoping he will regain his scoring punch alongside rising youngster Alex Galchenyuk.

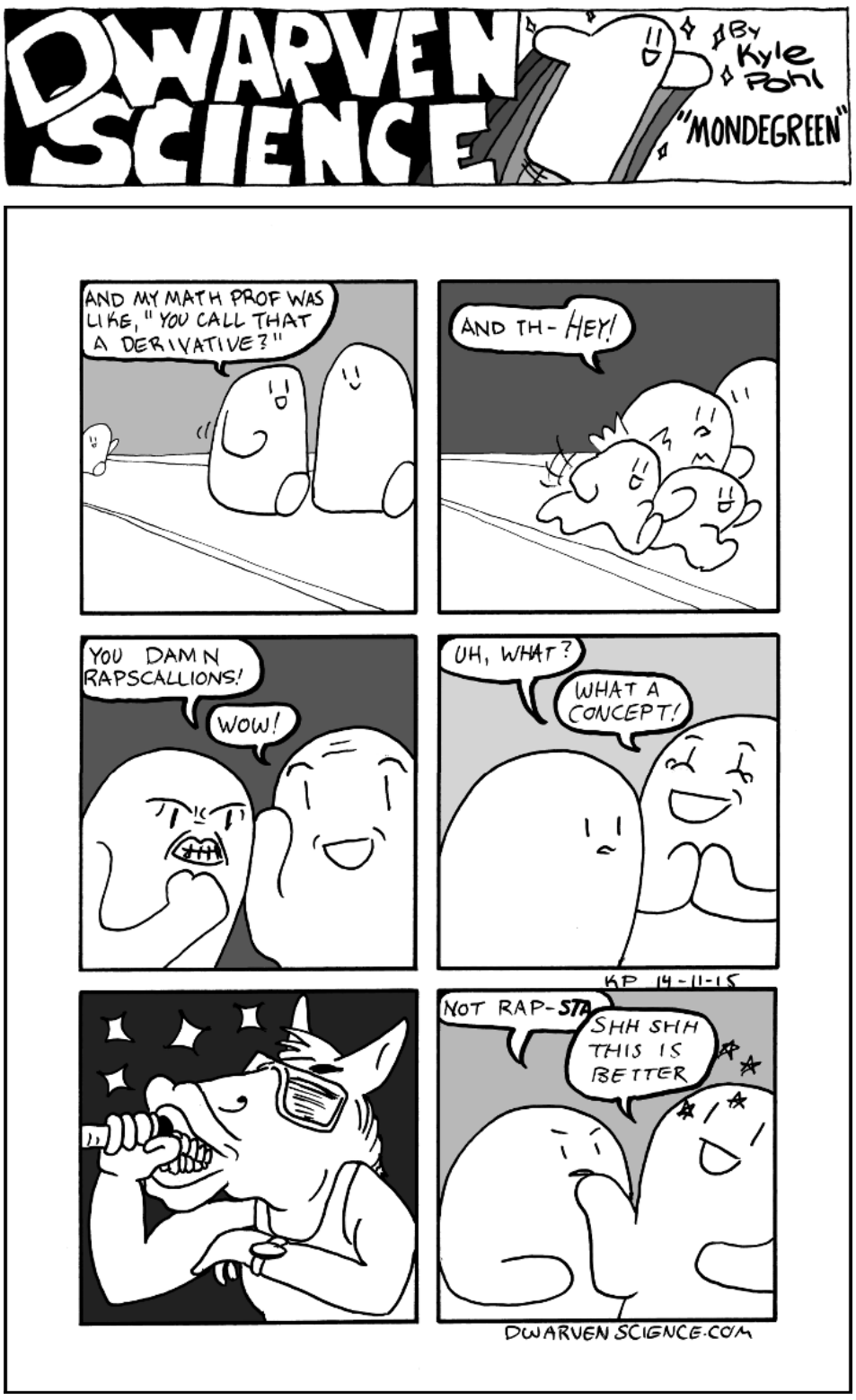
Coach Michel Terrien and the Canadiens are looking to establish themselves as Stanley Cup contenders. With Price, and many of their players with plenty of playoff experience, it is expected that they should at least make a deep run in the 2016 playoffs.

Carey Price is currently on the injury reserve after sustaining a lower body injury one week ago. He is expected to return after this week, but in the meantime we've gotten a glimpse at Montreal without one of their big studs. Backup Michael Condon has been solid, winning six of seven games with .940 save percentage and 1.57 goals against average. If Condon can keep this up, the Habs should be able to win many games provided they continue to produce offensively.

As usual, offense remains the biggest concern. Stud defender P.K. Subban will do his bit, particularly on the power play, as will highly dependable captain Max Pacioretty, gritty winger Brendan Gallagher and the ever-steady Tomas Plekanec. Still, Montreal will have to have more than a one-line offense. But the Habs will need more from their auxiliary components if they're going to keep this up all season. Of course, they will also need a similar level of stellar goaltending from Price and Condon.

That being said, much of the Atlantic Division is nothing short of weak. After the Canadiens, the Ottawa Senators are 8 points back; everyone else is 10 or more points back. Save the Tampa Bay Lightning and maybe the Detroit Red Wings, the rest of the division is hardly any kind of competition. It will be interesting to see how the Habs perform against marquee opponents on the Metropolitan side, including the red-hot New York Rangers and the feisty Washington Capitals.

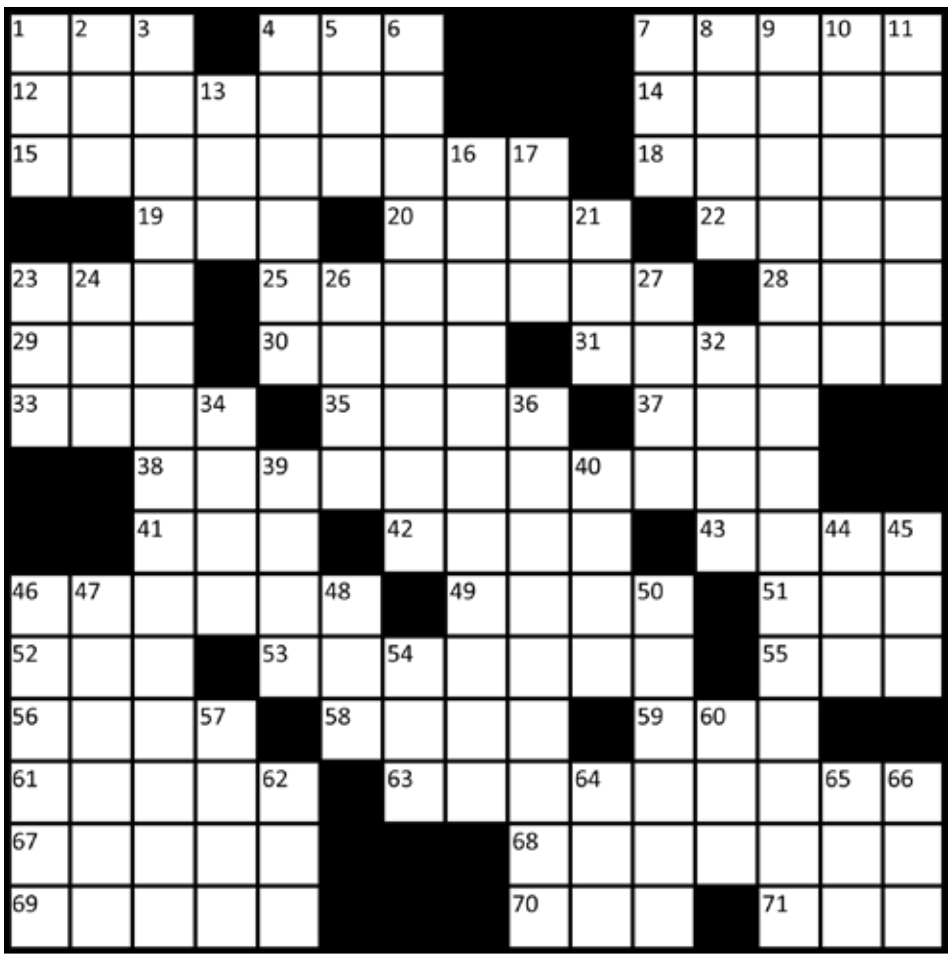
There should be a good rivalry going this season between the Habs and the Senators. Another popular sidetrack to watch will be the Karlsson or Subban for the Norris trophy show. Both are high-flying offensive defenseman, critical to their respective teams. A first-round rematch would indeed be exciting after last season's six-game nail-biter. Are the Habs going to be Canada's hope for real this year? Only time will tell…



The Iron Crossword

Video Games (On Purpose, This Time)

CAMERON SOLTYS
2T MECHANICAL



ACROSS

1: Latin abbreviation for "multiple species"
4: A three-contact phone jack
7: An open sore
12: A red-coloured vegetable oil with low cholesterol
14: Video game series where one plays as a Hylian named Link
15: Pre-organized stunt where many people assembly unexpectedly to do unexpected activities
18: "___ am in great ___..." Rick's catchphrase in Rick and Morty (2 wd)
19: North of ENE
20: Herman ___, author of The Caine Mutiny
22: Title appended to the name of a registered nurse
23: Sleeping facilities for an overcrowded hotel room, perhaps
25: Montreal daily newspaper that recently announced the end of printed weekday papers (2 wd)
28: Bare-bones computer interface that does not use a mouse (abbr)
29: Longest continuously-inhabited object in space (abbr)
30: A plastic tool used by burglars to open spring locks
31: Used for entertainment, particularly with video games
33: Small vehicles designed for off-roading
35: Object
37: Gold-and-brown shipping company
38: To a YouTube channel, perhaps
41: Location where live animals are displayed
42: Organization for healthcare businesses in New York City and area (abbr)
43: ___ for business
46: "___ ___, no hands" (2 wd)
49: Munitions for a bow
51: ___ Breton, medieval romance poetry
52: Refrigeration unit that cools air entering a plane's passenger compartment (abbr)
53: A ball or spring, perhaps
55: Internet speak for "what people are talking about here"
56: A red gemstone
58: Medium-storage optical disk that can be written to once
59: Found by setting the derivative of a function to 0, perhaps
61: A stew of meat, vegetables, and chickpeas
63: "I'm one-fifth of ___ ___ cheerleading squad" recent Kiss quote (2 wd)
67: The traditional outside material of Uggs
68: Most disgusting
69: Determine the components of an object
70: Belly
71: World of Warcraft or Skyrim, for instance

DOWN

1: Measure of the sun-blocking ability of sunscreen
2: Friend
3: Video game that pits vegetation against the undead
4: "I'm on the highway ___ ___" AC/DC song
5: Predecessor to Blackberry
6: Baseball derivative where the ball must be thrown in an easy arc
7: Sub machine gun originally produced by Israel Military Industries
8: Human protein that is a receptor of the hormone leptin (abbr)
9: Tom ___ ___ Cell stealth video game
10: Will not kill you to eat it
11: What happens to butter when it is left out for too long
13: Default homepage of Internet Explorer
16: Apocalyptic video game with cel-shaded graphics
17: To seek legal redress for a wrong
21: Space game that lets you build and fly custom rocket ships (abbr)
23: Intelligence agency of the United States
24: Data file used by Microsoft Outlook for data kept offline
26: Irish word for "age"
27: The car ___ from side to side
32: Someone who is paid to do something (2 wd)
34: Bazaar
36: Popular 3D-cube based building game
39: Explosive device
40: Cowshed
44: Consume
45: Egg of a louse
46: Mal de ___ ___, a disease caused by deficiency of tryptophan (2 wd)
47: ___ Rift, immersive gaming technology owned by Facebook
48: Abbreviation for the subtitle of the 6th Tomb Raider game
50: Element 76 in the periodic table
54: A type of radiation from the sun that causes wrinkling and skin aging
57: "Do or do not, there is no try" attributee
60: The International Organization for Standardization's country code for Iceland
62: Another name for the Coalfish
64: Very informal wedding question
65: Company that provides internet services
66: A medical technique for recording fetal heartbeats (abbr)

Sudoku

#2015-14

MEAGAN CARDNO
3B NANOTECHNOLOGY

O.W.L.s

5		2		9		4		
		7	2	8			1	
						2		3
				1				2
2		9	4		3	5		8
3				6				
7		6						
	4			2	9	8		
		3		5		9		4

N.E.W.T.s

		6			5	9		
	7			1			2	
			8			1	4	
			5	9	1		8	
	5	9		7		2	6	
	3		2	6	8			
	6	5			2			
	2			5			1	
		7	6			5		

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

THE IRON INQUISITION

Gabrielle Klempt, 1A Geological

"What should be the next big Waterloo Startup?"

"This isn't our idea, but Luber- it's like Uber, but you call them when you need lube or condoms, and sandwiches."
Naomi & Lylalee, 1A Geological & Enivronmental

"A Campus Shuttle Service"
Zoltan & Tony, 1A Civil

"An App that tells you when the caf is out of good food."
Aileen, 1A Environment

"Spraypaint Wifi."
Michael, 3B Mechanical

"Self-crashing Cars."
Ian, 4B Mechanical

"4-D printing, because everyone needs more time."
Ben, 3A Mechanical