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THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY

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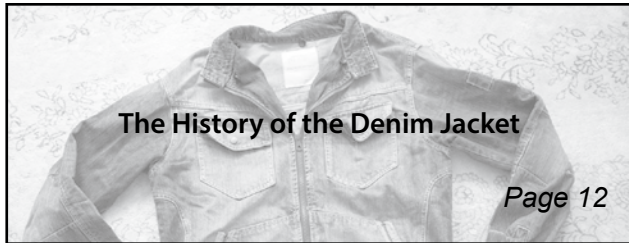
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Waterloo's Housing Surplus



Ethan Alter

The skyline around the university is dominated by student-housing apartment blocks.



MEAGAN CARDNO
3A NANOTECHNOLOGY

It only takes one look at the crane-filled skyline anywhere in Waterloo, and the spring blossom of billboards announcing "Available for Rent this Fall!" to see that our region is setting itself up for a big problem. While student enrolment at both the University of Waterloo and Laurier University is projected to be on a moderate rise, the housing available is increasing at a far faster pace. It doesn't take much math to realize that this will cause a very legitimate housing surplus

in the near future for the Waterloo region. An estimated 7000 new beds are to become available within the next few years, the majority of which are high-density high-rises with three- to five-bedroom units typically aimed at students.

Currently, the Waterloo Town and Gown Committee estimates approximately 1200 surplus beds of student housing. So why would anybody in their right mind build even more housing? Simple—student housing is a thriving market, and one where customer loyalty is, at maximum, only a five-year investment. With many students leasing an apartment or house for twelve months at a time and new students arriving every year to replace graduates, new housing placements

have just as much chance to succeed as established venues. In fact, they have the added incentives of having completely new, clean units to offer tenants, and no anecdotal tales of poor service to deter potential tenants.

Before we go decrying this surplus as a travesty, there are some notable benefits for us and the community as a whole from this situation. Most notably, a high supply-to-demand ratio typically benefits the customers more than anything—different housing companies will be forced to offer more competitive pricing and higher-quality units in order to attract and maintain business. It typically also means a more wide variety of housing options, including price ranges, locations, ameni-

ties, and unit size.

In a similar vein, the sort of high-density accommodation we see being developed is much better suited for student tenants, as both the buildings and property maintenance is covered by the property owners. This can mean that the usual unsightly 'student neighbourhoods' with badly maintained lawns and run-down bungalows should, in theory, become less commonplace, and allow for the development of housing intended for families and young professionals, or for non-residential developments—a sector in which Waterloo needs all the help it can.

To put things into perspective, local

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Protecting Yourself in the Digital Age



CAMERON SOLTYS
EDITOR-IN-CHIEF

Friends! Welcome back. I hope you didn't miss us too much as we took our extra-long three week hiatus. So much has happened in those three weeks. We celebrated Canada day, Greece turned down a bailout, and the EngSoc Joint Annual General Meeting took place. So much has been going on, so we have so much to catch up on.

For instance, Alex has written a piece on the ongoing important ramifications of the horrific Charleston Shooting (page 4) and Sam has an article on the ever-evolving situation in Calais (page 6). Also look out for Michal and Sherwin's PCP, where they discuss different economic incentives that could reduce carbon emissions (page 13). As always, a massive hand to all the journalists, copy editors, and layout editors who made this issue possible. A special thanks to Ethan for braving the heat to get us our beautiful front-page photo, and to Sherwin and Nachi for their extensive help with layout this weekend.

Well this is a mercy. After fretting for two weeks on what to write my editorial about, something dropped right into my lap—late one night last week, I got an innocent looking email: "Action Required: Check your Mailbox". It was a message for the National Student Loan Services Center (NSLSC), asking me to create an account on their system where they could send me information about loan repayments and things. No problem, right? Name, SIN card, Student Loan Number, email address, communist-party association status (not really on that last one). Then I got to the "password" section of the account creation page. A government service that looks after all kinds of sensitive financial and personal information. A service that provides for frequently tech-savvy young adults all over the country. How bad can their password system be? Very.

I won't bore you with the details. They had the standard questionably-useful rules that all passwords have: 8-16 characters, must contain at least one upper case letter, one lower case letter and one number, and no repeated letters. But it also cannot contain any special characters. I couldn't believe it. It was just so irregular. On the one hand, I wonder if they put in this in there to make everyone make up a new password, instead of re-using a canned one. On the other hand, I'd say it is an ineffective strategy, since it made me perform the time-honoured tradition that we do when we have passwords we will never remember—I put it on a Post-It Note on my wall.

Anyway, now that I've explained the inspiration of this editorial, it's time to move on to the real body of the matter: why are some passwords better than others, and how can I make the best ones.

What is a Password?

It seems like a really simple place to start, but if we want to know how to make a good

password, we have to start with what we want to use it for. A password is a secret key we can use to verify our identities. It's something that only you and the person you are dealing with know. Perhaps most importantly, a password is only a metaphorical key, a piece of information; it can be stolen without you having any knowledge that it happened.

How do Passwords Get Stolen?

The answer is that there are a lot of ways, and a good password can substantially reduce the effectiveness of many of these methods. Let's start with one that we absolutely can't prevent with any password: data breaches involving password lists. This happens when somebody infiltrates a company's servers and gains access to the list of login credentials, potentially stored as plain-text or encrypted plain-text. There is nothing that you can do to stop this from happening, unfortunately. Without going into too much depth, the company could have done some clever math to make it so that they could verify that you input the correct password without being able to easily figure out your password is. But they didn't, so the hacker knows what password you used.

So the hacker knows the password and email you used for that one site? No big deal right, the company just tells everyone to change their passwords. Wrong, because the next way your password gets stolen is through password reuse. Now that the hacker has the emails and passwords of thousands of people, he can try to put each set of credentials into hundreds of sites, and some of them are sure to work because people reused their passwords. In other words, especially if it's for an important service, never reuse your password. And god help you if they gain access to your email, because they can reset all your other accounts.

Well if I want to use a different password for every single service I use, I pretty much have to write them all down. This is not a good idea. Why? Because I would argue that the biggest threat anyone faces is from people in the real world who are close to you. If someone hacks your Facebook account, what can they do? Put up homophobic propaganda and unfriend all of your friends. It sucks, but once you realize what happened you'll be able to change your password and try to fix it. People will understand. Worst case scenario, you nuke the account and start anew. Financial transactions and identity threats are more annoying and costly to fix, but still very fixable. But when you write down your passwords on a piece of paper, you are making them vulnerable to the people in close geographic proximity to you. Hopefully all those people mean you well, but if one doesn't how will you explain the horrible and highly-specific things you emailed your crush last night, or why you approved those CAD drawings for the now-collapsed roof? I'll take my chances with the anonymous hacker, thank you very much.

How Can You Make a Good Password

So I hope that I have managed to instil in you the keys to a good password: memora-

ble so you don't need to write it down, and unique. Although I didn't mention it, long is also useful, just in case you are on a service that doesn't detect and prevent a brute force attack that simply iterates through different passwords on a specific account. But how can we actually make a good password? I have two solutions: a password manager, and a password algorithm. A password manager is a piece of software that stores all of your passwords securely behind one very strong master password which you are obviously encouraged to never write down or tell anyone else. You can even get online passwords wallets, so that your password manager is with you wherever you are. They're probably effective, and probably secure; you really don't have a way to verify either of those things. The other way is a password algorithm. I start with some unique identifying thing about the site. For instance, Facebook's colour scheme is pretty consistent and I don't foresee them changing it, so I start with the phrase "blueandwhite". I use the same colour-based seed for every site. Then I come up with an algorithm to turn that phrase into a unique password containing lower-case and capitals, numbers, and alt-characters (just to ensure that it will be accepted by most sites as a valid password). If I really need to, I can write down the seed and its corresponding site name while still keep my algorithm, and thus my password, perfectly safe.

How Can Companies Make a Better Password

Certainly they have been trying. Most websites, as I have already discussed in depth, have certain rules and conditions on your password. I would argue that they don't work very well though, since they strongly incentivise either password reuse or writing down the password, especially if they have rules no-one else uses.

But by far the best thing a company can do to keep your account secure is offer two-step verification. The way this works is that whenever a login request is received from a new location or a new device, the website sends a text to your phone with a code, and you have to enter the code into the website. The brilliance of this is that it removes one of the assumptions we made up at the top: your password is no longer simply a piece of copyable information, but is now a piece of secret information plus a physical object in the form of your phone. Someone with just your phone can't gain access to your account, because they still need the secret half of the key. And someone with the secret half of the key can't get access because they need to steal a piece of physical property.

I'm sure that before long someone will find a way around two-step verification. Maybe they'll intercept the text, or the code that the website sent you was pseudo-random and predictable.

Anyway, hopefully this at least makes you think a bit about your passwords a little bit more. The internet can be both a dangerous and wonderful place, and I want to make sure you stay safe as you cruise along the information superhighway.

THE IRON WARRIOR

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

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

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Same-Sex Marriage Legal In the USA and Ireland



SHERWIN KWAN
4B MECHANICAL

Late June has long been a significant time of year for the North American LGBT (lesbian, gay, bisexual, and transgender) community. On June 28, 1969, police raided the Stonewall Inn in New York, a mafia-owned gay establishment. Ostensibly, the raid was targeted at the mafia owners for not having a liquor licence, but once there, the police began arresting cross-dressing patrons for indecency, which elicited outrage and two nights of rioting in New York. Beginning the following year, annual marches were held at the end of June in several American cities to show solidarity, and these proliferated far and wide. (EngSoc now has a tradition of attending the Toronto Pride Parade.)

Other significant milestones include John Lawrence, who was accused of sleeping with another guy, being acquitted by the U.S. Supreme Court in June 2003 and Canada's House of Commons agreeing to the Civil Marriage Act (legalizing same-sex marriage) in June 2005.

The American Decision

On June 26, 2015, the U.S. Supreme Court added another chapter to the history of the LGBT community, pronouncing same-sex marriage legal across the USA. The lawsuit which produced the case was filed by James Obergefell, a gay Cincinnati native who had married John Arthur in Maryland (where the law already permitted same-sex marriage). When Arthur died of ALS in 2013, Obergefell asked to be recognized as his surviving spouse on Arthur's death certificate. However, the Ohio Department of Health turned him down, as the state banned same-sex marriage. He immediately sued Rick Hodges, the director of the Department of Health, and the case *Obergefell v. Hodges* was appealed all the way to the Supreme Court.

In a 5-4 split decision, the court made a sweeping decision in favour of Obergefell; not only did Ohio have to recognize his gay marriage, but the 15 states that did not already recognize same-sex marriage all had to do so ASAP. Justice Anthony Kennedy, writing for the majority, based his argument on the Due Process Clause (DPC) of the U.S. Constitution, which states that "no state shall make or enforce any law which shall abridge the privileges ... nor deprive any person of life, liberty, or property, without due process of law". For decades, courts have held that marriage is one of these privileges or liberties, and you can only be forbidden to marry with "due process", which is legalese for "there better be a really good



Nicole Jiang

EngSoc participated in the Toronto Pride Parade, where all had extra reason to celebrate after the US ruling.

reason".

Kennedy rejected three arguments against same-sex marriage: a) the founding fathers did not accept same-sex marriage, b) marriage had always been between a man and a woman, and c) marriage is about childbearing and gay couples cannot have biological kids. To the first, he answered that the founding fathers had intentionally used generic language in the constitution so that future generations could discover new rights within the meaning of "liberty"; to the second, he answered that the meaning of marriage had already changed before, so it can change again (for example, Americans nowadays freely choose their spouses, not because their parents arranged the marriage for social or political gain); to the third, he answered that marriage isn't just about having kids, but also about dignity, love, commitment, and legal benefits. Since no compelling reason can be found to reject same-sex marriage, then all 50 states must recognize it under the DPC.

Justice John Roberts, speaking for the other four judges, thought that it was not the court's job to change an age-old definition of marriage. In his opinion, the court had no right to enforce legal same-sex marriage—only lawmakers elected by the people had the right to make such revolutionary changes. Roberts pointed out that the DPC had once been used to squash minimum-wage laws, for eerily similar reasons (the Supreme Court had ruled that removing your right to work for any salary you wanted

was an affront to human dignity and freedom), and we now recognize that decision as misguided. He also argued that similar reasoning could be used to legalize plural marriage. He closed by asking proponents of same-sex marriage to take their case to the people, to get it legalized the "normal" way through the passage of a new law.

Reactions

Most states wasted no time in complying with the Supreme Court ruling, with some exceptions. Several judges in Alabama stopped issuing marriage licenses at all in protest. In Kansas, Gov. Brownback announced that his state needed time to "fully review and analyze the ruling".

The two largest religious groups in the USA, the Catholic Church and the Southern Baptists, announced that they would continue holding a one man-one woman definition of marriage internally (which, as the U.S. Constitution separates church from state, they have the right to do), and expressed worry that people with conscientious objections might have to quit certain occupations (e.g. wedding planner, baker) to avoid catering a same-sex marriage. On the other hand, the Episcopal Church hailed the decision. Some ministers expressed support for the ruling as a matter of civil rights, despite personally opposing same-sex marriage.

At Pride Parades across the country, the gay and lesbian community and their allies had extra reason to be festive, celebrating

the victory with rainbow flags, costumes, balloons, and music. President Obama hailed the ruling and lit up the White House in rainbow colours. Support for the decision also came from the American Civil Liberties Union (ACLU) and the American Bar Association. However, LGBT rights advocates cautioned that there was still some ways to go: just as racism continued after de-segregation, laws discriminating against gays and lesbians aren't entirely a thing of the past. Also, as Brigita mentioned in her article last edition, transgender individuals still often face poor treatment and desire greater acceptance.

Across the Pond

Same-sex marriages are expected to be recognized in Ireland soon. A referendum was held on May 22nd, in which 62% of Irish people voted in favour of same-sex marriage, sparking jubilant festivities from the LGBT community and its allies. However, the joy was tempered by a legal challenge. Two opponents of same-sex marriage challenged the referendum's legitimacy in court. In Ireland, as in Canada, major parties receive public funding; the challenge claimed that, since the same parties had taken out ads supporting a "Yes" vote, taxpayer money had indirectly been spent to take sides on a referendum. While it is highly unlikely that a court would actually overturn the results of the referendum, it will probably delay the implementation of same-sex marriage until early 2016.

Imprint and Feds Renegotiating SLC Lease



CAMERON SOLTYS
2B MECHANICAL

Readers of the other newspaper on campus, *Imprint*, will undoubtedly have read the news that Imprint Publications may be looking for a new office space for next fall. On the front page of their most recent issue was displayed the most exciting of headlines: "Feds to evict Imprint after 37 years".

The article goes on to say that Feds terminated the lease at the end of winter term and informed them on May 1. According to a Feds blog post, the *Imprint's* lease first ran out on April 1, 2007 and has been automatically renewed each year under the same conditions. This year, Feds want to renegotiate.

Both the *Imprint* article and the Feds blog agree that *Imprint* has three main options: stay where they are under a new lease for twice the rent, move to a new location in the SLC that has "...just over half of [Imprint's] current space," or move out of the SLC. According to *Imprint*, it was mentioned by a Feds director that the space, should *Imprint* vacate it, might be turned into office space. According to Jesse McGinnis, *Imprint's* board chair, this is a proposal that "...is unsettling to say the least." *Imprint* went further, suggesting that the decision might not be a business one. According to McGinnis, the "I can only conclude it's personal, and in response to how Imprint has covered issues... [that] cast a bad light on Feds." *Imprint's* article continues this line of accusation, quoting Ryan Macfarlane, executive of the Canadian University Press, as saying that student unions and student media

are "typically at odds with one another."

From the Feds official perspective, it is all business. The *Imprint's* lease was up, and Feds isn't sure that *Imprint* is the best use for the space. They claim that "...cost of the space to the Federation of Students is higher than the amount paid by Imprint." This, as Feds sees it, is a subsidy of sorts; students already pay *Imprint* fees, so Feds should not "spend students' money from the Feds fee on a separate organization..."

Beyond that, Feds also has the 2014 SLC Space Audit to back them up. In this survey of Waterloo Students, it was found that *Imprint* was one of the services that students ranked in the lowest category of the "Reasons for Accessing the SLC". There are some caveats to this, however. Most of the 38 services in the study were ranked in this lowest category, including CIBC, International News, and

"Feds Offices Use". The only service with a median ranking of 4 out of 5 was Tim Horton's.

This debate has the potential to raise a number of issues about student governance in the University of Waterloo. For instance, does Feds need the amount of office space it has, or would it be better to fill the SLC with rent-paying services that students might enjoy more? What should the SLC and other student spaces on campus be used for? Should it only contain those services that are useful for all, or should it be a place where all student activity is centred, no matter how niche? These are not questions that will be answered when *Imprint* decides what to do, or when Feds decides to use any newfound space they get. But they are questions that are fairly pressing for the often space-strapped student body and student clubs.

Pan-Am Games Preview



**ELIZABETH
SALSBERG**
3A NANOTECHNOLOGY

THE BENCHWARMER REPORT

Hola readers, and welcome to the first of two *special* edition Benchwarmer Reports on the Toronto 2015 Pan-Am Games!!!! There is a lot to look forward to over the next couple of weeks, and Canada has many exciting athletes worth watching, so let's get into it.

For those unfamiliar with Pan-Am, like the Summer Olympics the Pan-Am games will feature pretty much every sport that isn't traditionally played in the winter. I would encourage you to catch some of the more "exotic" events that we so rarely get to enjoy such as paddle sports (canoe,

kayak and rowing, various varieties), equestrian, sailing, beach volleyball, fencing, triathlon, handball, water polo, rugby sevens, judo, taekwondo and yes, you are about to read this correctly, roller sports (includes figure skating and speed skating on wheels).

There are also a lot of more traditional sports that should be fantastic to watch such as soccer, swimming, tennis, and athletics (track and field). A complete daily schedule and results can be found at <http://www.toronto2015.org/> and cbc.ca has live coverage of all events, as well as highlights in case you missed something. With that out of the way, let's take a look at some key Canadian athletes heading into these Games.

First, and many would say foremost, you've definitely heard of this one: Adam van Koeverden (Kayak). At 33 years

of age, he already owns four Olympic medals, one gold and one bronze in Athens (2004), along with two silver, in Beijing (2008) and London (2012). He is the most experienced kayaker in the water at these Games, and it's expected that it will show. Predictions have Adam on the podium—watch it July 18 and 19.

Next up is the next-generation Canadian Women's Soccer team. After a merely satisfactory showing at the FIFA Women's World Cup (they lost a disappointing one to England in the quarters), it's time to find out who the next Christine Sinclair, et. al. will be. Led by emerging star and World Cup Young Player Award Winner, Kadeisha Buchanan, the team features Canada's future in the sport. Canada is the defending Pan-Am champion, and is looking to get back to where they left off, with four players counting caps on the Senior Squad, as well as many returnees from U20- and U17-groups. Catch all matches live on Sportsnet throughout the Games.

Canada are defending champions in two other teams: men's baseball and men's rugby (sevens). The baseball squad for this year, largely filled with minor-league pro players, includes eight 2011 gold medalists. Four of the pitchers, Jeff Francis, Shawn Hill, Jeff Richmond, and Andrew Albers are current or former members of the Blue Jays system. The rugby team includes five returnees from 2011, including captain John Moonlight and Sean Duke, both of whom have scored over 100 career tries in seven-a-side rugby.

Michele Li (defending a 2011 Pan-Am gold) is the #1 seed this time around in women's badminton. In women's squash,

watch for Sam Cornett, who won a team-event gold and a singles silver in 2011.

In gymnastics, Ellie Black, a former World Cup and Commonwealth Games gold medalist, will be competing in the women's events (the vault and balance beam are her specialties). In men's trampoline, 2007 Pan-Am winner Jason Burnett and 2011 Pan-Am winner Keegan Soehn are returning to seek a second gold. Rosie MacLennan (2012 Olympic gold) and Karen Cockburn (silver at 2004 and 2008 Olympics) will represent Canada in women's trampoline. Trampoline finals will take place on July 19.

On the diving platform, London 2012 bronze medalist Jennifer Abel returns with new partner Pamela Ware. Ranked 2nd in the world in synchronized diving, and top-3 finishers in their last five international competitions, the pair are expected to have a podium showing at this year's Pan-Am's. This event will happen before this article is published, but go watch the highlights if you haven't heard about what happened already!

Also in the pool, London 2012 silver medalist Ryan Cochrane is in the hunt for gold in the 1,500 m freestyle (hardly a race for the faint of heart). Looking to build some momentum heading into the Worlds next month, this is a good opportunity to watch Canada's front-running swimmer before the 2016 Olympics in Rio. Catch this one July 18th before kayaking.

Besides these major stories, there will undoubtedly be exciting developments throughout the Games. Medals will be won, records will be broken and the next generation of elite athletes will emerge. Right here, right now. Enjoy the Games—they'll be done before you know it.



The Rogers Centre has been temporarily transformed into the Pan-Am Ceremonies Venue.

Taxiarchos228

Charleston Shooting: Its Lasting Effects



ALEXANDER LEE
3A NANOTECHNOLOGY

It's been three and a half weeks since June 17, 2015, the day that the Emmanuel African Methodist Episcopal Church in Charleston, South Carolina suffered from a mass shooting, which resulted in the deaths of nine of the ten people shot. Among the victims was Clementa C. Pinckney, who served as a state senator in the South Carolina Senate. The primary suspect for the crime is Dylann Roof, who was taken into custody the day after the shooting.

The Emmanuel African Methodist Episcopal Church, founded in 1816, is the oldest church of its denomination in South Carolina and the whole American South. From its foundations, the African Methodists have been at the forefront of the fight against slavery, racism, and civil rights. The denomination split from the white Methodists due to increasing discrimination and racism, particularly over the issue of burial grounds. Its initial years were ones of great hardship and suffering, as laws at the time heavily favoured white people and restricted the actions of African Americans; church members had been arrested and executed in the 1820s for allegedly organizing slave revolts. The church itself had been razed in 1822, and was even outlawed from 1834 until the end of the American Civil War in 1865. During this time, the church held services in secret and suffered heavy persecution.

The church has been politically active since the end of the Civil War, and its pastors have served as South Carolina Senators and even as representatives in Congress. Martin Luther King spoke at the church in

1962 at the peak of the civil rights movement. The church has over 1800 members and is a patron of local art and culture.

On June 17 2015, at around 9:00 PM, shots of gunfire were heard in the vicinity of the church. Ten church members were involved in a bible study at the time; all were shot, and nine would later die of their sustained injuries. The tenth was injured but survived, and claims the shooter said he left her alive to "tell people what happened here". Included among the dead was Sen. Rev. Pinckney, the church pastor, who had been a member of the South Carolina House of Representatives from 1997-2000, and a state senator from 2000 onwards. He had served as pastor of the Church since 2010.

The primary suspect in the case is 21-year old Dylann Roof. He had previously purchased a Glock 41 .45-cal handgun. At the time, he was on probation and was not allowed to carry a handgun.

This was one of the largest mass murders ever to take place in a place of worship on American soil. Given the historical significance of the Emmanuel African Methodist Episcopal Church, it is reasonable to assume that the attack was racially motivated, and the Department of Justice is currently investigating the possibility that the attack was a hate crime. Additional evidence pointing to the shootings being a hate crime is that Roof has been known to associate with neo-Nazi and white supremacist elements. He has made racist comments against Blacks, Jews, Hispanics, and East Asians on his website, and also contains his thoughts that "blacks were taking over the world". He was also known to wear a jacket with the flags of Rhodesia and apartheid-era South Africa on it. Rhodesia was a former British colony that existed where Zimbabwe is today and was heavily racist, favouring the white minority colonists over the black majority. Af-

ter being taken into custody, Roof has also admitted that his intention was to attempt to start a "race war." In light of all this, it is highly likely that the shootings were racially motivated.

In the aftermath of the shootings, much controversy and discussion was generated, on a myriad of issues, from gun control to the status of the Confederate Flag to the proper use of the word "terrorism" when describing attacks.

Gun control would naturally come up as a topic of discussion after shootings because the simple fact is that the shooting could have possibly been avoided if there was tighter regulation of firearms in America. In addition, an article published in The Washington Post on July 10, 2015 states that FBI Director James Comey attributed Roof's ability to purchase a firearm to lapses in the FBI's background check system; the mentioned system will need to undergo review and improvement to help ensure such tragedies will be prevented in the future.

The controversy regarding the status of the Confederate flag is not directly related to the shooting, but is tangentially. The Confederate flag was the flag used in the American Civil War by the army of the Confederate States of America, which comprised all the states that seceded from the Union. This included all the states in the Southern United States, from Texas in the west to Virginia in the east. The line between Union and Confederate states could largely be drawn by the issue of slavery; the states of the Union had banned slavery, with a few exceptions, while all the states of the Confederacy still allowed slavery and thrived on it. While the American Civil War was fought mainly on states' rights versus federal power, the issue of slavery was still one of the prime underlying factors which caused the war to occur.

On Roof's website, there is an image of

Roof posing with a handgun and the Confederate flag. However, the real controversy over the flag began on the day after the shooting. Many flags were flown at half-staff as a solemn sign of remembrance for those that died on the day before, including at the South Carolina State House. However, the Confederate flag at the State House was at full-staff; it lacked a pulley system and thus could not be flown at half-staff, and it could only be removed after a two-thirds majority decision in the State House of Representatives. This sparked uproar across the United States. Many politicians, including Barack Obama, have called for the removal of public Confederate flags, and many places have already started to take them down as a result. Wal-Mart has stopped selling items featuring the Confederate flag, and other retailers such as Amazon, eBay, and Sears have followed suit. The flag has generated such controversy because, even though it represents many things such as Southern culture, it also represents an era of slavery and racism, and today America does not want to indicate they still support that in any way.

Although the issues that has been raised by the shooting are legitimate and should be addressed, the most important thing right now is that the families of the dead should be comforted, and that America and the world stand united against racism and hate crimes. President Obama delivered Sen. Rev. Pinckney's eulogy on June 25, and called for "an open heart" from everyone for the victims of the shooting. The Emmanuel African Methodist Episcopal Church has been at the forefront of black civil rights, and the tragedy that has befallen it has touched myriads beyond the church's flock. Together, the church and America must move beyond the tragedy and ensure it never happens again.

The Last Planet Gets its First Visitor



CAMERON SOLTYS
2B MECHANICAL

Pluto may not be a planet any more, but it is still an important object in the hearts and minds of space enthusiasts, and a body filled with mysteries ripe for scientific investigation. On July 14 (future to the time of this writing, but past to the time of you reading it), NASA's New Horizons spacecraft will pay a short visit to this cold body, aptly named after the Roman god of the cold, dead underworld. It will fulfil humanity's long awaited goal of visiting all the major bodies in our solar system. And while Pluto, it turns out, is not alone in its vast region of space known as the Kuiper Belt—or the largest trans-Neptunian object, for that matter—it is still a meaningful goal to reach that once-planet that was still considered a planet when New Horizons launched.

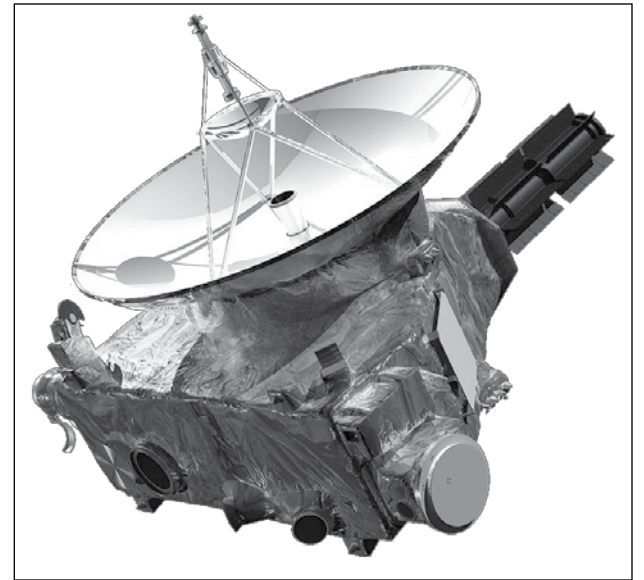
Even if Pluto is not a planet, and it is becoming increasingly hard to justify its unique reputation beyond being the first Kuiper Belt object we happened upon, New Horizons' mission can still be viewed as important; this is our first close look at the most numerous of all the bodies in the solar system. The Kuiper belt is estimated to contain hundreds of thousands of objects over 100 km in size, and potentially trillions of comets. So far, our only experience with these objects has been through pixelated Hubble Telescope images or encountering inner-solar system comets that have been drastically altered by their close encounters with the Sun. New Horizons offers a new opportunity to see these cold balls in their native habitat, as it were.

The spacecraft itself is an amazing piece of hardware. When it was launched in 2006, New Horizons set a record for the highest launch speed of an object leaving Earth. It then traveled over 5 billion kilometers to end up 5 light-hours away at the doorstep of Pluto. On July 14, New Horizons will speed past Pluto and its 5 known moons at 14 km per second, collecting a huge amount of data. Among its scientific instruments are MVIC, a colour camera; LORRI, a high-resolution black-and-white telescopic camera; and Alice, to perform ultraviolet spectroscopy of Pluto's atmosphere.

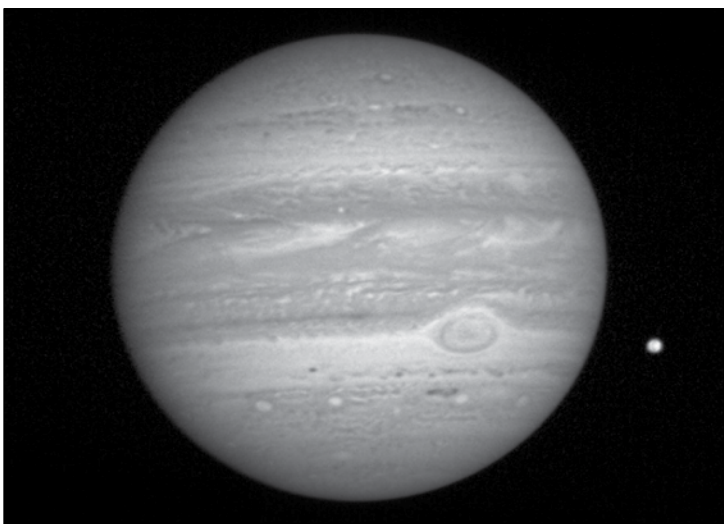
Since it took 9.5 years to get to Pluto, every major system—computers, guidance systems, and memory—was given a backup; you don't want the entire mission to end before the probe even gets to its destination.

There are many questions that New Horizons is expected to answer. For instance, why is Pluto so much brighter than its largest moon, Charon? The Pluto-Charon system is also rather unique, as far as we know, for having a planet and moon so close in size. It is thought that Charon is made from the debris resulting from a collision between Pluto and another body. On both of those interesting properties, we have only one other example: the Earth and the Moon, so New Horizons will provide us with a fresh perspective on our own planet that the other major bodies in the solar system can't bring us. After it finishes its rapid flyby, there is the possibility that New Horizons can use

its remaining fuel to steer towards another Kuiper Belt object for another rendezvous in a few years. And in the meantime, it will remain a source of wonder and discovery as all of the data collected from the Plutonian system is slowly downloaded and analyzed over the many coming months.



The spacecraft has been travelling for over 9 years to reach Pluto.



New Horizons took pictures of Jupiter as it flew past.

The Battle for Your Data



SAM MADHAVAN
1B ENVIROMENT

In the age of information, knowledge is – literally – power. Over the past few years, whistleblowers have come forward en masse to shed light on just how governments and corporations have been tracking and analyzing private browsing data – and people are only now waking up to the fact that their information is no longer exclusively their own. Even massive corporate giants like Google and Facebook have openly voiced concerns over the "unconstitutional" government surveillance of private individuals without prior reason or cause for suspicion.

Fortunately, the political powers of the world are not the only parties that get their say in the matter of unwarranted surveillance. More websites are rolling out encrypted, secure web protocols to protect visitors from surveillance every day. By using HTTPS instead of the standard text transfer protocols, companies can digitally scramble traffic between company servers and users, making the monitoring of data significantly harder for any third party. Following in the footsteps of smaller media outlets like Vice News and Techdirt, the Washington Post began encrypting parts of its website. At this time, the change to HTTPS is in an experimental phase, in which only the paper's homepage, national security page and tech policy blog use the new protocol. The rest of the site is expected to make the transition over the coming months. Following massive breaches of data security, the White House has mandated that all federal websites must replace

all web transfer protocol with the more secure protocol by 2016.

HTTPS is not a new fad in an ever-changing market; online banking, e-commerce and other sites with sensitive user information already use the protocol, by establishing private browsing sessions to prevent hackers and spies from unlawfully accessing and manipulating user data. Tech giants like Google, Facebook, and Twitter all saw stock values soar after announcements about decisions to use the new protocol. It is clear that the market for protected information is only just beginning to take root; Canadian networking equipment company Sandvine projected that more than half of all global web traffic would be encrypted by the New Year. The move does come with its consequences: advertisers using incompatible platforms may choose to promote their product elsewhere, and the Washington Post expects a temporary negative impact on its advertising revenue as advertisers decide if they want to rewrite their code to function with the new protocol.

Although not a major issue in most parts of the developed world, securing and encrypting internet data transfer is expected to open up channels of free information and speech in oppressed and politically unstable regimes. Cyber authorities will have few choices to control access to a particular webpage or discussion short of restricting access to the entire domain, and it will not be possible to identify and persecute individuals for their browsing habits. The debate around balancing national security against a right to privacy of personal information may have moved to a virtual ground, but the stakes remain just as real. It seems the issue of data privacy is as much a moral issue as a technological one.

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WATERLOO CASES IN **DESIGN ENGINEERING**

Greek Debt Crisis Leaves Future Uncertain

Greek Exit From Eurozone Possible



ALEXANDER LEE
3A NANOTECHNOLOGY

On July 5 2015, the Greek people took to the polls to vote on the economic future of their country. 61% of participants voted to reject the bailout conditions proposed by the European Commission, the International Monetary Fund, and the European Central Bank, also colloquially known as the Troika. There was 62.5% voter turnout. As a result, Greece and the European Union (EU) must come back to the negotiating table, or Greece will have to leave the Eurozone and adopt a new currency. The referendum was just the latest symptom of the European debt crisis afflicting the EU, which itself is an offshoot of the 2007 global financial crisis that rocked all corners of the financial world, and that we are still recovering from today.

The Greek debt crisis began in 2009, after the newly elected Greek government revealed that previous governments dating back to the early 2000s had used a variety of creative accounting techniques to underreport their annual national deficits and debt levels. Having already been weakened by the American housing bubble collapse and the subsequent global financial crisis, investor confidence in Greece plummeted, and Greece found itself in a position where its debt was unsustainable and that it would eventually default on its loans. In the ensuing chaos, the Troika put together a substantial bailout package for Greece to ensure it did not

default on its loans. This bailout was conditional on austerity measures to be implemented by Greece to control its deficit level. Since the original package was delivered in 2010, there have been four additional bailout packages that have been given to Greece.

Greece alone does not make up a large portion of the Eurozone's economy; it has a relatively small population and GDP compared to the rest of the Eurozone. However, Greece is also not the only country in the Eurozone that was suffering from high debt and deficit levels. In 2010, Ireland, Portugal, and Spain in particular also had debt levels that were close to default risk. Italy was also dealing with high debt, but was in better economic shape than the other countries. The worst case scenario for the EU was Spain defaulting on its debt, as Spain actually makes up a significant portion of the EU's economy, with a relatively large population and GDP. The Troika ended up bailing out all of the most at risk countries to some extent.

A large reason why economically weak Eurozone countries are at risk of default is that they use the Euro as their currency. If each country had a national currency, they would have more control over their currency and the money supply. If their debt got too high, they would have additional tools to combat it, such as devaluing their currency or raising inflation. While these are economically harmful, the national debt would remain manageable. However, Eurozone countries do not have these controls, and thus are much more restricted in what they are able to do to manage their economies.

Today, the debt crisis has largely passed. Ireland and Portugal have successfully gone through their austerity measures, and Spain has passed the risk of default. Greece remains the most pressing threat at this point. However, though the spectre of sovereign default has diminished, the EU is not out of the woods yet. The decisions surrounding Greece can still have far reaching consequences for the rest of the EU.

There are two main choices regarding the relationship between Greece and the EU right now. Either another bailout package is negotiated and Greece remains in the EU—at the cost of more austerity measures—or Greece leaves the Eurozone, abandons the Euro, and adopts a new currency or, more likely, returns to their previous currency, the Drachma.

If a new bailout package is negotiated, the world returns to the status quo, and Greece will continue to try to reduce their deficits. However, this has proven to be a long process, and while Greek economic health has improved in the last five years, it is still a far cry from being able to stand on its own. A new bailout package signifies that the EU will accept Greece as an economic drag for years, possibly decades to come. However, Greece will remain in the EU, and continue to use the Euro.

If an agreement cannot be reached, then Greece will most likely exit the Eurozone, an unprecedented move. Greece would move to its own currency, which it will have control over and be able to pay its debts by heavily devaluing their new currency. This brings its own risks, such as hyperinflation, but at least

Greece would not be at risk of default and would have more control over its own economic future. Additionally, the rest of the Eurozone would no longer be committed to bailing out Greece from its own crushing debt, and the economies of other Eurozone countries would improve.

However, the EU does not want Greece to leave the Eurozone for several reasons. First of all, it sets a bad precedent for other countries who might also be inclined to leave, and it's possible that the EU would become less unified and integrated, eventually collapsing. The Euro would lose strength as more countries stop using it as a common currency.

Germany also would not want Greece to leave the EU. Germany is one of the strongest national economies in the world, and is the primary economic engine behind the EU. The way the EU is currently structured, Germany benefits from being a member by the power it holds over the other members and also by having access to easy foreign markets in the form of the other countries. Losing Greece would mean losing access to an export market which would hurt the German economy.

There are two main decisions for Greece and the EU to choose from: either Greece accepts another bailout package and additional austerity measures, or Greece rejects it and most likely leaves the Eurozone, taking control of its economic future. No matter which decision is reached, only one thing is certain: Greece faces an immediate future marked with hardship. It will only get worse before it gets better.

Migrant Woes at Calais



SAM MADHAVAN
1B ENVIRONMENT

Migrant African workers and Middle Eastern war-weary refugees are crowding the French port of Calais, determined to smuggle themselves into Britain or die trying. The image of some 2300 odd people living in squalid makeshift shelters or lying on the ground of the still popular tourist destination is surreal, something out of a post-apocalyptic catastrophic warzone. Most of the refugees keep their meagre possessions in a single bag: spare shoes, clothes, toothpaste and soap; there is a singular objective in the minds of these people—survival. That is why those that get caught and turned away at the border do not return the way they came. For many of them, there is nothing to return to.

Britain has in one way or another, brought this influx of refugees upon itself. The island nation has a reputation as a safe haven, free from exploitation—less than a quarter of all illegal immigrants caught within the borders are deported. For rather obvious economic reasons, David Cameron and the Democratic Party have taken a stance favoring an open economy, welcoming in cheap migrant labour. While the thousands of migrants have brought international travel to a grounding halt, inconveniencing British tourists enjoying their summers, the country itself is still relatively unaffected, being on an island. England is also

not part of the open borders agreement shared between over 25 members of the European Union, but the influx of immigrants leaving their homes behind to cross the Mediterranean has slowly but visibly shaken Europe. Some immigrants have traveled almost halfway around the world from as far as Pakistan, through Greece, Italy, and Spain on their search for a place to start their lives over. It seems cruel to deny them, so close to salvation.

And yet there are no ways to avoid the fact that Britain simply cannot afford to provide employment and welfare for all those looking for a better life. It would be unethical to selectively allow certain

ethnic groups into the country while other equally impoverished people still struggle to make it to the next day across the channel. The wealthier immigrants pay tourists exorbitant sums as bribes for being stowaways; some tourists make as much as 20,000 euros for a two hour drive across the border. Others risk their lives to stow away in cargo trucks and lorries, hoping that border security or a curious driver does not chance upon them until they are across the border. However, with a 2,000 pound-per-head fine for any illegal immigrants caught hiding away in a vehicle, truck drivers are more motivated than ever to remain vigilant. Despite the threat of

confrontation, some of them carry weak firecrackers to convince stow always to leave their hiding spots in the wheel base or cargo hold of the truck.

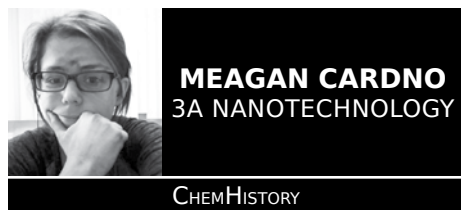
French police and British border officials are working together to mitigate the damage, but it is becoming apparent to everyone involved that these people are not going anywhere soon without concerted and widely coordinated political assistance. The migrants at Calais are but the first waves of what is predicted to be a long, ongoing future trend, with thousands more following their footsteps in search of a life where they would not have to struggle each day to wake up the next.



Billy69150

The Channel Tunnel is an underground road and train tunnel connecting France to the United Kingdom.

Agent Orange



Alas, if only all aspects of chemistry's history were sunshine and daisies. This issue, we shall delve into some of chemistry's darkest applications, and their resulting impact on the world's history as we know it.

Chemical warfare, like nuclear and biological warfare, is considered a subset of non-conventional warfare techniques that utilize weapons of mass destruction, or WMDs. However, herbicidal warfare is the exception to the rule—while it is not considered an WMD, it has been forbidden from use since the 1970s by the Environmental Modification Convention, due to its negative effects on the planet.

Agent Orange is one such method of herbicidal warfare. It is a mixture of two herbicides: 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) and 2,4-dichlorophenoxyacetic acid (2,4-D), the former of which has been banned from use within the United States, and whose use to this day its use closely monitored. This particular chemical was most infamous for its use in The Vietnam War, in what was known as Operation Ranch Hand by the U.S.

Air Force. The goal of the operation was to ruin as much of the forested and rural land as possible in order to deprive the Vietnamese guerrilla fighters of resources such as food, shelter, and cover for their attacks.

It is suggested that over 6500 spraying missions took place over the course of Operation Ranch Hand, resulting in the destruction of approximately 10 million hectare of agricultural land. Reforestation of these areas was incredibly difficult due to soil erosion from the lack of tree coverage preventing any reseeding. Animal diversity suffered tremendously, and even to this day dioxins have been shown to persist within the native species, bioaccumulating within the food chain.

The effect on the population was no less severe. Over 4 million Vietnamese people were exposed to the chemical, with a quarter of those exposed either disabled or having reported health issues from the exposure. The chemical is a known carcinogen, and from a sociopolitical perspective, those living in rural areas were forced to move into cities, resulting in a three-fold increase in the urban population. This rapid urbanization led to the formation of many slums in urban centres.

Further complications arose when it was revealed that some of the 2,3,5-T was contaminated with 2,3,7,8-tetrachlorodibenzodioxin

(TCDD), one of the most toxic dioxins and known carcinogens, explaining many of the health affects caused that were not typically associated with exposure to Agent Orange. TCDD interacts with binding sites, affecting a transcription factor that moderates the expression of genes and genetic information. While it is classified as group 1 carcinogen, it primarily functions as a promoter of cancer caused by other compounds, not a mutagen itself. Even more terrifying is that this compound, like other dioxins, persists for incredibly long times on a variety of environments—it was a half

life of approximately 7 years in human fat tissues.

It is not known whether or not the contamination of the herbicide with the dioxin was known about before Operation Ranch Hand was carried out. While it is repeatedly claimed that the contamination was only discovered afterwards, numerous reports of odd health cases and accidents during the production of the chemical even in Europe have been brought to attention, suggesting potential negligence or dishonesty on the part of those involved in the operation.



The United States used defoliants to destroy the forests of Vietnam, thereby harming the guerrillas operating within them.

CBC Requests Conservative Ad Removal



There is much controversy surrounding the Conservative party's latest anti-Liberal advertisement. It opens with images of ISIS killing prisoners in horrible ways—first, by drowning in a cage, and then a beheading by an explosive cable wound around their necks, followed by a clip of Justin Trudeau affirming that “we'd move away from the [bombing] mission”. In the interview, CBC's Terry Milewski continuously questions Trudeau about his declaration that a

Liberal government will pull Canadian troops out of the mission with ISIS and re-establish a diplomatic relationship with Iran, asking “If you don't want to bomb a group as ghastly as ISIS, when would you ever support real military action?” “Terry, that's a nonsensical question,” Trudeau responds, and the ad ends with Trudeau's face and the now familiar phrase “Just Not Ready”.

This clip debatably violates part of Bill C-51's anti-terror policy by showing terrorist propaganda. Some say otherwise, but either way it is in bad taste to use the combination of graphic deaths and music for political gain. But this is not the only issue with this advertisement.

The CBC has requested that YouTube

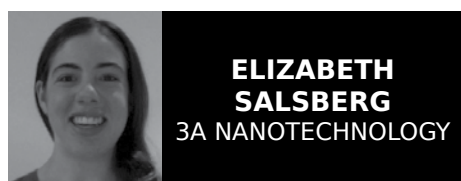
and Facebook take down this video in accordance with what CBC news editor Jennifer McGuire calls their “guiding principle”, which she describes saying “No one—no individual candidate or political party, and no government, corporation or NGO—may re-use our creative and copyrighted property without our permission. This includes our brands, our talent and our content.”

However, the University of Ottawa's digital law professor Michael Geist says that, “The CBC is simply wrong. Its guiding principle is wrong and its attempt to use copyright to take down an offensive advertisement is wrong”. He argues that the clip does not violate Canadian copyright law since twenty-two seconds does not constitute a

substantial amount, and that it has a valid claim to be used for educational purposes.

Using news footage in campaign advertisements is quite a common practice, which is why CBC's request seems strange. McGuire also writes that, “when a TV clip of an interview of a party leader shows up in another party's advertising edited in a way that shifts the context of the facts, this may cause viewer confusion and even suspicion about our journalism, and the intentions of journalists,” which seems like even more motivation to request the ad's removal. However, is it possible that anti-Conservative sentiments are an ulterior motive? Or is this just another conspiracy theory?

Federal Elections 2015: Never A Closer Race



This fall's federal election will be one of the most intriguing in recent years. There is no clear-cut winner like in the past two elections, and it is highly unlikely that there will be a majority government. Whoever wins will do so by a razor-thin margin, with a mere couple of seats separating government and opposition.

The two major contending parties this time around are Stephen Harper's Conservatives and Thomas Mulcair's NDP. The Liberals are lagging behind a little at the moment. This can be attributed to Justin Trudeau's inability to sell his platform to centre and just left-of-centre voters. With many focused on party leaders, the deterioration of Trudeau's image has worsened his chances. That being said, Trudeau and the Liberals have gained momentum this

year, and many Canadian's displeasure with the Harper government can only help them out.

The first interesting story to watch unfold will be how Quebec votes. With Gilles Duceppe back on as the Bloc's leader, polls indicate a decent likelihood of the BQ stealing away enough seats for official party status (i.e.: a minimum of 12 seats). It is generally believed that these BQ seats will come at the expense of the NDP (winners of a party-record number of Quebec seats in 2011).

According to a recent Angus-Reid poll, the NDP would win 36% of the popular vote, with the Conservatives at 31%, 23% Liberal, 5% Bloc and 5% Green. Five runs of the Globe and Mail's Election Simulator suggest similar trends. Zooming in on some provinces, there are some interesting things happening: first, the NDP appears to have gained a lot of popularity in British Columbia, winning 60-80% of available BC seats on each run. Conservative popularity is not what it was in Ontario, with the Liberals likely

to win back several of the seats that went Conservative in 2011. Unsurprisingly, Quebec will mostly go NDP, with the BQ snagging a few seats (but only enough for official party status in one out of the five simulations). Results in the West (Alberta, Saskatchewan, and Manitoba) are as expected, with the Conservatives winning the majority of the seats there.

Though the NDP appear to be leading the Conservatives by a small margin right now, it could easily go the other way. In particular, it is worth considering a scenario in which Trudeau's Liberals manage to gain some momentum; because the NDP and the Liberals are basically marketing themselves as “We're not Harper! Vote for us and change will happen!” it is likely that any Liberal gains will come at the expense of the NDP. Should this occur, the Liberals and the NDP will split the left, centre-left, and possibly even the dead-centre vote, clearing the way for another Harper Conservative win (albeit a minority).

Needless to say, voter turnout will be

another determining factor. Just because someone says they will vote for a party doesn't mean they will physically haul themselves to a voting station on Election Day. The key issue for all three parties (as always) is to get as many of their supporters physically putting ballots in the ballot box. While popular vote prior to the election tells us a bit about what could happen, in this regard it is perhaps not always representative. That being said, pollsters who subdivide into asking people if they will actually go out and vote would probably have a significantly smaller sample size to work with, thereby lending less statistical credibility to their results.

Fortunately, it seems likely that voter turnout will be higher than usual at this Election. It appears that most Canadians are either strongly in favour of keeping the Conservatives in, or booting them right the hell out. With the race so close, more people will probably be motivated to hit the polls—who knows? One person's vote just might make a difference.

Presidential Shortcomings Round Two



LEILA MEEMA-COLEMAN
PRESIDENT

As this is my second last Iron Warrior article I am going to take a page out of our past president David Birnbaum's book and recount something that is very difficult to speak about publicly, that is, my failures as a President. You may wonder why I would write an article about this or even why you should read it but to me it will be one of the most important articles I will write. I was elected on a set of platform points and promised students certain things. Some of these I am proud to say I accomplished, but there are also many that I unfortunately failed in providing to you, the students. I hope that with this article I can emphasize accountability as well as holding the Executive responsible for their failures as well as

their accomplishments.

The first and main objective that I am disappointed I was not able to accomplish during my tenure as President was a syllabus bank. This has been a long-standing request from students and would be a new beneficial service we could offer. Though I made some headway in the Fall term, things dropped off in the Winter and I was never able to claim the same momentum that I had in the Fall to get approval from the Faculty. I apologize to those who sent me syllabuses with the hope that they would be published while they were still in school. We still have all of them on file and I sincerely hope that the effort and the push continues until we have succeeded in implementing the bank.

Another larger area that I personally believe I have failed in is running the Engineering Society Council. While on the surface it may look like we have accomplished a lot with the

diversity policy and the executive review committee, I have failed in terms of cultivating a council who truly cares about the role of Council and understands its importance. In my attempt to move away from the circular and endless discussion of the past, I went too far and we now have a Council that is governed by the Executive and rarely actively disagrees with motions. This was not my intention in the slightest and I'm not even sure how it actually happened. To try to correct some of my mistakes we have started the plan to implement a council review committee to try and make changes to Council. In addition it is my hope that once the current Executive finish we can still attend meetings and start the discussion on motions again and help the first years re-understand the importance of Council.

The last of my many failures I would like to address is external relationships. Following David I knew that I did have

many bridges to rebuild but I came in confident and optimistic that I could rebuild them. However I can't say that our relationship with the Federation is much better than it was when he was President (whether or not that is a good or bad thing is up for debate) and A-Society and B-Society are no more similar than they were when I started. Some of these were because I wasn't willing to compromise on my opinions and part of this was because I stopped putting in the effort to rebuild the relationship. This is a case where we need to keep chipping away at the wall between us and others and start playing nice.

There are many more things I would like to address, but I have reached my word limit. If you think there are other things that you disliked about my role as a President I encourage you to share them with the new Executive team so that they can learn from the mistakes I made.

Charities! Have YOUR say!



HEATHER SMITH
VP EXTERNAL

Hey engineers! I hope everyone is having an absolutely dandy term so far, and that with the term winding down you're not too bogged down with deadlines because I know I am! I am currently writing this in the Orifice during WEC, shout out to all the awesome diWECtors and volunteers!

I am going to discuss an initiative I started a year ago when I was just starting my term as VP External that I would like to see continue. That involves some help from all of you! When I ran for VP External, one of my platform points was to have a charitable

organization selected by the students, towards which all funds raised by A- and B-Societies over the course of a year would go. Previously, the charities that EngSoc would donate to with funds raised through various charity initiatives — including Charity Grilled Cheese/Pancakes, Charity Bottle Drive, Purplepalooza, and Change for Change week — would be selected by the charities directors on a termly basis. In the Spring 2014 term, I put out a form to get suggestions from students of both A- and B-Society members on which charity they would like to see EngSoc donate to. From these suggestions, my team of charities directors and myself put together a survey, including a blurb on each of the charities as well as the websites of each organization, to ensure voters could make an informed decision

on which organization they would like to support. The nomination and voting process was left open to all members of A- and B-Societies, since the charity selected would be receiving our donations for 12 consecutive months, and the charitable initiatives from both societies would be in support of the organization voted on.

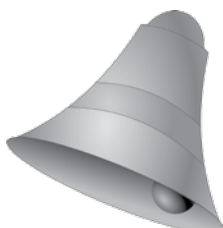


The reasons I wanted this initiative when starting my term: it is important that students have a say in the cause that their donations are contributing to; committing to donate to a charity for three consecutive terms will make a big difference for one cause over three consecutive terms as opposed to smaller donations to three different charities; and consistency in the charity initiatives between the Societies.

I have discussed this initiative with

the current VP External of B Society, Kieran Broekhoven, who plans to continue this initiative for the upcoming three terms. Until July 24 at 11:59 PM, members of A-Society and B-Society can nominate local or international charitable organizations that will later be voted on to be the EngSoc Charity for the Fall 2015, Winter 2016, and Spring 2016 terms. If there are any charities that you feel have an important cause and would like to see EngSoc donate to for the upcoming year, look for a link in your emails, or on the EngSoc Facebook page to nominate a charity and tell us about it!

If you have any ideas, comments, or concerns, please feel free to email me at vpexternal.a@engsoc.uwaterloo.ca. Take care and I hope you all have a lovely final month of school!

Upcoming Events Calendar

Wednesday July 15	Thursday July 16	Friday July 17	Saturday July 18	Sunday July 19	Monday July 20	Tuesday July 21	<p>Check out up-to-the-day event postings on the EngSoc website at engsoc.uwaterloo.ca/event-calendar</p> <p>NEW FEATURE: CCA events being offered by CECA. See uwaterloo.ca/career-action/ for details and to register</p>   
<p>EngSoc Meeting 5 5:30 - 7:30PM, POETS</p> <p>Coffeehouse 8 - 11PM, POETS</p> <p>CCA Foundations of Project Management 1 9AM - 5PM, TC 2218 Career Interest Assessment 1:30 - 3:30PM, TC 1214 Info Session for Graduating Students 4:30 - 5:30PM, E3 1408</p>	<p>Charity Grilled Cheese 11:30AM - 1:30PM, CPH Foyer</p> <p>CCA Work Search Strategies 10:30AM - 12PM, TC 1208</p> <p>Info Session for Graduating Students 11:30AM - 12:30PM, AL 113</p> <p>Interviews: Proving Your Skills 1:30 - 3:30PM, TC 1208</p>	<p>LAN Party 6 - 10PM</p>	<p>Semi-Formal End 8:30PM - 1AM</p>		<p>CCA Working In Canada 10:30AM - 12PM, TC 1208</p>	<p>EngProv 6:30 - 8:30PM, POETS</p> <p>CCA Business Etiquette and Professionalism, 10:30AM - 12PM, TC 2218</p> <p>Interview Skills for Academic Positions 2:30 - 4PM, TC 1208</p>	
Wednesday July 22	Thursday July 23	Friday July 24	Saturday July 25	Sunday July 26	Monday July 27	Tuesday July 28	
<p>EngPlay 8 - 10PM</p> <p>CCA Getting a U.S. Work Permit 12 - 1PM, TC 1208</p>	<p>Charity Grilled Cheese 11:30AM - 1:30PM, CPH Foyer</p> <p>De-Stress Workshop 11:30AM - 1:30PM</p> <p>TBT OT 5 - 8PM, CPH Courtyard</p> <p>EngPlay 8 - 10PM</p> <p>CCA Successfully Negotiating Academic Job Offers 2:30 - 4PM, TC 1208 Medical School Applications 5:30 - 8PM, TC 1208</p>	<p>Exchange Going Away Party 5 - 6PM</p>	<p>EngPlay 8 - 10PM</p>			<p>CLASSES END!</p>	

Engineering Student Deals



KEVIN MCNAMARA
VP FINANCE

This issue I'd like to take an opportunity to discuss an aspect of the VP Finance portfolio that I haven't really had a chance to do much with over the last 16 months, and that is the EngSoc Student Deals Program. Established in Spring 2013, the program was created to allow EngSoc members (that's all undergraduate engineering students, unless you've refunded your fee) to receive deals at places in the plaza and the surrounding Waterloo area. All you have to do is come in to the EngSoc Office

(CPH 1327) and request a sticker, show us your WatCard, and start saving.

Currently the deal has 6 participating restaurants in the University Plaza, which can be viewed on our website at <https://www.engsoc.uwaterloo.ca/services/student-deals/>. 10% off cash purchases at Vegetarian Fast Food (they don't just have vegetarian food either), 15% off food at Molly's, 10% off food at Sweet Dreams Teashop, 10% off at Aunty's Kitchen, a free basket of waffle fries with the purchase of two pitchers at Kickoff (only when Bill is working). The last one is so new that it's not even on the website yet, and that deal is at Marble Slab, where EngSoc members will now receive double stamps for every regular priced purchase! Pretty sweet

deal in the summer. A big shout out goes to Don Tu, my counterpart on B-Society, for getting that set up.

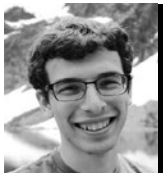
There are two main things that this program needs: awareness and more deals. A lot of students know about the program, and have come into the Orifice to get their stickers, but at the same time a lot haven't. That's one of the reasons I wanted to write about the program in this issue, to get the word out there. If you don't have the sticker, come get it! If you know someone who doesn't have the sticker, tell them to come get it! If you know someone who knows someone...just get the sticker! It's easy to do and totally worth your while.

What about more deals? We're con-

stantly trying to approach new places to get new and exciting deals to offer our students. We are currently in talks with a number of restaurants in and around the university area. However, we always want to know what you want to see in the student deals program. If you have an idea for a new deal, please let me know! Stop by the Orifice and we can chat, or send an e-mail to me at vpfinance.a@engsoc.uwaterloo.ca. I'm always happy to get your feedback and see what you want out of the Engineering Society.

That's all I've got for this issue! As always feel free to let me know if you have any questions about EngSoc's finances. See everyone in a few weeks for what will be my 22nd and final IW Update ever!

Work Term Report Survey Results!



JOSHUA KALPIN
VP EDUCATION

Hi everyone and welcome to the second last edition of my exec updates. It's kind of crazy how almost 16 months have gone by since I've started. I still have some things to share this week about work term reports, so let's get to it.

I've mentioned in my past few exec updates a work term report survey that I was preparing. That was sent out about two weeks ago and I wanted to discuss the preliminary results of the survey. I'll also be presenting a more detailed version of this at council and a full report will be available on the EngSoc website.

So, what exactly did we learn? Well, it turns out a lot of people have a lot of complaints about how work term reports are currently run (shocker). But there are some more interesting data points than just that.

A couple points of note: When asked how easy it was to find a report topic from their work term, only 20% of students said that it was easy to find a topic. When asked about marking, only 40% of students felt like the technical requirements were clear, while 35%

were unsure of how the report itself was marked. Lastly, only 50% of students felt like they had a useful contact for asking questions about their report.

Included in the survey questions was an open comment section, as well as a place to give suggestions for reports. The key things were that students want more flexibility in the structure of their reports and feel like the reports are an outdated form of technical communication. Other concerns were raised about confidential work term reports and how the reports were graded.

As mentioned before, the full results of the report will be published in the coming weeks and my plan is to send it out to the department chairs as well. The goal of this whole process is to give the departments and the society the information it needs to improve work term reports as a whole. Out of all the pain points students have, this is one of the worst and I want to make sure we are doing everything we can to make them better.

That's all I have for this week, and my next update will be my last as VP Education. It's been a pleasure to represent engineering students over the past year. As always, my email is vpeducation.a@engsoc.uwaterloo.ca if you have any questions or concerns. Cya in two weeks.

End the Year Events Are Here



ADELLE VICKERY
VP INTERNAL

It's hard to believe that we only have two weeks left of classes. As this term is quickly coming to an end, I'd like to write about the last couple events we have scheduled. As you're stressing and working to meet your assignment and project deadlines, and starting to prepare for final exams, I'm hoping you take some time to come out to some of the events we have planned and relax a bit!

The first big event we have coming up soon is our termly Semi-Formal! The theme this term is "Radiate!". This event is a great way to celebrate the end of term with your friends and have one last hurrah before the end of term. Come out to Turret Nightclub on Laurier campus on Saturday July 18 for a night of good music, dancing, free food, and friends. Semi-Formal is open to all faculties, so feel free to invite your friends! The event will be licensed for those that are 19+. Tickets are available in the Orifice (CPH 1327) for \$15. Hope to see you there!

Another termly event that is always a great time is EngPlay, a play directed and casted by engineering students. This

term's play is especially exciting because our amazing directors also wrote the play! This original play is called "The Geese Are Our Dreams" and is guaranteed to make you laugh. There will be 3 shows this term: Wednesday July 22 and Thursday July 23 at 8pm, and Saturday July 25 at 5pm. Tickets are ONLY \$2! A very small price to pay for a night full of laughter.

The last big event I want to talk about is our End-Of-Term (EOT) event! If you've been following the Waterloo Engineering Society's posts this summer, you may have seen the "Throwback Thursday" (TBT) posts. Throughout the term, we've been sharing some old pictures of the Society and comparing them to how things are now. Following the TBT trend, we are finishing the term with a "Throwback Thursday OT" (#TBTOT). This event will be on Thursday July 23, and will have all the old games we played in elementary school! Drop by between 5 and 8pm and relive your childhood memories.

As you're getting ready for the end of term, I really hope you take a break and come out to one (or more!) of these events to celebrate the end of a great summer.

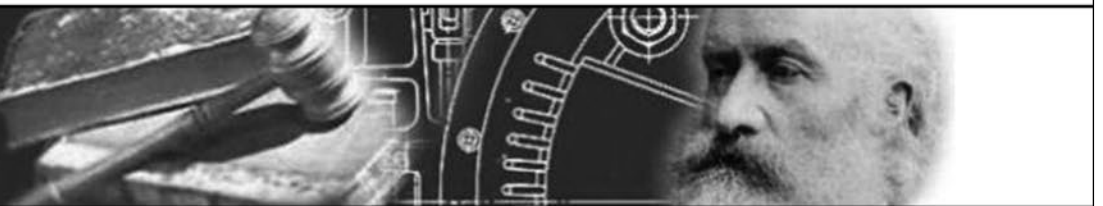
In my next article, I will be talking about some of the things I plan to do as President with my new team over the next 16 months so make sure you look out for that!



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The SFF Memorial Leadership Award Nominations

In recognition of the late Professors Saip Alpay and Wm. C. Nichol, and Sam Ceccerallo, Robert Elligsen, later former students of the Faculty of Engineering

The Leadership Award is granted to an intermediate-level undergraduate student in the Faculty of Engineering who has demonstrated outstanding contributions to the Faculty in the promotion of extra-curricular activities, including, but not limited to: Intramural Athletics, promotion of Engineering Society and Sandford Fleming Foundation events, competitions, etc., and for the support of associations, both on and off campus.

Nominations for the Memorial Leadership Award can originate from student groups, faculty members, or other individuals. A Letter of Nomination and Letters of Support from colleagues, faculty, and others familiar with the nominee's accomplishments are extremely important and form the major basis upon which the Executive Committee of the Sandford Fleming Foundation will form its decision. Nominations must be submitted to the Foundation by August 31, 2015 and/or before the last day of the student's 3A term.

The Memorial Leadership Award consists of a Certificate plus a citation, and an honorarium of \$1,000.

Nominations Must be Submitted to SFF Office Manager by August 31, 2015

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

Meet the Waterloo Submarine Racing Team

ANA KRSTANOVIC
WATSUB TEAM

Did you know there is a new student design team? It is the Waterloo Submarine Racing Team! The challenge is to build

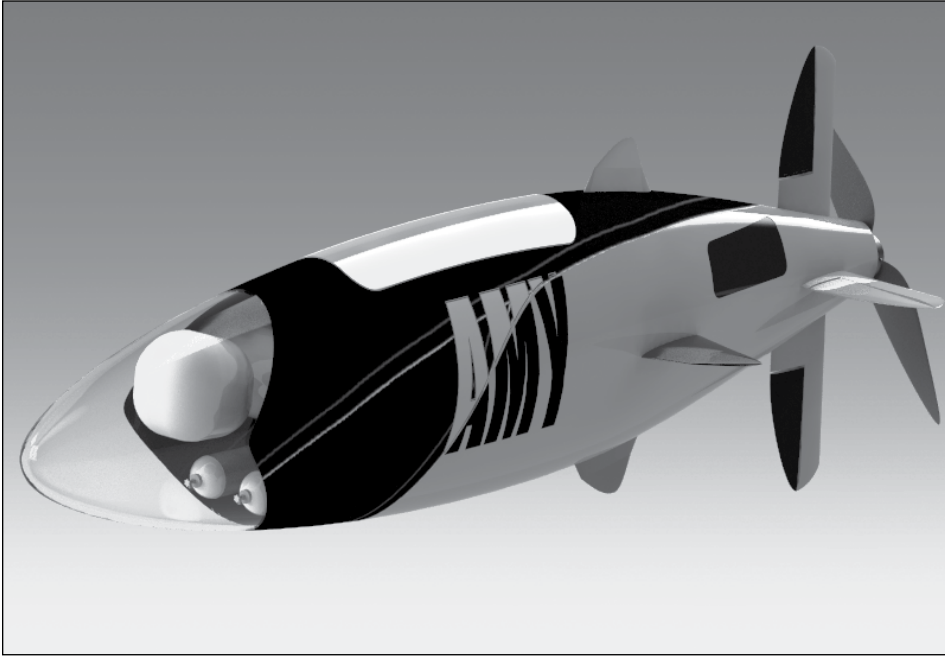
a human-powered submarine and race it in international competitions. However, it is not that simple—everything is, of course, underwater. This means having to think outside the box to make it work, since many little details play a big role:

buoyancy control, materials, exhausted air management, electronics, etc. This is what makes it so thrilling, as you get experience in the completely unique field that is marine engineering.

WatSub started last February; a small idea that two students had last fall quickly became reality as the recruitment for the team started. Today WatSub is approaching its manufacturing phase, but in order to have a better idea on what to expect—and to build—the team decided to visit Maryland, USA. Every two years the International Submarine Races (ISR) takes place at the Carderock Division of the Naval Surface Warfare Center, a US Navy base in Maryland. The team went to observe and get a glimpse of what a submarine race is like. Innovative designs from highly recognized universities around the globe were present, and our team got to meet with most of the competing teams. Some of them were first timers, while others were experts, but all of them shared their experiences. This valuable trip where the team got to see the world record being broken brought home the hopes of WatSub's submarine being the one to break it next time. But it also brought more motivation and knowledge.

What are the team's plans? The goal is to build a submarine called AMY, named after Amy Van Dyken, a Olympic swimmer and gold medalist, for next year's competition in the UK. This is the European International Submarine Racing (eISR). The team already started to get ready by getting diving classes, as for the competition it is essential to have licensed divers helping out with the submarine setup underwater, and of course the pilot is the most important underwater figure.

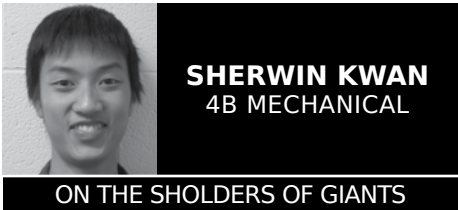
WatSub is divided into four sub-teams: Propulsion, Hull, Life Support Systems, and Business. No matter what program or faculty, there is a place for you in the team, to experience and learn completely new things, to put in practice what you learned in the classroom, and ultimately, to innovate. If there is anything you are not sure about, the team is there to support you; for example, the team offered a SolidWorks workshop for members that wanted to learn how to use it. WatSub is about innovation, especially by having the opportunity to build something new from scratch: a submarine, a team. Are you ready to dive into this underwater challenge?



WatSub Team

WatSub hopes to have its design, AMY, compete in the UK next year.

Alan Turing: Father of Computer Science



SHERWIN KWAN
4B MECHANICAL

ON THE SHOULDERS OF GIANTS

(Well, it appears that my declaration of the end of OTSOG was premature, after all ...)

The subject of this article was someone who faced hostility from his society for the wrong reasons. Alan Turing was born in London (the original one, not the city in SW Ontario) in 1912. His father and his mother's family were both involved in the civil service in colonial India. As his parents were not that wealthy, he was educated in public school. Growing up, he liked doing experiments and reading science books. He impressed his math teacher by deriving the Taylor series for the arctangent without being taught it, and started reading Einstein's works in his spare time.

Turing was accepted into the University of Cambridge in 1931 to study math. He graduated in 1935 and was awarded the Smith's Prize for a paper on the central limit theorem, proving that if you randomly sample N data points out of a distribution and average them, and repeat enough times, the distribution of the resulting averages will be a normal distribution.

Now the German mathematician David Hilbert had recently proposed the decision problem: does an algorithm exist which can prove whether any given mathematical statement is true or false? In 1936, Turing and the American Alonzo Church independently proved that no, not all mathematical problems

are solvable. However, they also proposed that a "universal computing machine" could theoretically exist which would be capable of solving every math problem that can be solved. Although this theory (the Church-Turing thesis) has never been proven, so far all the evidence points in its favour; we have not found any machines which can solve more problems than Turing's universal machine.

After this, Church accepted Turing as a grad student at Princeton University. While there, he began attempting to build a universal computing machine. However, world events soon intervened, and it is this aspect of his life that Turing is best known for. In 1939, when war broke out, the British government requested that Turing work for their Code and Cypher School in Bletchley Park, to help crack German codes.

The German ciphering machine, Enigma, had a known design which was not secret. Turing and his partner Gordon Welchman exploited a weakness of Enigma in which an educated guess could be made at the content of particular messages - for instance, the Germans sent out weather forecasts to all their ships every morning. Maybe the word "XTQRNT" really meant "CLOUDY". They designed a machine to calculate, after a guess was entered, whether or not a "guessed" ciphering of a known word was possible given the known constraints of the Enigma machine.

In October 1942, the capture of a U-boat in the Mediterranean with its Enigma settings intact led to the decisive breakthrough. This, along with the entry of the USA into the war (which meant that the codebreakers were able

to get deciphering machines in much greater quantity from US manufacturers), meant that by mid-1943, German naval messages could be read almost in real time.

After the war, Turing was hired by the University of Manchester as a professor, where he began a design for a universal computing machine. The result of this was the Manchester Mark 1, completed in 1949.

In 1952, Turing had his home was broken into while sleeping with another man. Homosexual acts were still a crime in the UK then, and he therefore faced charges. He was convicted and forced to take hormone injections to "reduce libido", and was barred from working for the government's codebreaking units for life. Crushed by the verdict, Turing committed suicide by taking cyanide in 1954. It took until 2013 for the British government, recognizing its cruel treatment of Turing, to apologize and issue a pardon.

Turing's work in mathematics has left a significant legacy. His universal computing machines (which are often referred to as "Turing-complete" machines in his honour) would eventually evolve into the computers we have today.



Turing made massive contributions to the Allied war effort as a code breaker.



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Trump's Curious Candidacy



MEAGAN CARDNO
3A NANOTECHNOLOGY

Donald Trump, the billionaire tycoon who I assume needs no further introduction, has been putting on quite the show for the world in these past few weeks. Within nearly the same breath as he announced his candidacy for presidency, seeking to be nominated under the Republican Party, he made very aggressive comments concerning illegal immigrants, particularly from Mexico, equating them to drug dealers, rapists, and such criminals stereotypes. Oh but don't worry, Trump made sure to clarify by saying "And some, I assume, are good people."

Of course, it is only expected that these comments were met very poorly by many notable people and corporations. Many companies who previously affiliated themselves with Trump and his business endeavours were quick to cut any strings they had associating themselves with him. Among these companies are ESPN, Macy's, NASCAR, and NBC. Unsurprisingly, several entrants of the Trump-run Miss Universe Pageant, including the representatives from Mexico, Panama, and Costa Rica, announced that they would no longer be attending or competing.

Out of the dozen or so potential Republican candidates, what makes Trump so special? Well, first off, he's Donald Trump. Celebrities, even (or especially) disliked ones, attract media attention almost magnetically. Folks can't help but pay attention to what the celebrities are up to—it's part of the reason why I am writing this article in the

first place. Is all publicity good publicity? If your last name is Kardashian, maybe. As Presidential candidate... not so much. Throwing out controversial opinions that alienate a significant percentage of potential voters isn't generally recommended, and so many critics are, well, critical of Trump's brashness about this very polarizing opinion.

Fortunately for Trump, his blunt manner of speaking and forthrightness can seem refreshing to voters when compared to the normal roundabout speech of politicians. For the citizens who dislike politics and how they operate, Trump might appear to be the lesser of many evils—that is, to say, the least 'political' of the politicians. He speaks his truths with little care for how they are perceived, and frustrated citizens can appreciate the no-nonsense, git-er-done personality he has developed for himself over the years—but even the most realistic painting of fruit can't be eaten.

Numerous critics and news sources have pointed out Trump's rather sudden change of opinion polarity on numerous political points compared to his previous declaration of intent for candidacy back in the early 2000s. Where once he spoke in favour of universal health care, abortion clinics, and taxation of high-income corporations (all reminiscent of a democrat's viewpoint), he now expresses distaste at Obama care, labels himself as 'pro-life,' and comments on how nobody likes higher taxes (all the opinions of a typical republican point of view). Of course, we cannot fault an individual who finds that their opinions changed over the years, but we can ask just how many of these beliefs accurately represent the person, and how many are convenient opinions maintained purely for public image.



Gage Skidmore

Donald Trump is running for the Republican candidacy.

Housing

Continued from page 1

counsellors have recently discussed the need for a potential development grant in the Waterloo Uptown region, similar to one passed in 1999 that exempted developers from certain development charges, with an associated price tag of nearly \$10 million. After the end of the grant's lifespan, residential development dropped by 49 percent, while non-residential development dropped by a massive 96 percent. Without improvements to the Waterloo region, it will be more difficult to encourage potential residents to move and occupy the housing that has been built.

There are also some associated downsides to having a large excess of student housing in Waterloo. Most obviously, when there are fewer students than beds that need to be filled, there are undoubtedly going to be momentary losses for investors. Most at risk are small-property owners and landlords, the people who own and lease their property independently, not as a company.

Consequently, the dominance of housing companies can lead to a far more impersonal experience—everyone has heard or even experienced the horror stories of having your unit's broken sink

ignored for weeks, because you were low down on the repairman's list of emergencies to fix. While of course the competition can mean that only the best in housing companies will thrive, it doesn't mean much if the 'best' company still has low standards of customer service.

Finally, there is also the worry that the majority of housing being built is aimed so specifically at students that it limits the options of housing for families and young professionals. As three- to five-bedroom apartments, typically with one or two bathrooms, a shared kitchen and living areas are almost exclusively for the student demographic, over-saturation of this particular style of housing can limit and define the region's housing market, and deter potential non-student residents due to lack of housing options for their needs.

So, what can we as tenants do to make the best of this situation? Primarily, ensure that our voices as both students and residents of the Waterloo are heard by housing companies and landlords alike, ensuring that our standards are upheld by voicing complaints and changes that need to be made. In a surplus of supply, it becomes the responsibility of the customers to ensure that the best housing services survive.

Volkswagen Worker Dies at the Hands of a Robot



VINCENT MAGAS
2B MANAGEMENT

Volkswagen confirmed a few weeks back that a 21 year old worker was crushed to death by a robot in one of its production plants. The man, whose identity has not yet been released, was an external contractor for Volkswagen. He was installing the robot on one of their assembly lines at a plant near Kassel, Germany. According reports, the man was working on the robot when it grabbed him and pressed him up against a metal plate, crushing the man's chest. The worker died in hospital later on, despite attempts to revive him. A second contractor was also present at the time of the accident and was unharmed by the robot.

Volkswagen spokesman Heiko Hillwig announced that the initial conclusions point to human error as the cause of the accident. Hillwig stated that the robot is programmed to perform various tasks in the assembly process, often operating within a confined area at the plant. Volkswagen stressed that this robot in particular runs within a safety cage, unlike Volkswagen's newer generation of "lightweight" robots which are set up alongside workers on the production line without safety cages.

Robots in the automotive industry widely vary in type and application. The

most common applications are in robotic vision (sensory), collaborative robots such as Volkswagen's aforementioned "lightweight" robots, industrial-worn technology, and various transfer robots. The use of robots on assembly lines and production plants has often eliminated the human factor in what would be repetitive or dangerous tasks.

Given the nature of the accident, the machine in question may be similar to a heavy-duty materials handling robot. Heavy-duty part transfer robots are often capable of lifting anywhere from 900kg to 1300kg (approximately 2000 lbs. – 2800 lbs.). These robots such as FANUC's Automotive Body Transfer robot have full 6-axis articulation, reaching a horizontal stroke of up to 8m (approximately 26ft) and a vertical stroke up to 6m (approximately 20ft). In the automotive industry, part transfer robots are often used for work cell loading and unloading of anything from car closures, chassis or the whole vehicle body; they can also be used for moving pallets or work directly with stamping machines. Often, part transfer robots would be confined within a safety zone or safety fence equipped with emergency stops and fail-safe circuits. Company safety regulations and standards set by government health and safety bodies would be in place to ensure that the robots function safely.

A full investigation is currently in progress at the Volkswagen plant, and no further details have been released.

Lexus Announces Hoverboard



BRIAN CHAN
3A NANOTECHNOLOGY

So remember when you had a dream, a dream where hoverboards existed. It would be the coolest thing that everyone would be using. That idea was conceived when Back to the Future II was released, and time and time again peoples' dreams have been crushed with hoax after hoax. So when Lexus released a teaser video with hoverboard hype, the whole world was more skeptical than excited because the promotional video never showed the board in action.

But never fear! If this is some hoax, then the Lexus's name will be shamed throughout all the corners of the Internet. But if it is true, then every 80s kid will

have their dreams become a reality! According to Lexus, this hoverboard uses magnetic levitation to make the board hover. By using liquid-nitrogen-cooled semiconductors and magnets to allow for frictionless travel, it enables the board to be floating inches above the surface. Lexus stated that they plan to begin testing this device in Carcelona this summer and there is no expected release date of this product to the public. One can expect though that this will be pricey and definitely something that won't be sold at children's stores. Only time will tell whether or not the dreams of every 80s kid can finally be realized or if their hopes will be crushed once again. Hopefully the former though and if not, someone else will find a way. It's not that human's imagination is lacking, but that the technology to achieve our dreams catching up.

From Cowboys, Miners, to Rockers and Hipsters

The Long History of the Denim Jacket



We are back with Hit Replay! Moving away from the 8-bit music and pixel fun of the last few issues, we return this week with something a little more tangible. In this week's issue we're going to talk about one trendy item that has endured everything from the Wild West, back-alley punk bars, and even today's indie coffee scenes. If there is one thing that could survive being worn by Elvis Presley, be featured in Marlboro commercials, and now be sported by countless hipsters, it's the denim jacket or jean jacket.

Not surprisingly, the denim jacket has been around almost as long as jeans have been. The origins of the denim jacket have often been attributed to the Father of jeans himself, Levi Strauss. For those who don't know, Levi Strauss was a German-American businessman and founder of the Levi Strauss & Co. His company, better known as Levi's (which exists until today) was the first company to manufacture and distribute the infamous blue jeans.

The denim jacket appeared sometime around the late 19th century, originally advertised as a working blouse, or working jacket. Levi's "Type I", "Type II", and "Type III" jackets featured pleated fronts, a variance of single or double pockets, leather patches, and cinched backs; a style very similar to what we know today as trucker jackets.

These early versions would find their way to through the turn of the century. The jacket became synonymous to the working class man being a staple item on the ranges and ranches of the mid-west. Shortly after the turn of the century and the introduction of the silver screen, western "cowboy" films solidified the image of the jean jackets and the Wild West. This same cultural image became the basis for countless Marlboro cigarette commercials and ads decades later.

It was in the 50s the jacket gained popularity beyond the working class and entered the world of pop culture. Its pop-culture transition was largely caused by the popularity that followed jeans after James Dean wore a ton of denim in *Rebel Without a Cause*. It was further propelled into stardom when Elvis Presley sported a black variant of the denim jacket in his all too famous *Jailhouse Rock* performance. This rebel-attitude look would forever stamped on the image of the denim jacket. The jacket had continued appearances with popular cult icons such as John Lennon, Robert Plant, Eddie Van Halen, and the Ramones to name a few.

Sometime around the 1980s the jean jacket found its home in a completely different market. The denim jacket caught the attention of major designer label brands, with the likes of Calvin Klein, Diesel, and Guess producing their own versions of the jacket. The 80s saw a revival of the cool-factor that Elvis originally brought to the jean jacket. Pre-washed and pre-faded versions of the jean jacket worked their way into Calvin Klein ads and designer fashion

runways. The denim jacket now catered to a wide variety of people.

Today, we see a revival of the denim jacket, bringing endless possibilities. The 2000s saw a return of retro work wear, and new-found interest in the original "Type I" and "Type II" jackets

of the early 20th century. Running simultaneously with the revival trend, is the re-invention of the denim jacket with avant-garde brands that push it to new heights and designs. Nonetheless, it's not hard to argue that the denim jacket has found itself back from time!



Elvis wore a black denim jacket in the film *Jailhouse Rock*.

WATERLOO ENGINEERING



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Point Vs. Counterpoint

Is a Carbon Tax a Better Carbon-Reduction Incentive than a Cap-And-Trade System?

POINT

SHERWIN KWAN
4B MECHANICAL

In a carbon tax system, the government declares that for every tonne of carbon dioxide you put into the atmosphere, they will collect a certain price. This might be applied on the producer side (taxing oil companies, power plants, etc.) or on the consumer side (taxing the general public at the gas pump, on electric bills, etc.). The revenue collected can then be used either to: a) lower taxes on something else or b) fund research towards less polluting or more environmentally-beneficial energy sources. The theory is that, by raising prices either companies will be motivated to come up with technologies which are better for the environment, or ordinary people will be motivated to make energy-saving decisions.

I believe there are at least four ways in which a carbon tax is a better solution than an emissions permit market.

1) Cost certainty: Companies trying to budget for the future like to know, as much as possible, exactly how much something they must pay will cost. A carbon tax has this advantage; because the government sets the rate in advance, budgeting is simpler than in an emissions market that experience has shown is often volatile. The European Union has been using a cap-and-trade system since 2005 to control greenhouse gas emissions. Prices have been volatile; there was a crash in 2007 in which permits were being traded for next to nothing. Between 2008 and 2013, prices for a certificate for one tonne of carbon dioxide have ranged between €2.75 and €20, a seven-fold difference. Now certainly the Europeans have an unusually volatile market — California's carbon price has been more stable, varying between \$12 and \$19 over the past four years. But no matter what the magnitude, ups and downs in the price are unavoidable.

If you're an electric company and you want to figure out how much the right to send a few thousand tonnes of carbon dioxide into the atmosphere will cost you, a variable price won't be that helpful. A set carbon price at least provides cost certainty, which helps companies make more informed decisions about whether to be more energy-conscious. Especially in Canada where businesses have a risk-averse streak, a tax of known price strikes me as more suitable.

2) (Relative) Simplicity: OK, no tax law will ever be "simple", as anyone who's ever tried to understand the tax code when filing their taxes will know all too well. However, a cap-and-trade system requires an entire system to be set up to monitor exactly how much carbon dioxide businesses are emitting, and a market for the trading of permits, which could potentially be pretty complex or costly. Meanwhile, a carbon tax could be collected using tax agencies which already exist. For this reason, carbon taxes have generally been fairly quick to implement.

3) Broad Coverage: In theory, a cap-and-trade system could cover all emissions. However, due to the complexity of getting every business in the country into the system, governments usually decide it's too much of a hassle and impose the cap only on businesses in certain industries. So in practice, carbon taxes are usually more fair and effective in that all pay their share, instead of just a few industries while leaving businesses in ex-

empted industries to keep emitting.

4) Better use of revenue collected: In a cap-and-trade system where certificates are simply being given away based on how much a company has emitted in the past, the money ends up flowing to businesses which can quickly reduce their emissions, increasing their profit. By contrast, a carbon tax allows the money to go to the government, which then has the option of investing it in "green" technologies or returning the money to consumers. I presume most citizens would rather have the money spent there than being given to companies. (Note: This point does not apply to cap-and-trade systems where certificates are auctioned to the highest bidder. In that case the revenue does go to the government with all the flexibility that the carbon tax provides.)

My counterpart believes that an emissions quota is a market-oriented system. But a tax (changing the price) is no more disruptive to the economy than a quota (changing the quantity). Either way, you're intervening to make the market aware of an externality cost, and I think we agree that such an intervention isn't a bad thing.

A possible unwanted side-effect of a carbon tax is that it is a regressive tax. The poorest also spend the largest chunk of their income on fuels, and thus end up getting the brunt of the impact of a carbon tax. However, this is where the revenue collected by the government becomes an advantage; some of that money can be paid out as credits to subsidize low-income households. In BC, the government actually went further, and after introducing the carbon tax gave all the money back to taxpayers in subsidies and tax cuts, leading to them now having the lowest income taxes on people making less than \$100k a year in the country.

Let me close with a diplomatic note. At the end of the day, the tax system and the quota system both work towards the same goal: reduction of carbon dioxide emissions by changing people's behaviour. Essentially, this is a "friendly" PCP; if you believe, as I do, that such incentives would be good for the future of our planet, this is a debate between good policy and better policy.

MICHAL KONONENKO
2B NANOTECHNOLOGY

In contrast to levying a direct carbon tax on the industry, using tradeable permits as part of a cap-and-trade system is a superior, market-oriented approach to reducing greenhouse gas emissions. Under such a system, the Canadian government would set a hard limit on the amount of CO2 that can be emitted by the economy. This limit is then parceled out into a series of certificates, which are then sold on the open market to anyone willing to buy. Purchasing such a permit would then allow the holder to emit the amount of carbon stated on the certificate. If a company needs to emit more CO2, it then needs to purchase more CO2. If there are CO2 certificates available on the market, they can be bought and sold like any other financial instrument, such as stocks.

The advantages of such a scheme over a carbon tax is that this scheme is market-based, meaning that the price of pollution is set by the supply and demand of the market. In theory, this means that the government setting the pollution cap doesn't have to worry about what the value of the tax should be, only what volume of CO2 certificates should be issued. Setting this limit to a feasibly sustainable amount of CO2 pollution would allow sustainable development in the same way that, for example, chemical exposure limits in the workplace set a concentration to which workers can be exposed on a long-term basis. Since the price is set by the market, the market can adjust the price to take care of changes.

Tradeable permits also open up the possibility of creating a green economy in ways that a carbon tax never could. Rather than using the revenues from a carbon tax to fund environmental restoration efforts, the government could simply authorize private companies working on environmental restoration

COUNTERPOINT

to issue permits based on the amount of carbon they sequestered. With an appropriate amount of oversight, someone could find a company that plants trees, and the company would be allowed to issue permits for, say, one tonne per year of CO2 for every 100 trees planted. The company could then use the funding generated from the sale of these permits to finance their activities.

Lastly, tradeable permits would be a lot easier to internationalize than a carbon tax. Since the CO2 problem is clearly not well-recognized internationally, a globally scalable solution to said problem needs to be found. Since the permits under a cap-and-trade scheme are no different from other financial instruments, there would already be an extensive infrastructure in place to allow international trading of emissions permits.

Economists have found that markets are great at allocating resources, provided that the resources in question are depletable and excludable; that is, they are removed from the economy on consumption, and that a consumer can exclude other consumers from using the resource that he just paid for. While the air is not an excludable resource (unless you're a villain in Spaceballs), pollution can certainly be thought of as depleting the air. A tax on CO2 would certainly disincentivize its emission, but using a tradeable permit scheme, the emission of CO2 could become a commodity. Tradeable permits would serve as a tool to explain the environmental damage of CO2 to Adam Smith's invisible hand, and let it account for the cost of releasing CO2. If there is significant oversight to monitor emissions levels, and there are mechanisms in place for businesses to trade permits on carbon dioxide production, then bargaining will allow the cost of pollution to be quantified, thereby providing incentive to reduce it.

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.

KITCHENER WATERLOO



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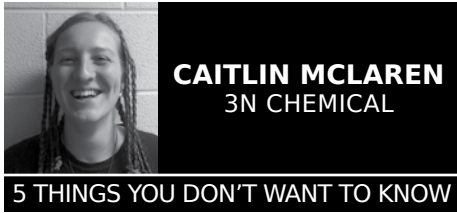
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Animal Lovers Edition



Humans have lived alongside animals for all of history. Dogs are man's best friend. Horses carry our stuff. Cats are our overlords. Many people have a pet today, and everybody loves a cute baby animal.

Our ancestors loved animals too... most of the time. Sometimes things got a little weird. Other times, everything was horrifying.

Irish Kings had a Symbolic Marriage, With a Horse

In ancient times, Ireland wasn't just one country - it was split into many different kingdoms ruled over by different kings. The different regions had their own traditional coronation ceremonies, and some of them were quite odd.

The mediaeval scholar Gerald of Wales wrote that one tribe in the north of Ulster would, when crowning a new king, prepare a white mare. Everybody in the kingdom would gather for the show, popcorn in hand. The king-to-be would then perform a ceremonial mating with the horse, to symbolically become the Lord of Horses. Immediately afterwards, the mare would be killed and boiled in a huge cauldron, bit by bit. When the water cooled, the king would then bathe in the horse soup and eat the horse flesh, while

his people would crowd around the tub and share it with him. The king wasn't allowed to use cutlery either: he would have to drink his bathwater straight from the tub.

I'm not sure what the most horrifying part of this story is, but poor horse.

Giving Birth to Rabbits

In the year 1726, in England, a woman named Mary Toft claimed to have given birth to a rabbit. At the time, it was believed that what a pregnant woman saw could influence the development of the child, so the doctors were not as skeptical as one would imagine. Several doctors examined her, and to their astonishment, she began to produce various body parts of rabbits and cats.

At this point, a few of the doctors were completely convinced, and rushed off to publish reports about her. Some were more sensible, and investigated further.

Of course, it turned out that Toft was obtaining the corpses of various small animals, and shoving them up her vagina. You may recognize this as a horrible idea, and an excellent way to get massive infections and injuries. However, regarding the state of medical science at the time, note the above paragraph.

Toft eventually admitted to her fraud, and was arrested for being a complete lunatic, or, in the legal terminology of the day, being a "vile cheat and impostor." She proceeded to blame her mother-in-law, and was eventually released from prison (after being searched very, very thoroughly).

Ancient Roman Execution Methods

Everyone is familiar with the gladiators of ancient Rome, but the shows were much more varied and... interesting. You won't see all of the variety acts in movies, though.

Public execution of criminals was a very, very popular form of entertainment. Being killed by wild beasts was always amusing to the crowd, and for maximum entertainment, why don't we watch a female prisoner get "sentenced" to death by Zeus himself, represented by a bull?

The Roman beastmasters had specially trained animals to attack prisoners in - let's just say different ways. Sometimes, when the animals were carnivores, they would be permitted to eat them afterwards.

If this had happened to the baddie at the end of Gladiator... well, seeing Commodus getting felt up by a porcupine would have been highly satisfying, but would probably have obliterated the film's gravitas.

Egyptians Made Animal Mummies

Egypt's mummies are famous, but they didn't just mummify people. Millions of animals were mummified, either as pets buried with their owners or as offerings to the gods. It seems that originally bronze statues were the preferred offering, but animals were cheaper.

As time went on, a huge breeding program started, wherein animals such as cats were bred specifically to be

strangled and mummified. It seems that the Egyptians weren't afraid of curses at all.

As the demand for cat mummies grew, Egyptian priests didn't have time to make good quality mummies any more and started filling the cases with random cat body parts. More expensive mummies were very elaborate: for example, a rich person could fill a hollow statue of a cat with kitten fetuses to please the gods.

However, there is a plot twist - recent scans show that about a third of animal mummies don't contain any animal. There are three possibilities: the priests were defrauding their customers; the ancient Egyptians thought that their gods weren't very bright; or, the mummies have escaped their wrappings and are currently right behind you.

Animal Gods and Their Eccentricities

Most ancient cultures (and by "most," I mean "every, and that includes your great-....-great grandma") venerated animal gods. Some of these were fairly quirky, which says a great deal more about their human subjects than about the animals themselves.

For example, the ancient Egyptians venerated the Apis bull, which was an actual bull. Supposedly, it gained power by being flashed.

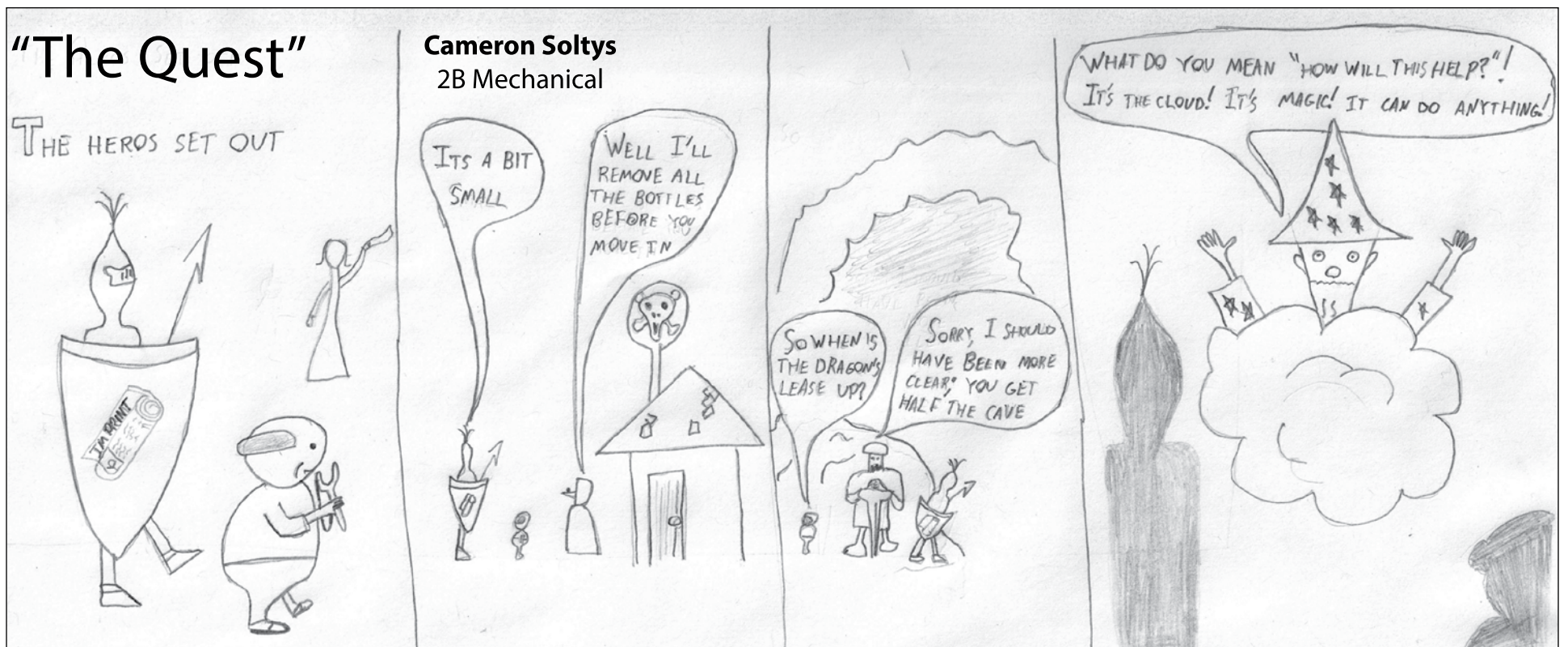
The Romans constantly mocked Egyptians for these silly beliefs. Much more sensibly, they believed in satyrs and fauns (half-man, half-goat), who were constantly chasing human women. During the Lupercalia, or wolf-festival, Roman youths would run about, nude except for goatskins, whipping everybody in sight. Women would line up purposely to get whipped, not for Fifty Shades-related reasons, but because they believed that this would prevent them from experiencing a difficult childbirth.

The ancient Finns believed that they were descended from a human woman and a bear, and as a result, women should avoid associating with bear hunters after a kill, because that would be sad! When bears were killed, their mortal remains would be worshipped, and be the star guests at a dinner party. The diners would sing songs, attempting to convince the bear that the death was an accident. Then, they would hang the skull on a tree, and save the teeth and the windpipe for good luck.

Whoever you are, and whatever your pet is, you come from a long line of people who had complex relationships with animals.



An apparently tame depiction of a gladiatorial event.



Pretty-Decent Breakfast Pancakes



Hello friends, welcome back to Cooking with Cam, the column where I teach you to make gourmet meals on a student budget. This time, I bring you a delicious and surprisingly robust recipe for Canada's favourite breakfast item, maple-syrup covered pancakes. They're delicious because who doesn't love maple syrup, and I know they're robust because of the semi-chaotic experimentation I do to the recipe every time I make them.

As always, my three golden rules remain active: every part of a meal can and should be substituted instead of bought, from the "secret ingredient" to the "primary constituent"; if what went into it was edible, what comes out can also be made edible; and measuring cups are a tool invented by the supreme corporate oligarchy to suppress creativity.

Baking is a very challenging form of cooking, and should only be undertaken by confident chefs-in-training who can consistently make excellent meals while adhering perfectly to the golden rules. I recommend that such individuals making their first foray into the field of baking take the time to pre-assess their ingredient stores, and perhaps consult a recipe. In this first attempt, it is encouraged that one make use of traditional-format recipes, using them to get an idea of the approximate proportions of each ingredient. It is important, however, to quickly leave this stage before the ingredient lists become a crutch.

As a seasoned chef, I have no such need of recipes, so I headed straight to the kitchen

intent on making what I believe some sorely-misguided people refer to as "flapjacks." To start, I rummaged through my pantry to find items that would be suitable for inclusion in my breakfast. Since baking, unlike cooking, occurs in two distinct steps of mixing and heating, it is strongly advisable that you try and get all the ingredients out ahead of time, though if you forget, the meal will of course still be salvageable. My search yielded me the following materials: all-purpose flour, vanilla extract, cinnamon, baking soda, white vinegar, egg, butter, salt, and sugar.

Next, I got my largest bowl and began to add the dry ingredients. I wanted to make enough pancakes to last for two days, so I started with about three avalanches of flour out of the container; it seemed to be around twice as much flour as I would comfortably admit to eating in a single sitting. I shook some sugar on top of that. As the two were the same colour, I could not accurately keep track of how much sugar had been added, so I just decided on six seconds of moderate shaking. The cinnamon came next, to offer some contrast allowing me to track my other cocaine-mimicking ingredients. I added only a small amount of salt, since baking soda itself tastes salty, and less baking soda than you might expect since baking soda, being pure, is much more potent than magic baking powder. I used a spoon to mix all the ingredients until the cinnamon was uniformly dispersed.

I stowed my dry ingredients, then went to work on the wet. My first attention was on the butter, fresh out of the fridge. I decided that it would be better melted — chopping it would lead to flakey pancakes — so I put it in a small bowl under a paper towel in the microwave. It was at this time I remembered that pancakes needed to be cooked, so I put a



Kanko from Nagasaki, Japan

Pancakes are the most delicious thing you can have in the morning.

pan on the stovetop at medium heat.

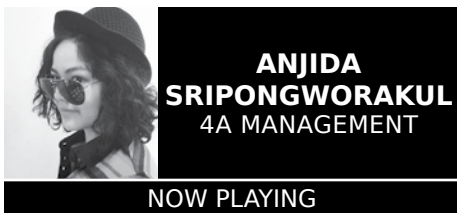
Into my main bowl went two eggs, a splash of vanilla extract, and two splashes of vinegar. It became immediately clear to me that I needed substantially more wet ingredients, so I got some milk from the fridge. After adding the milk, I stirred it all up and found that there was still some dry flour when I scraped the sides of the bowl. Two more additions of milk (less each time) resulted in a batter that I would describe as "like pancake batter," which is an amazingly convenient metric to use when making pancakes. Next I needed to batter the pan, so I went in search of the paper towel I had used to cover the butter as it generally still has useable butter on it. I found the paper towel still in the microwave with

the now-liquid butter. After adding the butter to the batter and remixing, I wiped first the butter bowl and then the pan with the paper towel.

Cooking the pancakes is easy, so I won't bother with that part. Instead, I have a brief recipe for making syrup since, have you ever looked? Stuff is crazy-expensive. Instead of wasting good money on what is essentially tree-blood, specifically the tree-blood that has been stagnant in the tree's feet all winter, put sugar, water, and vanilla extract into a pot. Put the pot on high and keep it uncovered. Whenever a batch of pancakes are done, put them on a plate and pour part of the contents of your pot on top. Voila! Easy pancakes with syrup.

Deutschland 83

Cold War Spy 101



Germany, 1983. A country divided, and a boy torn apart: his heart in the Socialist East; his duty in the Capitalist West.

24-year-old Martin Rauch (Jonas Nay), an East Germany border guard, woke up in the West to discover he was to be a spy, a worm planted by the Stasi—the East German secret organization—within a West German military unit to gather intelligence on the West Germany-United States communication.

"The West is on the offense," declared Lenora (Maria Schrader), Martin's aunt, a high ranking Stasi officer responsible for his recruitment. Martin was to become Moritz Stamm, a first lieutenant and aide-de-camp (personal assistant) to General Edel (Ulrich Noethen), a close contact of a top American General.

He refused, naturally, and Lenora countered with an offer to ensure his sick mother gets a position on an organ transplant waiting list, an offer which grounded Martin back to base—a West German one. What followed was Martin acting his way through a series of missions as Moritz, while using the 80s state-of-the-art spy gadgets (tiny cameras and floppy disks, anyone?) to deliver confidential information to the East.

Deutschland 83 seamlessly weaves in a cast of colorful, conflicting characters, each with their own intricate backstories relating to the historical backdrop, into the main espionage plot. Though the tone is supposedly solemn, as the Cold War

tension tightened between East and West Germany, ironic, dark humor and surprisingly light moments are peppered throughout the episodes. Seeing West Germany through Martin's East German eyes has never been more entertaining. The rookie spy is baffled by the West's luxuries, finding telephones and Western etiquette foreign. There is a single scene in episode two which I particularly enjoyed, almost an emotional peak of the episode.

The eight-part miniseries is currently airing on Sundance TV, all in its native German, with subtitles provided, establishing it as the first German-produced, written, and, directed television series to be airing on a United States network. Though some scenes have strange editing and direction, the dialogues are cleverly written, the plot solid, and the show's gorgeous costume and set design truly transports the audience back to the 80's. The soundtrack, both the original score and the song selection (from David Bowie to Duran Duran), serve as perfect backdrops to scenes, capturing the characters' intensity and emotions, and involving the audience into Martin's mission-of-the-week.

The rookie spy tries his best, but circumstances outside his control, other characters' meddling (intentional and unintentional) in Martin's life, and certain pieces of information kept from him by his aunt turn each mission into another adventure, another knot he has to untie, at whatever cost. To survive, Martin must risk his life, lives of others he cares about, and even those he loves most.

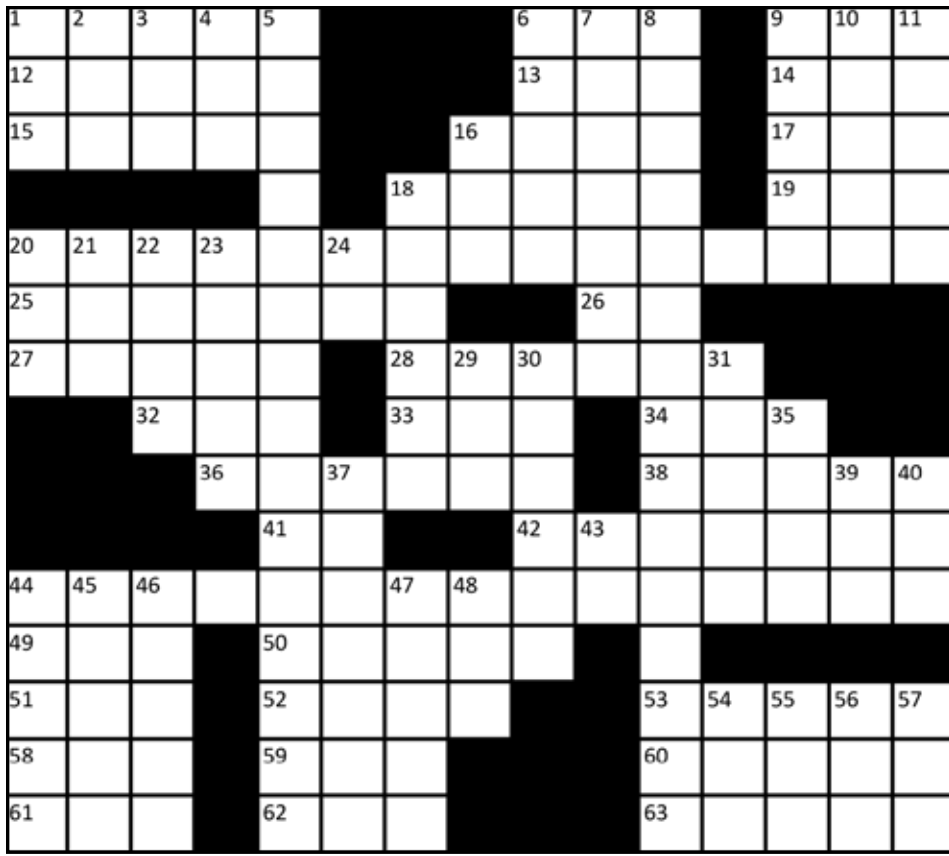
If you're looking for a Cold War drama in the style of *The Americans*, but served with a 1980s twist as a coming-of-age thriller, be sure to check out *Deutschland 83*. I promise you won't be disappointed.



The Iron Crossword

Gods

CAMERON SOLTYS
2B MECHANICAL



Across

- 1: An all-powerful creator-being
- 6: Onomatopoeia for a light tap, particularly to the head
- 9: Korean auto company that started out making bicycles
- 12: Greek name for self-sacrificial love
- 13: German title for the father of 24-down
- 14: The most populous of the governmental-zones within 41-across (abbr)
- 15: Uses the major and minor keys
- 16: A spicy Nigerian goat-meat dish
- 17: Producer of the Speed Wagon light truck
- 18: Italian for apology
- 19: A measure of ability in e-sports (abbr)
- 20: Rules given on Mount Sinai
- 25: You should not feed ____ after midnight (2 wd, one of them an article)
- 26: Video game maker famous for their sports games (abbr)
- 27: A Mediterranean tree who's fruit can be used in lieu of cocoa powder
- 28: Herbal remedies in the form of solutions
- 32: An instruction that can be given by a sick patient to not prolong their life (abbr)
- 33: An instruction a high-school math teacher

- can give to halve the homework (abbr)
- 34: An umbrella term for disorders that affect how the brain processes sound (abbr)
- 36: American guitar manufacturer that built the Les Paul
- 38: The first one signified the birth of Jesus
- 41: The country 14-across is within (abbr)
- 42: Sent using an electronic communication
- 44: An insurrection caused by the first tax imposed by the US on a domestic product
- 49: An association that represents Canadian railway questions (abbr)
- 50: With plenty of space
- 51: A variant of a popular card game that uses 100 unique cards
- 52: Moving ____ (2 wd)
- 53: "I am the alpha and the ____"
- 58: Thomas A. Anderson's more famous name
- 59: German appliance manufacturer with the slogan "Perfekt in Form und Funktion"
- 60: Greek god of the south wind
- 61: Prefaced by U, an ex-superpower (abbr)
- 62: Acronym for a television show that teaches children spanish
- 63: According to Douglas Adams, "an utterly

insignificant... planet"

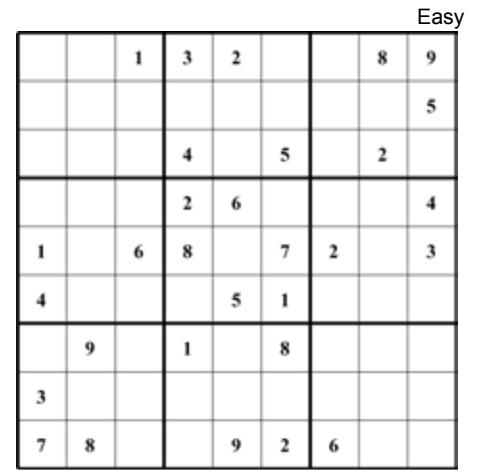
Down

- 1: File extension commonly used to contain generic data
- 2: "L'eggo my ____"
- 3: *Being* ____ kids television show
- 4: Clot-dissolving enzyme that is given to stroke victims (abbr)
- 5: What you must follow to get home
- 6: Senior crewman of the deck department on a ship
- 7: Christian institution that teaches ordinary life is a path to sanctity
- 8: Now disestablished US territory that surrounded a canal
- 9: Holy book of the followers of Muhammad
- 10: Not capable
- 11: Incorrectly named by ancient Greeks as "indivisible"
- 16: Another name for Obamacare (abbr)
- 18: What gods can do to you, preferably through massive electric discharge
- 20: ____ Nuke, a popular super-weapon in some video games
- 21: Japanese wishing plaques
- 22: Direction opposite sud
- 23: A circular metal instrument that sounds at 261.6 Hz
- 24: Informal name for daughter of 24-down
- 29: A magical land inhabited by numerous princesses and a lustful king
- 30: If you stand alone, there are ____ you (2 wd)
- 31: Go bad
- 35: A store that serves fresh and fine foods
- 37: In retrospect, a weapon that was ill-suited for the Great War
- 39: Constellation resembling a cat
- 40: Infrequent short form for Sudan
- 43: Along with myself and I
- 44: Small brown birds with beautiful songs
- 45: Greek god of the underworld
- 46: Fluid used by immortals in lieu of blood
- 47: Makeup designed to emphasize the cheeks
- 48: A physical phenomenon that can apparently disrupt a casino's electrical systems
- 54: Extinct flightless birds of New Zealand
- 55: The abbreviation appended on to a particular Ontario highway because it is a toll road
- 56: The pair of long digestive tubes in the human body
- 57: Emanating from a volcano, potentially riding on a Entei

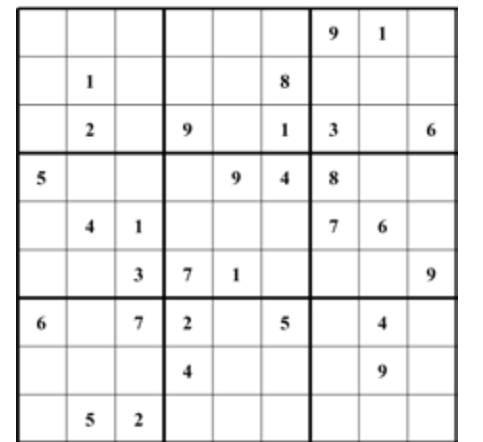
Sudoku

#2015-08

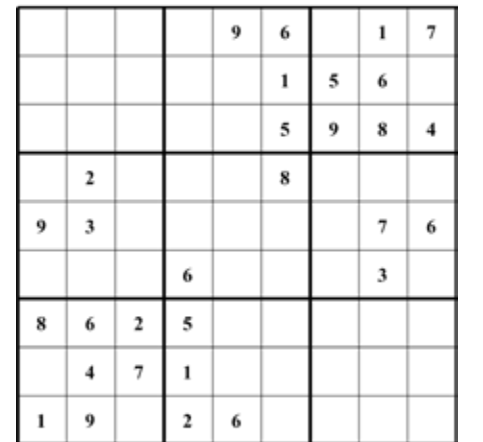
CAMERON SOLTYS
2B MECHANICAL



Easy



Medium



Hard

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

THE IRON INQUISITION
Jessica Keung, 2B Civil and Vince Magas, 2B Management

"Where would you put the Imprint office?"



"MC"
Tulin Akdogan, 2B Management



"Heaven"
Peter, 4a Chemical



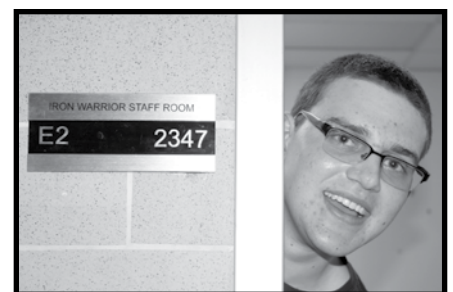
"In the flames of hell!! jk"
Joe Dykstra, 3A Mechatronics



"FEDS main office"
Abdullah Barakat, 2B Mechanical



"Why not Phil's?"
Vince Magas, 2B Management



"I recommend the Iron Warrior Office, E2-2347, where we have meetings every Tuesday at 6:30 PM and all are welcome."
Cameron Soltys, 2B Mechanical