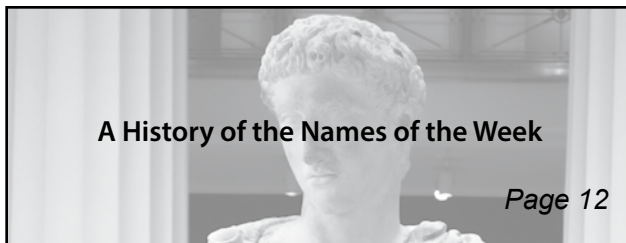


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# THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY

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## Poorly Preserved Bones Hide Soft Tissue Fossils



ScottRobertAnselmo

The new finding raises the possibility of finding a multitude of previously rare soft tissue samples in existing collections.



LISA BROCK  
3A MECHANICAL

When you think of dinosaurs, perhaps the dynamic images of Jurassic Park come to mind, or maybe visits to the museum to admire dinosaur skeletons and other fossils. What you may not realize is that these skeletons are more than just rocks of fossilized bones – they can contain preserved soft tissues such as muscle tendons and connective tissue.

A study at the Imperial College in London led by Sergio Bertazzo and Susannah Maidment has found what appears to be collagen protein fibers and red blood cells preserved in 75-million year old dinosaur specimens. The study is particularly interesting because the fossils used were poorly preserved and had no external sign that the soft tissues would be found. Harder material like bone is

more easily preserved, so usually soft tissue is found in only the best-preserved samples. This could mean that soft tissue preservation is more widespread in fossils than previously believed. Bertazzo and Maidment are co-authors for a paper published June 9th in Nature Communications detailing the results of the study.

Cretaceous dinosaur bone samples from the collection of the Natural History Museum in London were examined using methods of advanced material characterization, such as secondary ion mass spectrometry. Six of the eight specimens were from the Dinosaur Park Formation, a major geological unit in Southern Alberta. The fossils included a theropod claw, chasmosaurus rib, hadrosaur toe, ankle bones and other fragments, the toe of a horned dinosaur, and a rib of an unidentified dinosaur.

Through the use of scanning and transmission electron microscopes, the researchers saw that instead of bone crystallites, there were structures consistent in appearance to collagen fiber remains and presumed red

blood cell remains. The samples then underwent time-of-flight secondary ion mass spectrometry (ToF SIMS), which focuses a beam of ions onto a sample surface producing secondary ions, which are then analyzed for information about the molecules and elements present on that surface. The results revealed amino-acid fragments typical of collagen. Also, the mass spectra results for the suspected red blood cells were similar to that of emu whole blood, and birds are commonly thought to be a descendant of dinosaurs.

The examination of these soft tissues can provide clues about the relations between types of dinosaurs and their evolution, as well as additional information about their physiology and behaviour.

For individual vertebrate groups, the smaller the red blood cell, the faster the metabolic rate, meaning that animals with fast metabolic rates tend to be warm blooded, and those with slower rates tend to be cold blooded. However, it is unknown whether this relationship holds true for dinosaurs. A larger sample size

of blood cells from a variety of dinosaur species could help answer this question and provide clues about the lifestyles these dinosaurs had. If they were cold-blooded they may have acted slow and reptile-like, but if they were warm-blooded, they could have been more bird-like.

Examination of the collagen protein can be done via collagen fingerprinting, which is based on the idea that its molecule structure is unique to different animals. Similarities in collagen structure could help differentiate between closely related dinosaurs and distant relatives. This would provide more information regarding dinosaur relatedness and family trees.

The research team says that further research is required to confirm what it is that they are imaging. However, the ability to find these structures in fossils that have not been exceptionally preserved could pave the way for further biochemical and cellular investigations, leading to more insight into how these creatures lived and evolved.

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# Why I Love the Traditions



**CAMERON SOLTYS**  
EDITOR-IN-CHIEF

Welcome back everyone. This is what I call the week of regret. Why? Two reasons. Firstly, Hell Week is over, so it's time to regret all the time you spent not studying for hard midterms, or maybe the time you spent studying for the easy ones. Secondly, the Steam Summer Sale is over, so it's time go through all your receipts and cry about how much all those purchases added up, a fantastic example of how numerous infinitesimal values can add to a real result. But take heart! Now you have enough video games to last you through till Christmas, and if midterms didn't go well, most of your mark is still locked into how well you do during the final!

During the hard times—for instance, midterm season—it's important that we are thankful for those who support us. I know I have a lot to be thankful for. For instance, all of my copy editors who spent what was supposed to be their weekend of recuperation after Hell Week emptying the ever-filling bucket of unedited articles. I'm particularly thankful for Michal and Sherwin who showed up to keep me company on the long hard days of layout. And also to my writers, who similarly sacrificed their precious study time to bring us all the the stories in this issue. The important stories, the funny stories, the interesting stories, and the downright horrifying stories. In particular, I found Brigita's article "Don't Forget the T" (page 9) about Caitlyn (formerly Bruce) Jenner's gender transition to be informative on the topic of trans\* acceptance. Brian's piece about drones used to proctor exams (page 15) raises some important questions about the emphasis we put on standardized tests. Allen's report on Apple's Worldwide Developer Conference (page 6) lets us peer a bit into what the future of music will look like. And finally, be sure to check out the EngSoc page (page 10) for all sorts of important information, including the results of the A-Soc Executive elections.

A few weeks ago I went to TalEng. I know that many of you were there, and I'd like to thank all the performers who kept us captivated and pumped up throughout the night. Before this semester, I didn't go out to events or parties very much; there was always something more important to do, specifically, homework. This semester is different. Thankfully, I have a very light course load that requires little work, and I have a newfound awareness of everything that is happening on campus from filling out the EngSoc calendar on the EngSoc page of this publication.

What can I say about getting out to events? Probably not much that most of you don't already know. Each one is tons of fun. The enthusiasm and excitement of dozens of peers is infectious. At TalEng, I got so caught up in the moment I found myself cheering and applauding instinctively to the "cheer" and "applaud" signs the Tool Bearers held up. It's also a chance to let out a little bit of the craziness that has been pent up over the endless hours of toil: get up on the TalEng stage and sing your best karaoke, go to the Toronto Pride Parade and cheer your lungs out on busy streets where that would usually be frowned upon. In other words, get out and do something that you normally wouldn't be comfortable with doing, but get to enjoy on this one day.

I think most engineering traditions started in the way I just said: people going out and making a celebration out of doing something odd. Those with eidetic memory among you might remember that two semesters ago, I had a column called "Engineering Traditions" in which I purported to introduce you to the traditions of engineering faculties from around the world, but ended up being exclusive to Canada and the US. The reason I wrote that column is that I though the traditions were kinda cool and interesting, though I didn't know why. I think I know now.

I love the traditions because they build community, not only amongst those who perform them together, but between all the groups which perform them through the years. As someone who is neither good at or comfortable with small-talk and building rapport, it is comforting and encouraging to know that there are people from all walks of life that share in the traditions I share in. Purpling, wearing expensive leather jackets, trolling through piles of problem sets the day before an exam, and going to parades are all you need to break the ice and get to the real conversation; the more powerful shared interests.

Another reason I love traditions is that they are an excuse to go a little mad. Now there are all sorts of instances where it really isn't appropriate to go with the flow and do as everyone else is. But when partaking in happy, fun-for-all events, it pays to follow gleefully into whatever ridiculous thing is happening. And many of our traditions are ridiculous if you stand back and look at them (which I don't recommend doing often or for extended periods of time, lest all the magic dissipate). "Let's worship and revere an inanimate hunk of chrome-plated steel. It's so important to us that we have it under constant guard because there are people who would actually steal it if they got the chance." "Let's put rings on our fingers which are specifically designed to be annoying and get in the way when we are working." "Let's all dye ourselves bright purple with an agent that takes a

long time to come out, so we look terrifying on day one, and sickly and bruised for the next few weeks." They are all ridiculous. They are all things that you ordinarily should be discouraged to do. But you get to, because they are cherished traditions.

This issue is our Canada Day issue, so it wouldn't be appropriate to end without some comments on our Canadian Traditions. Depending on your perspective, Canada can be anything from an OK to a wonderful country to be a part of. There are all sorts of political issues ongoing, like Bill C-51 and Bill C-24. So you may like or abhor the government and the political system. But you can still be proud of the nation; be proud of its people and its rich history even if it can be unpleasant (as with the Native Residential Schools that Sherwin wrote about last issue).

Why is it important to celebrate Canadian traditions and get a little Nationalistic on Canada day? The first reason is that just as with the engineering traditions, they help foster a sense of community in a wide and diverse country. Canada, my grade-school history teachers told me, is a nation based on immigrants. A quick look a Wikipedia shows that in 2013 Canada was number 8 in terms of amount of the world-wide immigrant population that lived in each country, making what I'd say is a fair case in support of that claim. And of course, the vast majority of Canada's population came from somewhere sometime in the last 500 years, often in mass-migrations that caused non-uniform distribution of the incoming citizens, and thus different internal communities that are somewhat isolated. So how do we all come together? How do we find our common ground for national discourse and community? With traditions. With traditions like celebrating the maple leaf or the Canadarm, and equating "coffee-shop" with "Tim Hortons" unless otherwise specified. With all the traditions that can be passed from generation to generation, community to community, celebrated differently with unique twists, but celebrated in unison nevertheless.

Now, some might find it unreasonable or unfitting to ignore politics as I asked you to at the beginning, in order to be nationalistic and celebrate Canada day. But even if you won't or can't, I encourage you to celebrate the country; if you want to change the nation, if you want to improve something, or start a grassroots movement to make the country better, you need people who care. You need people who have really considered if they are proud to be Canadian and what they think that means. You need to be able to find some common ground to talk to all the people in the country to make a country-wide motion, and where better to start than with the traditions we share?

## 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.

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Send your submissions to [iwarrior@uwaterloo.ca](mailto:iwarrior@uwaterloo.ca)

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# China's Second Great Wall: Part 2

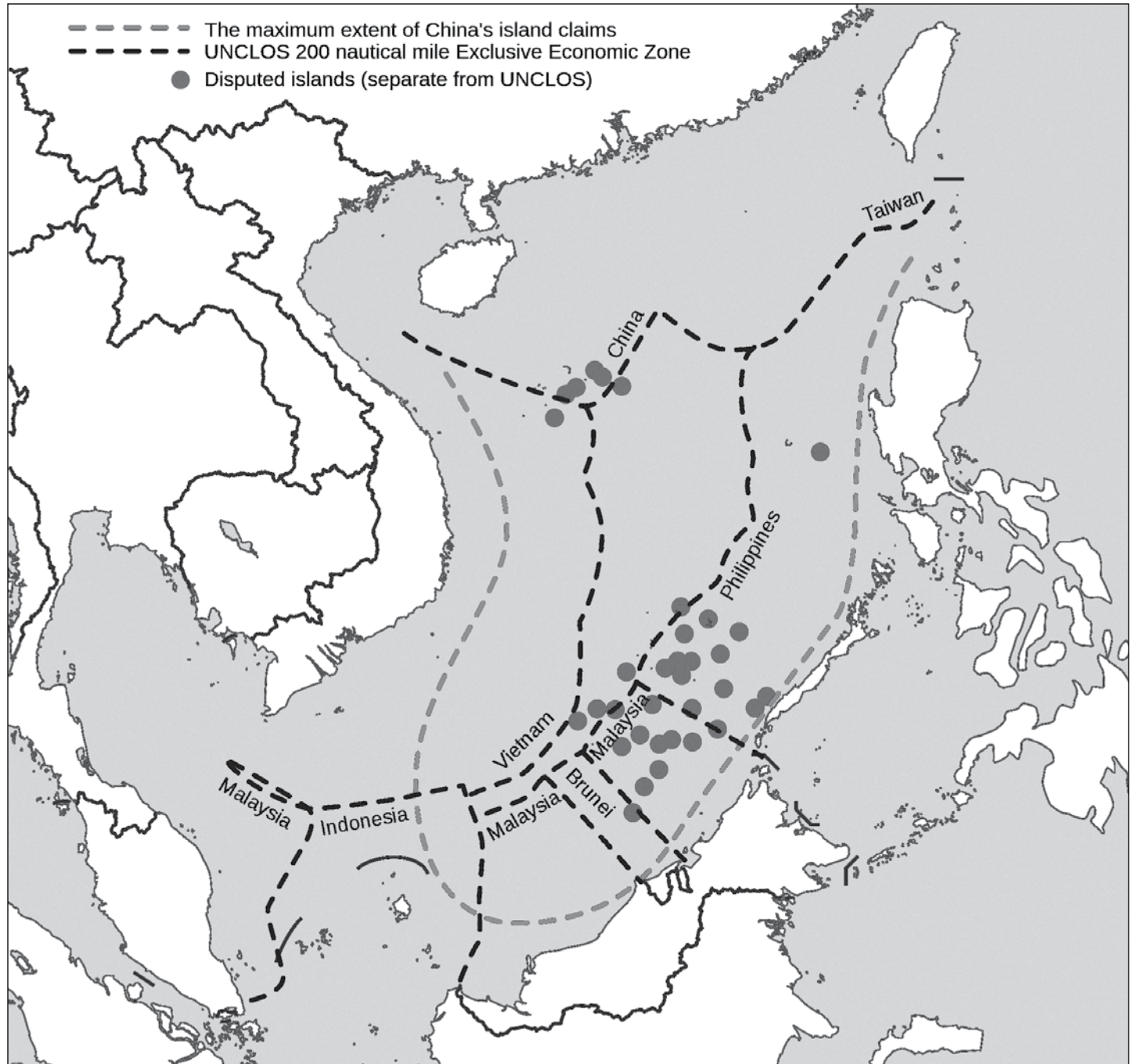


**VINCENT MAGAS**  
2B MANAGEMENT

Following the progress on China's Territorial expansion on the Spratly Islands located on international waters along the South China Sea, West Philippine Sea and Southern Vietnam, more developments have unfolded within the last month. In our last article, we reported the growing man-made islands which came to life in 2014. Construction was initially noted when dredging of sand and dirt was done around the natural Spratly islands, disturbing more than hundreds of acres of coral reefs. The land reclamation project as China calls it, now boasts a total of 7 man-made islands, the largest being a monumental 4 square kilometers spanning over what used to be coral reefs. The project has caused tension between bordering countries, including Vietnam, Malaysia, and the Philippines. Nations such as the United States and Japan have taken an interest in the unfolding events, the latter being no stranger to territorial disputes with China.

A recent announcement from China stating that construction on some of the islands within their land reclamation project are nearing completion, has brought the issue back in the foreground. Within the course of a year, dredging ship, and military vessels have been spotted all along the South China Sea for the project. Recent aerial and satellite photographs that have surfaced on the internet have shown the massive undertaking that has been in progress along the Spratly's. An airstrip can be clearly seen in one of its man-made islands located on Fiery Cross Reef and experts have speculated that it is large enough to hold fighter jets, transport planes and surveillance aircraft.

The U.S. have warned that the islands may allow China to eventually deploy radar and missile systems on the new islands to establish superiority in the region. This may lead to an event similar to China's creation of an air defense identification zone in the East China Sea back in 2013. In recent exchanges, between the United States and China, the US P8-A Poseidon surveillance aircraft flying over the islands (which are considered inter-



Goran tek-en

**China's island claims violate the exclusive economic zone of many other countries in the region.**

national airspace) was contacted by the Chinese Navy and subsequently asked to leave. Similarly Philippine aircraft and ships found near or around the Spratly's were warned by the Chinese military. China's foreign ministry has claimed that the incidents with the various nations should not be seen as confrontation but merely China exercising its right in monitoring all relevant air space and waters,

to protect its sovereignty and prevent any accidents in its waters. The US Navy has recently footage pertaining to the encounter showing military installations being built on the islands.

China has continued to defend its stance, claiming the islands are for civilian purpose and has been quick to turn down all accusations from various nations despite the grow-

ing evidence that has surfaced. Regardless of the continuity of their project, and the illegality and aggressive nature of their actions have many security experts fearing for conflict. It is worth noting that disputes with China on contested waters are nothing new, and they have had a long track record for territorial disputes with countries such as Japan, Malaysia, and the Philippines among many others.

# Edward Snowden: Two Years On



**ALEXANDER LEE**  
3A NANOTECHNOLOGY

Last week, the British newspaper *The Sunday Times* reported that Chinese and Russian intelligence services had successfully hacked into former NSA analyst-turned-whistleblower Edward Snowden's files, and obtained an extensive list of British field operatives working in foreign countries. The accuracy of the article was disputed by other individuals and news outlets. Glenn Greenwald, the journalist Snowden worked with to release his original revelations about NSA security practices, stated that there was 'zero evidence' of any such leak to Chinese or Russian authorities, and implied that this was a smear campaign on Snowden by the British government. Two years on from when Snowden first leaked the existence of PRISM and the NSA's extensive personal privacy invasions, he remains a polarizing figure across the world; some praise him as a hero, while others brand him as a traitor.

In some ways, Snowden's actions feel like they happened just yesterday; in others, they feel like ancient history. In June 2013, Snowden fled the US for Hong Kong, and shortly after, Glenn Greenwald released

classified NSA documents provided by Snowden to the world. Snowden revealed to the world how the NSA was violating the privacy rights of Americans; while the NSA had been conducting surveillance on citizens of all nationalities, they were not allowed under American law to spy on American citizens, which is why Snowden caused such a scandal in America. As a result of Snowden's actions, more and more comprehensive surveillance programs came to light in the coming months, and the world came to realize just how extensive, powerful, and pervasive that national security programs across the globe had become in the wake of 9/11 and the War on Terror.

Since he initially fled the United States for Hong Kong, Snowden has been granted temporary asylum by Russia, and still actively participates in the fight against global surveillance. His American passport had been revoked, and he is now a stateless individual. He faces criminal charges in the United States for compromising many of America's security initiatives and for endangering many agents operating in foreign territory.

The revelations brought about by Snowden's leaked documents have ignited the privacy vs. security debate and the role government surveillance has in society. Compelling arguments have been made both

for and against the surveillance programs. Their supporters say that they are necessary to protect nations from external threats like terrorism; their detractors respond that they are unconstitutional, and bring us uncomfortably close to totalitarian states as seen in George Orwell's *Nineteen Eighty-Four*.

Yet, no one can be sure that anything has truly changed. Nothing groundbreaking has happened with regard to the NSA's surveillance policies yet, and the White House shows no signs of changing its stance on it.

Despite significant public outcry, it appears that global surveillance has so far still not been curbed. The fight continues, but the opponents of mass surveillance still have a long road ahead of them before they can reclaim the privacy that they are fighting for.

Snowden has been a very polarizing figure, just as the privacy vs. security debate is such a polarizing issue. However, regardless of whether you think he is hero or traitor, no one can deny the impact his actions have had in shaping the world in the past two years.



See-ming Lee

**Snowden had gained supporters and detractors all around the world.**

# Random Privileges We Have As Canadians



**SHERWIN KWAN**  
4B MECHANICAL

Did you know that, as a Canadian, you are entitled to receive a copy of the Charter of Rights and Freedoms, or a picture of the Queen? The government provides every Canadian certain items which display "Canadian heritage" at no charge. An infinitesimally small portion of your taxes goes towards it, so you might as well claim what you have already paid for.

## Portraits of the Royal Couple

Three different portraits are available. You may receive a portrait of a) Her Majesty, Elizabeth the Second, by the Grace of God, Queen of the United Kingdom, Canada, and Her Other Realms and Territories, Defender of the Faith, wearing badges in her capacity as Sovereign of the Order of Canada and the Order of Military Merit of Canada, or b) the Queen's spouse, His Royal Highness, Prince Philip, Duke of Edinburgh, or c) a portrait presenting the Queen and her husband together. All of the portraits have a Canadian flag in the background.

Electronic versions of these are available from the website of the Department of Canadian Heritage. You may also order a printed copy by writing a letter to the State Ceremonial and Protocol Directorate, Department of Canadian Heritage, or alternatively by calling 1-800-O-CANADA (622-6232). Ship-

ping is free.

The use of royal portraits for commercial purposes is forbidden, and you are not to use them on adhesives, clothing, household linens, boxes, or labels.

## Documents Outlining Our Rights

Are you afraid that the government will take our rights away? Worry no further. The same government offers to mail you copies of documents which tell you what rights you have, a piece of paper which will surely come in handy when the secret police come for you.

Documents available include the Charter of Rights and Freedoms (i.e. the first 34 sections of the 1982 Constitution of Canada), the Canadian Bill of Rights (Statutes of Canada 1960, c. 44), the Universal Declaration of Human Rights, several other United Nations documents regarding the rights of women, children, and other traditionally disadvantaged groups, and reports made by Canada to the UN.

These may be ordered from the Human Rights Program of the Department of Canadian Heritage. Call 1-866-811-0055, email [droits-rights@pch.gc.ca](mailto:droits-rights@pch.gc.ca), or mail a letter. You must have a Canadian mailing address to avail yourself of this offer. Shipping is free.

## Flags

There are five flags flown from the parliament buildings in Ottawa, one of which is flown from the Peace Tower. The Peace Tower flag is exchanged every weekday, while the other four flags are exchanged once a week. Old flags

are mailed to a Canadian who has requested it. If you wish to obtain a flag, you may request one by email, fax, or mail to Public Works and Government Services Canada. Supplies, needless to say, are limited. It is first-come, first-serve, and there are already some 15,000 people on the waiting list. A flag you order today will be mailed to you in approximately 40 years. If you specifically request a flag which has flown from the Peace Tower, the wait is even longer: about 55 years. If you move before then, you must contact Public Works again to give them your new address. Otherwise, some lucky household is going to get your flag.

Again, shipping is free. To order a

flag, you must be living in Canada (or rather, you must plan to be living in Canada in the 2050s or 2060s, and you must hope the Parliament of Canada does not change its policy for flying, exchanging, or delivering flags in the intervening decades).

Due to the supply shortage, only one flag is allowed per household. If someone in your family has already ordered a flag, your request for a flag could be turned down.

(Shout-out to Mike Laanvere, former staff writer for the Iron Warrior, who requested a portrait of the Queen and showed us all during the end-of-term barbecue last year. Oh, and congrats on receiving your degree!)

# Happy Birthday Canada

## You are turning 148 years old!

**VICKY NGUYEN AND  
JOANNA LIU**  
1B CHEMICAL

Canada Day was the day the British North America Act was signed in 1867, creating the federal dominion of Canada and the Confederation of Canada. Yet Canada's existence is but one thread in the tapestry of history. To commemorate this day, we bring to you other interesting events that also happened on July 1st.

We begin this story far off in the East where sunglasses were being worn for the first time in 1200 CE. The lenses were made from slabs of smoked quartz attached to a rough frame that sat haphazardly on the faces of very rich Chinese courtiers.

In 1862, the U.S. Congress' Morrill Anti-Bigamy Act outlawed polygamy for the first time. No longer were husbands allowed multiple wives—at least not officially.

That same year, Emperor Alexander II of Russia granted Jews the right to publish books. This was by far an improvement from his father Nicholas I's rule, when he attempted to Russianize the Jews through numerous extreme methods.

In 1903, the 1st Tour de France bicycle race began. This first cycling race, sponsored by the newspaper *L'Auto* (ancestor to the current *L'Equipe*) ran until July 19th. This notorious race that continues until today began as a marketing strategy to circulate *L'Auto*.

In 1907, the world's first air force was established by the US Army. This small Aeronautical Division was meant to take "charge of all matters pertaining to military ballooning, air machines and all kindred subjects." Perhaps it was a surprise when they came to use in WWI.

On July 1st, 1916, Coca-Cola brought

the current coke formula to the market. The company presented the formula for the syrup of the eponymous carbonated drink as a trade secret known only to a few employees. This mass and highly successful marketing, publicity, and intellectual property strategy was brought by then Coca-Cola president Robert W. Woodruff (also an avid philanthropist).

Thirteen years later, US cartoonist Elzie Segar created "Popeye." Popeye made his first debut in *Thimble Theatre*, an established comic strip. Soon Popeye won the hearts of many, becoming the focus of *Thimble Theatre* as well as starring in television cartoons, and arcade games. Through gaining strength by eating spinach, Popeye raised sales for the vegetable over the century.

In 1933, German Nazi regime declared that married women shouldn't work. Nonetheless, women were often praised for "services to the state and race." What did that mean? We leave to you to conjecture.

On July 1, 1949, Bao Dai's Republic of Vietnam gained independence from France. France had been heavily involved with Vietnam since the 19th century with the reason of protecting the work of Catholic missionaries in the country.

Then, in 1956 on the same day of the year Elvis Presley, wearing a tuxedo—deviating from his usual style—appeared on Steve Allen Show. Allen, possessing a disliking towards rock and roll, had Presley dressing up as a hound dog performing his song of the same name. Presley referred to the performance as the most ridiculous one of his career.

This concludes only some of the exciting history of the World on July 1st. We leave this tale for you to end—what history will you be making on Canada's Day 2015?

# What's Going on This Canada Day?



**CAMERON SOLTYS**  
2B MECHANICAL

Canada Day may be inconveniently occurring on a Wednesday this year, making it a bit tough to do a big celebration like a weekend out at the cottage or a few nights back home with your family, but that does not mean that you cannot get out and celebrate the birthday of the nation. All across the region, plenty of groups are putting on festivities and events, including the University of Waterloo. Here are some that might interest you as you prepare to enjoy your well-earned day off.

## UWaterloo Canada Day Celebration, Columbia Lake Fields

The largest Canada Day celebration in the area is happening right here on campus. There are a diverse range of events including waterslides, face painting, and photo booths. Food trucks will be providing nourishment and a beer garden will quench your thirst. At 6:30PM, Juno-Award winning The Stumbellas take to the stage with a performance which promises to have you "singing along with them in no time." Then a second Canadian sound, Kim Mitchell, will be up to play his hits before the evening ends in fireworks at 10PM. Find more information at [uwaterloo.ca/canada-day](http://uwaterloo.ca/canada-day)

## Canada Day in DTK, Kitchener City Hall

The city of Kitchener is hosting a big fun celebration on Canada day which

they are calling "Canada Day in DTK (DownTown Kitchener)." The festivities are scheduled to start at 4PM and last all the way to midnight. Along with all of the delicious fare you can usually find from the food vendors in the downtown, you can join the party at a licensed beer garden set up for the day. You will enjoy an evening of live Canadian music culminating in fireworks launched from the roof of the Kitchener City Hall. Bands set to play include local talent Heaven Through Hell, Acquaintance, and Bad Girls. The headliners are Hollerado, Fefe Dobson, and Treble Charger. Keep an eye on the event at [kitchenerevents.ca/en/whatson/Canada\\_Day.asp](http://kitchenerevents.ca/en/whatson/Canada_Day.asp) for when they release a schedule of the performances.

## Cambridge Celebrates Canada Day, Riverside Park

Cambridge might be a little far from most of us who study all the way up in Waterloo, but the 200 goes all the way down, and it might be worth the trip. For its celebration, the City of Cambridge has, of course, the apparently quintessential live bands and beer garden. However, they also have a large number of more unique events. In the morning there is a Fishing Derby, and a parade at 1PM. If neither of those things catches your eye, how about a carnival full of games and rides? There is also three showings of the UltiMutts Dog Show, a theatrical event in which pooches perform stunts and tricks. Finally, end the day with some 9:30PM fireworks. For a full listing of times and events, go to [cambridgecanadaday.ca](http://cambridgecanadaday.ca) and check it out.



Geoff Sowrey

Happy Birthday Canada! 148 years on!

# 85% Of Fisheries Pushed to Limits, Says WWF



**MICHAL KONONENKO**  
2B NANOTECHNOLOGY

Two recent reports by the World Wildlife Fund confirms that 85% of all commercial fisheries are being exploited at or above their sustainable biological limits. The report valued the worldwide economic output of ocean fisheries at 2.5 trillion dollars, comparable to the GDP of some of the world's largest economies. Yet, through decades of industrialized overfishing, under-reporting, ocean acidification, and habitat destruction caused by human activities, the value of that economy is rapidly shrinking.

The first report, titled "Reviving the Ocean Economy," attempts to take stock

of global marine resources, including not just fisheries, but also carbon sequestration, and "services" provided by the ocean such as facilitating shipping. The survey did not include resources generated from offshore oil. The \$2.5 trillion annual product of the oceans may seem far-fetched, but keep in mind that for three billion people worldwide, 20% of the protein in their diets comes from fish.

However, as well as having a significant economic value, the environmental value of ocean resources contribute significantly to the global economy. The Coastal mangrove forests in the Southern USA act as barriers against climate change. The ocean absorbs around 30% of anthropogenic (human-generated) carbon dioxide. And the diversity of plant and animal species make the ocean a gigantic melting pot of

species, the understanding of which could bring about important scientific discoveries in everything from medicine to materials development.

This takes us back to the fisheries and overfishing, its biggest problem. While large-scale industrialized fisheries in the developed world have put significant pressures on fish stocks to keep up, there have also been problems with under-reporting. Approximately 40% of Panama's annual catch goes unreported, with similar numbers being reported wherever local fisheries provide a way of life for the locals. This means that oversight of fishing resources is limited, and the true magnitude of overfishing can be obscured from the people writing the laws.

These two reports fit into a larger context of protecting our oceans, so that we may

enjoy their bountiful resources for generations to come. Furthermore, the UN Millennium Development Goals are set to expire at the end of this year. These were a set of goals drafted in 2000 to guide UN development policy at the start of the 21st century, and included educational, environmental, and economic development goals to ease global poverty. These were the yardstick by which worldwide development was measured. By integrating preservation of ocean ecosystems into the post-2015 development agenda, the opportunity is open to influence international organizations to recalibrate their yardsticks for development. Ensuring that sustainable development of the oceans is on that list will ensure the long-term health of the oceans, and allow us to reap the benefits of our watery \$24 trillion trust fund.

# Tourists Blamed for Malaysian Earthquake



**RAEESA ASHIQUE**  
1B ELECTRICAL

On June 5, a magnitude 6.0 earthquake struck Borneo island's state of Sabah, causing landslides on Mount Kinabalu and killing at least eighteen people, including several school children.

But this is not your average natural disaster report. The twist? The local community is blaming its occurrence on a group of tourists.

Mount Kinabalu is the highest mountain in Malaysia, and is the main attraction at the Kinabalu Park UNESCO world heritage site. There is competing folklore about this sacred mountain. One

theory says its name comes from the phrase "Aki Nabalun" which translates to "the revered place of the dead". The locals believe that the spirits of their ancestors live at the top of Mount Kinabalu, and that when a person passes away, the spirits come to carry his/her soul to this final resting place.

The second theory says Kinabalu translates to "Chinese widow". Legend has it that a vicious dragon guarded an enormous pearl at the top of the mountain. A Chinese prince went in search of this treasure, and succeeded in claiming it for himself after slaying the dragon. He ended up marrying a local woman he fell in love with, but broke her heart by leaving and returning to his hometown. Devastated, she wandered the mountain to mourn. When she died of grief, her body

turned to stone, but her spirit continued to haunt its peak.

Regardless of the origin of the myth, the locals give Mount Kinabalu a high level of respect as a dwelling for spirits.

On May 30, a week before the quake, a group of ten tourists, including Canadian brother and sister Lindsey and Danielle Peterson, posed naked for an Instagram picture at the peak of the mountain. Apparently, taking nude pictures at popular tourist attractions is a growing trend, which seems strange. Sabah Deputy Chief Minister Joseph Pairin Kitingan said the foreigners' "disrespect to the sacred mountain" caused the earthquake, and that they would hold a special ritual to "appease the mountain spirit."

Not everyone blames the holidaymakers for causing the natural disaster, but

it is still seen as an insulting gesture. "I can't say whether the tourists caused the quake or not. We're a modern society but we also have local customs that have to be respected," says a tour guide named Supni.

The Canadians had been barred from leaving the country. On this subject, Canadian Foreign Affairs spokeswoman Jacqueline Laframboise said that "Canadian consular officials in Malaysia are in contact with local authorities to gather additional information and are providing consular assistance to the Canadian citizens." On June 12, they were sentenced to three days of jail time and a fine of 5,000 Malaysian ringgit (\$1,330). The court agreed that they had shown remorse regarding the incident, and had not been acting deliberately disrespectful.



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# Apple Showcases Music Service



**ALLEN CHEN**  
2B CIVIL

On June 8-12, Apple hosted its annual international conference in California, officially named Apple Worldwide Developers Conference (WWDC). WWDC is an annual showcase of the newest developments in Apple's product lines. For those unfamiliar with WWDC, it is essentially like those presentations Steve Jobs did back in the day that Apple users were always so hyped about. Many exciting announcements were made at this year's conference, though nothing quite revolutionary by any means.

The most significant new product discussed in the presentations is Apple's new music streaming service, Apple Music. In May of 2014, Apple acquired Beats Music and continued operating the application's streaming services. This year it is to be re-branded and re-launched. Apple Music was endorsed at the conference by high profile artists such as Drake, who specifically supported the new Connect feature that

focuses on exposing users to local unsigned independent artists. The Apple Music application will have the Siri voice commands feature, so users can have a hands-free music searching experience. Apple Music will be a subscription based service, at \$9.99 USD per month, with the first three months free. The app will also have a family sharing feature, so multiple members of a family or group of friends need not pay separate monthly fees. This particular fee will be \$14.99 USD per month. Apple Music will be released June 30 worldwide. The app will not be exclusive to Apple devices; versions for Windows and Android devices are expected to be released this fall.

As some are aware, iTunes Radio was launched in 2013. This service is expected to merge with Apple Music, as the app will include Beats 1, the first of many new exclusive internet radio stations. Beats 1 will be hosted by former BBC Radio DJ Zane Lowe, and users will have the option to skip tracks. In terms of the relation with iTunes, Apple Music will be the music streaming service, while iTunes will still serve as a store in which to purchase digital audio

from; the two will coexist.

Perhaps one of the most interesting stories developing out of this announcement is how Apple Music will compete with current services in the market such as SoundCloud, Jango, Songza, and most notably Spotify. While Apple Music requires a monthly subscription, Spotify uses a freemium business model: free users have limited access to "premium user" features, such as ad-free listening, and the ability to skip and select songs at will. They have a free 30-day trial of premium, or the first three months for \$0.99 CAD per month. Spotify's regular subscription fee is \$9.99 CAD per month, but the family subscription plan definitely does not match up to Apple Music, with the plan essentially working out as a buy one get one half price model. Overall Apple Music and Spotify are similar in many ways. Perhaps the most defining feature of Apple Music will be its ability to stream Taylor Swift songs.

Over the past 15 years, Apple has done its part to revolutionize the music industry to what it is today, first with the iPod and then iTunes. Although the concept of subscription-based music streaming was opposed by cofounder Steve Jobs,

Apple Music is being released onto the market with high expectations, so how well the service competes in the first year will definitely be something interesting to watch out for.

In addition to the launch of Apple Music, several other announcements were made regarding software updates to current Apple products. Most notably was the announcement of Apple's new desktop operating system, Mac OS X 10.11, better known as OS X El Capitan. El Capitan will be the successor to 2014's Yosemite, and while it lacks any distinguishable new features, El Capitan's main focus will be on its significantly improved and refined performance. El Capitan will be available this fall as a free upgrade for Mac users.

The new iOS 9 update for mobile devices was also announced for this fall, with a beta currently open for any Apple users interested in testing (and quite possible crashing) the new and improved features. Notable new features mentioned at WWDC include improvements to Apple Pay such as a partnership with Square (a very well known credit card processing service specializing in mobile payments) and availability of the application in the United Kingdom. Additionally, improvements were made to Apple Maps, particularly in the transit feature in the app. Whether the new improvements will encourage Apple users to actually use the app at all over Google Maps is the question. Other interesting mentions from the conference are the multi-view features being implemented for iPad and desktop (similar to the split view on Windows), and the updated watchOS, which will operate more independently from the iPhone in terms of computational capabilities.



Apple Music is a rebranding of Beats Music that will also incorporate the also existing iTunes Radio app.



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# Point Vs. Counterpoint

## Is Internet.org a good way to provide internet to those without?

POINT

**ALEXANDER LEE**  
3A NANOTECHNOLOGY

Let's clear one thing up now. Mark Zuckerberg, Facebook, and their partners are not involved with internet.org purely out of the goodness of their hearts. As with almost everything, the motivation behind the partnership is some part altruistic and some part self-interest; how much of each is up to you to decide for yourself. However, regardless of their motives, internet.org is doing much good in the world. Very few would argue that the intention of bringing internet access to the many in the world without it is a bad intention to have.

There is definitely a concern that internet.org violates net neutrality by restricting access to parts of the internet and providing preference to Facebook over other sites. However, is having access to only Facebook better or worse than not having access to any internet at all? I would argue that restricted internet access is better than no internet access, and simply having access to a social media site would allow you to learn so much more about the world and other cultures, and would massively expand people's horizons, just as the internet is meant to.

The Industrial Revolution which occurred 200-250 years ago was possibly the single greatest change the world had seen prior to the dawn of the digital era. As a result of the transition to new, more efficient manufacturing processes and technology, the amount of economic growth, population, and quality of life for everyone reached levels never seen before in history. Again, few would argue that the Industrial Revolution did not positively impact the world, and is largely responsible for the world that we live in today. Yet, the Revolution was far from perfect. Cities experienced massive overpopulation and large slums with appalling living conditions developed. Child labour was commonplace, as was racism and discrimination. Non-European countries were heavily exploited by the industrial powers of Europe. Income inequality was very significant, as much of the wealth went into the hands of the capitalists and factory owners, and as a

result, not everyone partook in the benefit of the revolution to the same level.

However, the important thing is that the revolution happened. Many of the problems that the revolution brought on were fixed in the following decades. Modern things that we take for granted, such as unemployment insurance, pension, publicly funded education, progressive taxation, and social welfare developed in the years following the Industrial Revolution to combat the problems that came with it. While many countries in Asia and Africa were heavily exploited and oppressed under the demands of the European powers, their development was dramatically sped up. New and more efficient manufacturing, agricultural processes, and technology were introduced to improve their lives. The problems the Industrial Revolution brought about were tackled and largely fixed, while the benefits the revolution brought about remained and is largely responsible for the lives we lead to this day.

In a similar way, the digital era has massively improved the lives of those who have been touched by it; yet, so many in the world have not had the opportunity to experience the wonders of the internet. The internet.org website states that two-thirds of the world does not have access to the internet. While they may have ulterior motives for trying to bring internet access to those without it, I doubt they are lying about this statistic. Net neutrality is a major issue, and the violation of net neutrality should be avoided as it results in an internet that is not fair and equal to everyone. However, as it currently stands, the internet is not fair and equal to even the majority of people, as so many in the world do not even have access to it. Before we can really tackle the issue of net neutrality for good, we must ensure that everyone in the world has access to the internet first. If people disagree with internet.org's motivations and practices, and I am sure there are many, then there should be new organizations founded dedicated to bringing internet access to those without while respecting net neutrality. Internet.org still does a lot of good for the world despite its flaws. We cannot just take it down and cancel its mission without ensuring that we have a better alternative in place to continue the job.

We in Canada have easy access to the internet by virtue of living in a developed, industrialized country. We are very fortunate to have the opportunities and blessings we do, and it is important not to take them for granted. The majority of people in the world right now do not have easy internet access. They have never experienced the infinite possibility and connectivity to the rest of the world that the internet brings. The fact that the internet is not available to everyone in the world is in itself a travesty and as much effort and resources as possible should be devoted to this task. Internet.org is but one organization working toward fulfilling this goal, and while it is not a perfect solution, the important thing is to provide everyone with internet access first, and then figure out how to ensure they have a fair experience and can use the internet to its maximum potential.

COUNTERPOINT

**NACHIKET SHERLEKAR**  
3T NANOTECHNOLOGY

Internet.org, launched in August 2013, is the execution of Mark Zuckerberg's vision of providing free internet access to people around the world that began with initiatives such as Facebook Zero. The project is a joint collaboration between Facebook and six other companies, including Samsung, Nokia and Qualcomm. Over the last two years, the project has launched in various "developing" countries across the world, of which the majority are located in Africa and Asia. Recently, however, the project has come under scrutiny and severe criticism for violating so-called 'net neutrality' principles. In each country where they have a presence, internet.org has partnered with a local mobile telephone carrier company to provide 'free' internet to their consumers. The catch is that this 'free' version of internet that was being provided isn't the same as the internet we know. Instead, only a limited selection of websites were offered for free consumption. This is an outright violation of the principle of net neutrality, which states that all data on the internet should be treated equally. In other words, it should not be possible to access only a select number of websites or mobile applications for free; this freedom should in principle extend to any and all online content accessible in regular circumstances.

The backlash against internet.org has been particularly strong in India, where they were partnered with Reliance Mobile. Several companies that were originally part of the project pulled out at the last moment, citing violation of net neutrality as the reason. This came at a time when Airtel, another mobile carrier, was caught violating net neutrality by offering an online shopping app for free on their services. This incident caused a surge of online awareness campaigns that collectively fueled the public ire against Facebook. Mark Zuckerberg spared no time in going into damage-control mode, publishing a lengthy post on his Facebook page defending the project by presenting a touching story of children experiencing the internet for the first time in a tiny village in rural India. People were not too ready to buy this, however.

The problems with internet.org are not limited to this. The name itself is misleading; people might easily confuse this service for the actual internet. Also, the .org domain implies that the venture is charitable and not-for-profit. Technically, this is true, but the commercial benefits for this service are undeniable. People whose first taste of the internet consists of a limited selection of apps and websites (including Facebook) will get hooked onto these specific services, with no idea of the alternatives they could have had. Facebook would essentially have cornered a massive user base of naïve first time internet users whose perception of the internet is completely controlled and filtered by Facebook. In essence, people would be confusing Facebook for the internet. In fact, this is a problem already in places like the Philippines, Indonesia, and Thailand where surveys conducted have shown that more people claimed to be using Facebook than the internet. In

their minds, Facebook and the internet are two distinct and mutually exclusive features, which is horrifying to think about. If Facebook has this level of control over the internet and what people consume online, there is no extent to the things it can do to potentially manipulate and control their user base for gain and profit.

It is also established that the version of Facebook offered under internet.org is a basic text-only version that can be operated cheaply on limited bandwidth, making the experience sub-par to begin with. Users may be getting this basic version for free, but if they attempt to view pictures on Facebook or follow links to other locations on the internet via Facebook, they are redirected to a page that offers an upgraded version for a certain monetary rate. Facebook is essentially enticing customers who are possibly already established users to spend money they might not have in order to use their service like any other consumer, which kind of defeats the entire purpose of the initiative.

On top of all this, internet.org poses serious security and privacy issues to its consumers. As of now, the service incorporates no encryption schemes of any sort, making it incredibly easy for people to snoop through and steal your data. Also, a precondition for offering a service on the internet.org platform is that Facebook must be allowed to track user information and data on these services, which can in turn be shared with the respective telecom companies and governments. All in all, it is a very scary situation.

More recently, in light of all the criticisms Facebook has received for the net neutrality violations, they have decided to open up the program in order to allow third-party developers to join in. There are several problems that come along with this. Telecom operators can choose to reject a proposed service outright if they want to, which creates an obvious conflict of interest in some cases. Also, start-ups that generally provide quite useful services are required to optimize their applications for a whole new platform, which they might not be equipped to do, giving more established companies an unfair advantage.

The counter-proposition that most people offer with regards to the execution of this venture is to give free data – limited, but free – that can be used by consumers however they wish, with absolutely no restrictions. This is however a utopia that seems too unfeasible to exist – which makes it all the more clear that the only reason Facebook wants this project to succeed is that this is their only avenue for long term growth in the future. Without internet.org, Facebook's growth will saturate. The only way they can grow is to get more people to use the internet and, in turn, Facebook.

Opposing internet.org may seem like we're shooting down the one viable idea to get more people online and connected. However, people are bound to come up with alternative ideas that work without violating internet freedom and net neutrality. Until then, it seems like it would be a better for people to wait than to be tethered to a service run by a multinational corporation whose sole objective is to seek profits.



guillaume paumier.com, CC-BY

**Mark Zuckerberg's Internet.org has stirred up the debate on net neutrality.**

**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.



# A New Chapter in the War on Drugs

## Legalized cannabis is changing the dynamic of illegal drugs



**SAM MADHAVAN**  
1B ENVIROMENT

A new law will take effect in Delaware this December, making it the eighteenth state to decriminalize possession and recreational use of up to an ounce of marijuana. Marijuana has fast become the next big industry in those states that have fully legalized it, and legalization has, as expected, crippled the demand for illegally grown and smuggled weed from Mexico; American dispensaries responding to the anticipated market demand with literal greenhouses of potent, exotic new strains such as Golden Goat and Oaktown Crippler. The resulting produce is labeled for potency and graded by plant strain, and marketed as a gourmet product to the masses, which American marijuana consumers

are increasingly turning to in favor of an untested and unregulated black market product grown illegally in the mountains of Mexico. One of the fastest growing sectors of the US economy (due to the huge spurt in legal, tax paying marijuana related companies), optimistic investment firms predict that the industry may top \$4 billion by 2016.

While analysts remain cautiously optimistic about the long-term impact of this shift on the flow of money to Mexican cartels, Mexican police have reported a sharp decline in gang-activity related homicides, and the price of pot on the other side of the border has dropped due to reduced demand from the American market. While the US border patrol has been seizing smaller quantities of marijuana every year, it now appears that the cartels have been diversifying their criminal portfolio, from stealing crude oil off Mexican pipelines to sex trafficking. Border

patrol agents have noticed a sharp increase in the amount of hard drugs smuggled over the border, only some of which gets nabbed by authorities; U.S. Homeland Security agents seized a record 35,000 pounds of crystal meth in 2014. The White House estimates that Americans spend about \$100 billion on illegal drugs every year.

As the profitability of Mexico's hand wrapped, seedy marijuana continues to slump, drug farmers are flooding the market with opium derived black tar heroin. The cartels then deploy people as carriers to smuggle the product by hiking through the Arizona borderlands, or send commercial trucks into Texas with the cargo disguised. One of the most curious responses to the market for legalization has been how the cartels have taken to smuggling high quality American marijuana back down south to Mexico, where the marijuana is generally of much lower quality.

The DEA alleges that traffickers are smuggling and distributing US grown marijuana across the border, acting predominantly from states with fully legal and operational high quality medical marijuana dispensaries such as Colorado.

Whereas in the past the vast majority of Marijuana was produced in Mexico and moved north, the superior quality of the bud produced by American entrepreneurs has caught the eye of the cartels, always concerned about their own profit margins; American weed is reportedly worth three to four times once it crosses the border. While these claims are yet to be substantiated by hard numbers, government officials appear more concerned with the increasing volumes of cocaine, meth and heroin smuggled over the border, where a significant portion of the population already has issues with prescription pill addictions.

## Speak Up; Be Heard

**MICHAEL BEAUCHEMIN, PAT DUONG, GORDON STUBLEY**  
COURSE CRITIQUES TEAM

Course evaluation packages will soon be sent to your professors and instructors, who have been asked to bring them to class between July 6 and 17, 2015. Student representatives will be called upon to distribute one questionnaire to each student in each class, collect them when they are completed, and deliver them to the EngSoc office. Your Course Critiques Directors ([coursecritiques@engsoc.uwaterloo.ca](mailto:coursecritiques@engsoc.uwaterloo.ca)) will work with student volunteers to prepare the packages for computerized scanning and processing. It's a process that has been repeated every semester for over 40 years. And yes, it's quite a big undertaking, but it's one we believe is well worth it.

On the day after grades are due, a package is mailed to each course instructor with a summary of the numerical data plus the original completed questionnaires so that they can read the comments you've written on the back. It's on you to provide meaningful, relevant feedback; instructors rely on your input to help improve their teaching. Think of this as your chance to influence the way that materials are taught and support change for the better. Department chairs use summaries of course evaluation results to inform tenure and promotion decisions, and the Associate Dean, Teaching uses course evaluation results to inform course improvement efforts. Results are also posted online (see links at <https://uwaterloo.ca/engineering/teaching-learning/course-evaluations>) so that you and future students may review the results.

On Engineering's Teaching Learning web site, you'll also find a teaching award nomination form. This is a quick and easy way to let us know which instructors you would like to see nominated for a teaching award. Visit <http://uwaterloo.ca/engineering/teaching-award-nomination> to access the form (login required).

Thank you for your time, your feedback, and, most importantly, for your continued support of this longstanding and valued process.

Sincerely,

Michael Beauchemin, Course Critiques Director

Pat Duong, Course Critiques Director

Gordon Stuble, Associate Dean, Teaching

## New Faces and Familiar Places

### A summary of E3 2015



**MEAGAN CARDNO**  
3A NANOTECHNOLOGY

It's not surprising that an expo aimed towards fans of video games often has a very competitive mindset; fans and journalists alike are often keen to say that one company or another 'won' E3. However, with solid performances from every company and developer at this year's Electronic Entertainment Expo, I'm not one who is so tempted to declare such a winner. With both entirely new games and sequels to old favourites showcased impressively all around, Bethesda started off the show with a bang as *Fallout 4* was announced to the delighted squeals of *Fallout* fans everywhere. The game's traditional FPS-meets-RPG niche looks to further expand into an RTS-like gameplay with the addition of post-apocalyptic city building elements. Plus, for a few extra bottle caps, you can own your very own Pip-Boy!

Microsoft's showing was highlighted by the announcement of Xbox One supporting backwards compatibility for Xbox 360 games, even allowing for online play between Xbox One and 360 players. The new *Halo 5: Guardians* also features an online multiplayer with up to 24 people. There were new titles such as *Tacoma*, a story-based first-person exploration game set in a futuristic space-station from the makers of *Gone Home*; the gorgeous cel-shaded action RPG, *Ashen*, revealed to be an Xbox One exclusive; as well as more footage regarding previously announced sequels such as *Rise of the Tomb Raider*, and *Fable Legends*.

Square Enix also had an impressive showing, with teaser trailers showcasing both the highly anticipated and celebrated RPG *Kingdom Hearts 3*, and the first glimpses of gameplay for Eidos Montreal's newest thought-provoking stealth-action sci-fi, *Deus Ex: Mankind Divided*.

Announcements from EA included the previously teased new entry in the *Mass Effect* series, *Mass Effect: Andromeda*, which will feature a separate story from the original trilogy featuring

Commander Shepard. Perhaps one of the most refreshing and surprising stars of EA's presentations was that of Swedish developer Martin Sahlin's *Unravel*, a new puzzle platformer that is simple but heartfelt in thought (simply listening to the developer talk about his game shows this). The gameplay focuses around using yarn-based physics to solve puzzles and move forward. Of course, EA also displayed it's fair share of staple sports titles, as well as anticipated sequels like *Mirror's Edge: Catalyst* and *Star Wars Battlefront III*.

Ubisoft kept things simpler, showing off the newest entries in their own tried-and-true series. The new *Assassin's Creed: Syndicate* brings fans to a long-desired location: Victorian London, with all the steampunk one could want courtesy of the Industrial Revolution. Three new games are also planned for the Tom Clancy series: *The Division*, *Rainbow Six Siege*, and *Ghost Recon*.

As a big Nintendo fan, suffice it to say I was slightly underwhelmed by this year's performance in comparison to previous years, as it focused almost entirely on titles to be released in the immediate future, and not long-term titles such as the new *Zelda* on the WiiU. Nevertheless, there were several exciting announcements in the new *StarFox Zero* for WiiU—a franchise long in need of a reboot—and a new three-player co-operative *The Legend of Zelda: Triforce Heroes* for the 3DS, which once again looks to aim to recreate the feel of top-down puzzles from previous hand held *Zelda* titles. There was also new information and trailers for previously announced, but still highly anticipated titles, including the adorable but innovative yarn mechanics *Yoshi's Woolly World*; the massive open-world futuristic fantasy RPG, *Xenoblade Chronicles X*; and *Fire Emblem: Fates*, which adds a focus on the results of player choice to the familiar turn-based strategy gameplay.

The controversy in announced games included the announcement of *Metroid Prime: Federation Force*—a 3DS game whose ties to the *Metroid* franchise seem tenuous at best, as it does not feature the iconic protagonist, Samus, nor the gameplay typical of a *Metroid* game, nor even the art style of any games

even previously featured in the series. Feedback towards the title even saw the creation of a petition for Nintendo to cancel production of the game—quite a devastating response for the poor game developers. The new *Animal Crossing* titles, *Happy Home Designer* and *Amiibo Festival*, were received with similar, but quite less severe criticism, as both are spin off games, not the highly anticipated main entry in the well-loved series.

Sony's presentation opened with a very exciting re-introduction of *The Last Guardian*—a game in development since 2008, designed by *The Shadow of the Colossus* director Fumito Ueda, with both action-adventure and puzzle gameplay elements featuring a weaponless boy and his large, griffin-like companion. The crowd-pleasing didn't stop there; there was also announcement of the remake of fan-favourite *Final Fantasy VII* with a gorgeous teaser trailer and no foreseeable release date. A very surprising showing was of *Shenmue III*, which was revealed to have a Kickstarter in place in hopes of attaining a funding target of \$2 million USD in one month—a sum that it reached within eight hours of the game's reveal. Updates on previously announced titles such as *Uncharted 4: A Thief's End*, *No Man's Sky*, and *StreetFighter 5* rounded off Sony's impressive showing.

The video games were not the only source of excitement at E3—virtual reality hardware took centre stage as well, with both Microsoft's HoloLens projector, HoloLens, and Sony's Oculus-like Project Morpheus being available for guest use. Of course, both projects do not appear to be quite consumer-ready, but that doesn't stop us from being really excited about being brought even closer to the promise of VR gaming in the near future.

For myself and many other gaming enthusiasts, E3 is like a second Christmas. Luckily for us, many of the games scheduled for release in 2015 are to be out this holiday season, and even more in the early months of 2016. If your wallets are feeling a little lighter after the Steam Summer Sale, it might be time to start saving now for your new favourite entries to your library, because there sure are many to come!

# Don't Forget the T



**BRIGITA GUBINS**  
1B ENVIROMENT

Transgender visibility is at an all time high, with Laverne Cox's appearance on the April 2014 cover of TIME magazine, and now Caitlyn Jenner's debut on the cover of Vanity Fair one year later, after her April 20/20 interview with Diane Sawyer. However, this has not always been the case. The 'T' in the LGBT community has often been ignored, even with the recent rise in marriage equality and acceptance of different sexual orientations.

Born William Bruce Jenner, the olympic decathlon gold medalist was heralded as an American hero, the world's greatest athlete, and—unofficially—was considered to be the ideal man. Jenner won the 1976 Montreal Olympics decathlon, an American cold-war victory after the Soviet Union's athletes had dominated the sport in the 1972 Munich Olympics. Bruce Jenner became a household name after her image was used on cereal boxes and various other advertising campaigns.

Jenner came out so publically in part to

bring attention to gender dysphoria, and the violence and discrimination faced by trans\* individuals. She herself stated during her interview with Sawyer that she was not what people typically associated with gender dysphoria, being a Christian, politically conservative republican.

Various trans\* individuals have expressed concerns that with Caitlyn Jenner's fame, she will be taken as the face of the transgendered community, when she is not the sole representative of this community. However, her fame brings a positive light in the period of transgender acceptance by the public. For years, different sexual orientations have become so visible that many people now have LGB friends or family members, giving a human face to the issues faced in the fight for acceptance. Diane Sawyer's interview had 20 million viewers when it aired, and now 20 million people can say that they know a transgender individual.

Caitlyn Jenner's gender transition will be documented in a 6-part documentary series, premiering this July. While Caitlyn Jenner is not the only face of the transgender community, her public debut as Caitlyn is an important step forward in trans\* acceptance.



Duncan Rawlinson

Jenner, here photographed at the 2012 London Olympics, was a successful Olympic Decathlon in the 1970s.

# I Scream, You Scream, We all Scream for Naan



**CAMERON SOLTYS**  
2B MECHANICAL

COOKING WITH CAM

Yes, I know that generally the term is “ice cream,” and generally when the term isn’t “ice cream” it’s some other sweet dessert-type food. But this week, I have a Naan-based recipe that will have you screaming for more. At your minimum-wage bakery-department grocery stocker because they only have two bags on the shelf and you definitely need four to get you through the week. The rules are still

the same: if you have time to measure, you clearly aren’t doing enough studying; short of spilling a vial of mercury (i.e., a fluorescent lightbulb) into the pan, every meal is not only edible but also capable of being returned to a state of deliciousness; and the only necessary ingredients are the ones you already own.

Naan is a type of bread common in West, Central, and Southern Asia. It slightly resembles a flour tortilla, but is over one centimetre thick and puffy. You can find it in bags of two or four—probably in with the flour tortillas—at your local commercial food distribution center of choice. I should now clarify that, even though this article is all about a recipe that I specifically made based around naan,

rule number three still applies: you don’t need any new ingredients to make any of the recipes I show you.

So maybe your wallet is a little tight because you were binge-eating your way through midterms. Or more likely, it’s just a little tight because you’re a student with a termly tuition of over \$10 000, not to mention rent and movies and slightly-diluted ethanol-based solutions. Either way, you don’t have three dollars to fork over every time someone says something tastes good. Well fortunately, I can think of a number of naan substitutes that will work just splendid. The most obvious, as I’ve already mentioned, is probably flour tortillas. They have the same shape and they’re both basically pieces of flat dough. Of course, if you don’t have naan, you might not have tortillas either. In that case, there is an almost unlimited number of items which are, at their core, just flat pieces of bread. Off the top of my head, I could recommend: pancakes, crepes, precooked pizza crust (available raw from the grocery store), tortilla chips, rice paper, or the end-slices of a loaf of bread (with the added bonus of recycling what is otherwise a waste product).

Anyway, on to the recipe. The first is what I like to call “The Magic Wrap” because I first prepared it as what I thought was going to be a simple mediocre meal but ended up being one of my triumphs of the term. Take some sort of pre-cooked meat. And by pre-cooked I could mean leftovers, store-bought, or the proceeds from your automatic lava-based cow-killing farm. Whatever’s handy. I’ve also found tofu works well, though this doesn’t

have to be pre-cooked. Chop it up into small pieces, about half a centimetre per side.

In a pan on the stove, put a dollop of butter and a few shakes of brown sugar. Pretty much any fat and any sugar will do if you have neither. Mix them together under heat until you have a boiling lake of liquid sugar. Add your protein, mixing it all together to get the sugar coating everywhere. If you want to add any spices—for instance paprika—this would also be the time to do so. Let the concoction fry for a while, stirring occasionally to equally distribute the heat.

While the meat is cooking, raid the fridge for pretty much any raw-edible vegetable. Lettuce is an obvious choice, as are tomatoes and cucumbers. But pretty much anything that you enjoy eating raw will work. Slice them up on the cutting board into whatever you think is an appropriate size. I’m not your mother; chew as many times as you want. Once that is done, your pan is probably done cooking. Take out the results and store it somewhere. A plate (for instance the one you will eventually eat off of) will work, as will the cutting board you cut the meat and vegetables on. Now take a piece of naan and place it in the pan. You can press it down to pick up more of the juices left from cooking if you like. At this point if you pay for your utilities then turn off the stove and cook with the residual heat. Every once in a while, perform the standard test to see if the bread is too hot to hold. Once this test is successful, transfer it to your plate or cutting board (bottom side up), add everything else you have prepared, fold into the “hard taco” shape, and enjoy.



Christine A. Darius

Naan is traditionally cooked in a clay oven.



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# E&P and the Other Side of the President



**LEILA MEEMA-COLEMAN**  
PRESIDENT

My article this week is going to talk about a part of the President portfolio very few know about and we hope no one ever needs. As President I sit on the Examinations and Promotions Committee, more commonly referred to as the E&P committee. The E&P committee is responsible for overseeing requests for exceptions to the examination and promotion rules, changes to academic decisions, changes to work-term evaluations, and issues regarding late withdrawals. These can include issues like failing a work-term, fail-

ing an academic term, removing a withdrawn from transfer requests, or petitioning for a "no-penalty" term on the basis of extenuating circumstances.

The committee itself consists of 16 voting members with the President acting as the only student vote on the committee. The rest of the votes consist of a representative for each program, a representative from co-op, a representative from WatPD, and a representative from Engineering Counselling. Together we meet twice a term to review all cases brought forward from the department and make decisions on all the cases.

If you ever find yourself in a situation listed above, with extenuating circumstances that prevented you from being successful in your academic or co-op term, the commit-

tee and myself are here to help and to ensure that your case is reviewed fairly. You can start the petition process by speaking to your academic advisor and working with them on developing the basis for your petition and discussing your options. After the initial petition is submitted that is when me or another President can help.

We encourage all students submitting a petition to meet with the current President to review your case. We can recommend additional information you can provide to the committee, discuss options for what to request for your petition, and most importantly become familiar with your situation and present any additional information you may have at the committee. Since meetings are closed the petitioner doesn't get to speak to

their case. This means that if the President is informed on the details of the case we can ensure that the case is presented fairly and the extent of your circumstances are weighted fairly. This is a very sensitive issue for students and it is important to note that all information learned during the course of the petition and any meetings is strictly confidential.

There is a lot more information on the details of the petition process itself online and your academic advisor is a great place to start for most questions. However just remember that if you ever find yourself in an academic or personal situation and you are unsure who to talk to or what questions to ask, the Engineering Society President is here to listen and we can hopefully guide you in the right direction and help you get back on track!

## A Better Co-op Experience



**JOSHUA KALPIN**  
VP EDUCATION

Hey everyone, and welcome to yet another VP Education Exec Update! I'm going to keep it short this issue as things have been relatively quiet on the education front, but I have a couple of updates about co-op.

Last week I met with the new coordinators

for the Co-op Fundamentals Course (CFE) that all engineering students take as part of their concepts course in 1A. In the past this course has struggled to effectively communicate useful information to students. We discussed many things such as how to better communicate resume writing tips, methods for approaching job applications, and other parts of the course. Later this term, I may be looking for some 2019 volunteers to vet some of the new concepts and ideas in this course.

In addition to talking about CFE, we dis-




cussed an upcoming resume tips session to be run at the new ENG 101 program on July 11th. This program is the replacement for Student Life 101, but focuses a bit more on engineering concepts. I'm looking for a 3rd or 4th year student who would be interested in getting a little bit more involved in this and related first year co-op initiatives. If this sounds like something interesting to you, please let me know and we can talk a bit more about the details.

One other thing that has been going on is the ongoing survey of work term reports. Eve-

ryone should have received an email with the work term report survey in it. This survey is intended to understand the current state of work term reports along with getting student feedback on how to improve them. If you didn't receive the email, the link to the survey is [bit.ly/EngSocWorkTermReportSurvey](http://bit.ly/EngSocWorkTermReportSurvey).

I hope midterms have and/or are still going well for everyone and you'll hear more from me next week. As always, my email is [vpeducation.a@engsoc.uwaterloo.ca](mailto:vpeducation.a@engsoc.uwaterloo.ca) if you have any questions, comments, or concerns.

## Upcoming Events Calendar

Wednesday June 24	Thursday June 25	Friday June 26	Saturday June 27	Sunday June 28	Monday June 29	Tuesday June 30	<p><b>Check out up-to-the-day event postings on the EngSoc website at <a href="http://engsoc.uwaterloo.ca/event-calendar">engsoc.uwaterloo.ca/event-calendar</a></b></p> <p><b>NEW FEATURE: CCA events being offered by CECA. See <a href="http://uwaterloo.ca/career-action/">uwaterloo.ca/career-action/</a> for details and to register</b></p>  
<p>Game Lunch in POETS! 11:30AM - 1:30PM, POETS</p> <p>EngSoc Meeting 4 5:30PM - 7:30PM, CPH 3067</p> <p><b>CCA</b> Working Effectively in Another Culture, 10:30AM - 12PM, TC 1208</p> <p>Graduate Studies Information Session 1:30 - 3PM, TC 1208</p>	<p>Charity Grilled Cheese 11:30AM - 1:30PM, CPH Foyer</p> <p>Neighbourhood Canvassing 6:30 - 8PM</p> <p><b>CCA</b> So You Want to be an Academic? 10:30AM - 12PM, TC 1208</p> <p>Interviews: Preparing for Questions 12:30 - 2PM, TC 1208</p> <p>Difficult Conversations With Your Supervisor 1:30 - 3:30PM, TC 2218</p> <p>Interviews: Proving Your Skills 2:30 - 4:30PM, TC 1208</p>	<p>EngHack (Day 1) Start 7PM, M3</p>	<p>EngHack (Day 2) End 7PM, M3</p>	<p>Toronto Pride Parade 8AM - 5PM, Toronto</p>		<p><b>CCA</b> Make Networking Count 10:30AM - 12PM, TC 1208</p> <p>Work Search Strategies 2:30 - 4PM, TC 1208</p>	
<p><b>Wednesday July 1</b></p> <p>CANADA DAY</p> 	<p>Charity Grilled Cheese 11:30AM - 1:30PM, CPH Foyer</p> <p><b>CCA</b> It's All About Your Skills 10:30AM - 12:30PM, TC 1208</p> <p>Résumé Tips: Think Like an Employer 2:30 - 4PM, TC 2218</p>	<p><b>Friday July 3</b></p>	<p><b>Saturday July 4</b></p> <p>Summer Leader Retreat</p>	<p><b>Sunday July 5</b></p> <p>EngSoc Joint Annual General Meeting 10:30AM - 4:30PM, CPH 3607</p>	<p><b>Monday July 6</b></p> <p><b>CCA</b> Academic Work Search 10:30AM - 12PM, TC 1208</p> <p>Successfully Negotiating Job Offers 1:30 - 3PM, TC 1208</p>	<p><b>Tuesday July 7</b></p> <p>Exchange Information Session 5 - 6PM, CPH 3602</p> <p>WiE Key Chain Workshop 5:30 - 7:30PM, Machine Shop</p> <p>MatLab Workshop 5:30 - 7:30PM, PO</p> <p>EngProv 6:30 - 8:30PM, POETS</p> <p><b>CCA</b> Your Personality Type, Pt. I 10:30AM - 12:30PM, TC 1214</p> <p>Non-academic Work Search and Networking 2:30 - 4PM, TC 1208</p>	
<p><b>Wednesday July 8</b></p> <p>Game Lunch in POETS! 11:30AM - 1:30PM, POETS</p> <p><b>CCA</b> Are You LinkedIn? Learning the Basics 10:30AM - 12PM, TC 1208</p> <p>Success on the Job 2:30 - 4PM, TC 1208</p>	<p>Charity Grilled Cheese 11:30AM - 1:30PM, CPH Foyer</p> <p><b>CCA</b> Career Exploration and Decision Making 10:30AM - 12:30PM, TC 2218</p> <p>Interviews: Preparing for Questions 1:30 - 3PM, TC 1208</p>	<p><b>Friday July 10</b></p> <p>Waterloo Engineering Competition (Day 1)</p>	<p><b>Saturday July 11</b></p> <p>Waterloo Engineering Competition (Day 2)</p> <p>EngSoc goes to THEMUSEUM 9AM - 3PM</p> <p>EngSoc Waterslide Day 12 - 5PM</p>	<p><b>Sunday July 12</b></p> <p>Beach Day 9AM - 8PM</p>	<p><b>Monday July 13</b></p> <p><b>CCA</b> Writing CVs and Cover Letters 2:30 - 4PM, TC 1208</p>	<p><b>Tuesday July 14</b></p> <p>Genius Bowl 7 - 10PM</p> <p><b>CCA</b> Mitacs: Foundations of Project Management I 9AM - 5PM, TC 2218</p> <p>Exploring Your Personality Type, Pt. II 10:30AM - 12:30PM, TC 1214</p> <p>Careers Beyond Academia 2:30 - 4PM, TC 1208</p>	

## Election Results

**SOHEIL KOUSHAN**  
CHIEF RETURNING OFFICER

It's with great pleasure that I am able to announce the results of this Spring's executive election. The elected candidates are as follows:

**President:** Adelle Vickery  
**VP Internal:** Sarbajoy Majumdar  
**VP Finance:** Abdullah Barakat  
**WEFF Director:** Eric Shi  
Voter turnout was 12.7%.

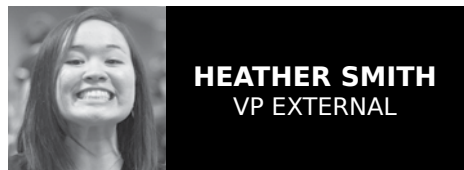
Another election will be held for the positions of VP External and VP Education. The dates are as follows:

**Nominations:** June 29 - July 3  
**Campaigning:** July 5 -10  
**Voting:** July 11-14

**Results Announced:** July 15 (EngSoc meeting)

Visit [engsoc.uwaterloo.ca/elections](http://engsoc.uwaterloo.ca/elections) for the nomination form and further details.

## Diversity and Pride!



**HEATHER SMITH**  
VP EXTERNAL

Hey Engineers! Midterms are hopefully almost or completely done for almost all of you! Now that you have a bit more time on your hands, why not celebrate getting through the past two weeks by going to one of the biggest EngSoc events of the term: Toronto Pride Parade! The parade is taking place on Sunday June 28 in downtown Toronto, where people gather from all over to celebrate LGBTQ+ history and culture. The Engineering Society is showing its support and appreciation by marching in Pride and would love to have you sign up to march behind our float with us; it's an absolutely amazing time!

Tickets are currently on sale in the Orifice, CPH 1327. A ticket including Pride swag to wear while marching in the parade, lunch, water, snacks, and a seat on the bus to and from Toronto costs \$20 for undergraduate students, and \$25 for alumni and staff. Tickets for everything except the bus ride to and from Toronto is \$15 for undergraduate students and \$20 for alumni.

## How Would You Spend Your Money?



**KEVIN MCNAMARA**  
VP FINANCE

Hello Engineers! This issue I'd like to discuss Engineering Society Finances in general. Obviously a big part of my role as Vice President Finance is to manage anything and everything to do with finances of the Society. The Engineering Society is here to serve and represent all undergraduate engineering students at Waterloo. This means that the Society should be spending money on what students want. However, it can often be hard to balance priorities. What might be a sound financial decision for the Society might not make the most sense for what students want. On the other hand, spending money on only what students want (i.e. free food and swag) isn't always the best decision either.

Whenever the Society makes a financial decision, I usually ask myself one question – "If I told 100 people I don't know what we spent

this money on, what would they say?" I think it's very important that we keep in mind what students want and try to reflect our decisions based on this. Sure, there might be 50 people out there who want to spend money on a pizza party, but what about the other 3000 plus students on campus? What would they think?

Looking at all the incidental fees that students here at Waterloo pay, it might be hard to keep up with what each one goes towards. In fact, you might think that all of these fees are a waste of your money. That's why I want to pose the question: how would you spend your money? If you were in my role and had about \$15 for every student on campus, what would you do with it?

The Engineering Capital Improvements Fund (ECIF) might be a good place. This fund is used to purchase things that will make your life better at Waterloo. New furniture for PO-

ETS and new equipment in the Orifice are just a few of the things that the fund has bought in the past. We are always looking for ideas on what to buy, so if there's something else you think that the school needs, you should let me know.

I want to hear how you would spend your money. Want to know how we spend it right now? Check out the EngSoc website (<http://engsoc.uwaterloo.ca>) and go under Documents. Have an idea on how we should spend it? Drop me an e-mail at [vpfinance.a@engsoc.uwaterloo.ca](mailto:vpfinance.a@engsoc.uwaterloo.ca).

To end off this article I'd like to take an opportunity to congratulate Abdullah Barakat who has been elected as the next A-Society Vice President Finance. Abdullah has a lot of great ideas on how to make improvements under the finance portfolio, so be sure to keep an eye out for those. See you next issue!

## Tickets, Tickets, Tickets!



**ADELLE VICKERY**  
VP INTERNAL

page: <http://bit.ly/EngSocGoesToPride> If you want to know more about the event, read the VP External, Heather's update.

### Beach Day!

EngSoc is going to Elora Gorge for a day filled with sunshine and laughter! The bus will leave the DWE cul-de-sac at 10am on July 12th and returning at 6pm that night. Tickets are only \$5 and are available in the Orifice (CPH 1327). You can visit the facebook page for more information: <http://bit.ly/EngSocBeachDay>

### Semi-Formal!

The termly Semi-Formal event is happening on July 18th at Turret Nightclub on Laurier campus! Come out to celebrate the (almost) end of the Spring term at this "Radiate" themed semi-formal dance. Early-bird tickets are on sale for \$10 until June 30th, and then the price rises to \$15! So come to the Orifice to buy your tickets early!

There you have it - some of the bigger events happening in the Society that currently have tickets for sale in the Orifice. There are also always events and services happening throughout the term that don't require you to buy tickets, such as technical workshops, CoffeeHouse, LAN Party, and more. If you want to know more about these events, visit the EngSoc website ([www.engsoc.uwaterloo.ca/event-calendar](http://www.engsoc.uwaterloo.ca/event-calendar)), find me in the orifice, or shoot me an email at [vpinternal.a@engsoc.uwaterloo.ca](mailto:vpinternal.a@engsoc.uwaterloo.ca).

Hey everyone! I hope midterms went well or are still going well if you, like me, haven't finished yet.

Now that midterms are done (or will be soon), why not come out to more EngSoc events? This article, I'm going to give you a run-down of the awesome events happening!

### EngHack!

Come out to this 24-hour Hackathon, where you can build your own software, learn some new skills, and show off your work! The event starts at 7pm this Friday (June 26th) and ends 24 hours later. Participants will be given free pizza and other snacks! Tickets are on sale in the Orifice (CPH 1327) for the rest of the week and are only \$5 for engineering students! Visit the facebook event for information and updates about prizes: <http://bit.ly/EngHack>

### Pride Parade!

EngSoc is marching in the Toronto Pride Parade on Sunday, July 28th! This is one of the biggest events of the term and you don't want to miss it. More information about the different ticket prices and what is included in the cost can be found on the facebook event

# WORK REPORTS

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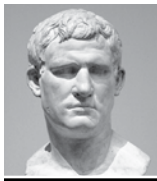
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# Rome and the Modern Days of the Week

## The Gods of the past live on



**GAIUS LUCIUS  
AGRIPPA**  
10B CONSUL

ACTA DIURNA

Salve citizens of Waterloo, I Gaius Lucius Agrippa welcome you back once again to the Forum Romanum! On this day of Jupiter Optimus Maximus, I bring to you another article in our befitting Acta Diurna column. Today, I speak of time itself, like the flowing rivers of the Tiber it goes continuously and as surely as the cycle of the sun and moon, and of course the days of the week. Appropriately, in this article I present to you, the origins of the names of each of the days of the week. Many of you may not know, but the seven day week and their names trace their origins all the way back to the glorious Roman Empire.

Originally, we followed the eight-day nundinal cycle, a period of 8 market days of a week. This was marked by the letters A to H on the calendar. This formed the basis for much of roman life prior to the adaptation of the seven day calendar. The market day was the day when citizens of Rome from the country would come into the city to sell their produce, while the citizens from within would purchase food and needs for the

entire week. In 45BC, then Consul Gaius Julius Caesar took steps to reform the Roman calendar, shortly after the conquest of Egypt. It is said that this is the turning point in which the 8-day week started to diminish in popularity, in favour of what soon to be known as the 7-day week. It is worth noting that these two systems were used simultaneously with each other, and a full switch did not come to be until much later.

The names of the week on the other hand can be traced much further. In a culture deeply seated in religion and the pantheon of gods, the days found their names from the gods. The ancient Mesopotamians were the first to associate and name each of their days with that of a god. Later on, the Greeks referred to this as theon hemerai (days of the gods) and as you can imagine, had their own equivalents of the names. Shortly upon the introduction of the seven day system in Rome, we followed this same system, and named each of the days according to the gods. The modern English equivalents and their original Roman counterparts are as follows: Sunday or dies Solis was named after Sol, the god of the sun; Monday or dies Lunae, named after Luna, divine embodiment of the Moon; Tuesday was the day of Mars, or dies Martis; Wednesday was the day of Mercury, originally known as dies Mer-

curii; Thursday was named after Jupiter King of Gods, and was called dies Iovis; Friday was named after the fair Venus, originally called dies Veneris; and Saturday for Saturnus, known as dies Saturni.

Many of you may say that the original names of the seven day week are incredibly different in English from their original Latin counterparts, save for a few such as dies Solis for Sunday, or dies Saturni for Saturday. It goes without saying that the word "dies" is the Latin word for day, and each of the names roughly translates to "Day of". The names themselves however, underwent many changes at the hands of Germanic tribes. Many German tribes south of the Danube river and within Rome's provinces adopted the names of the days, but converted them to their own culture and religion. By the process known as Interpretatio germanica, many of the Germanic people identified the Roman gods with the names of their own deities. As such the days of the week had their own Germanic equivalents, which is a lot more similar to the names of the modern days of the week.

- Sunday - Dies Solis changed to Sunnandaeg, the Germanic Sunna, equivalent of Sol
- Monday - Dies Luna had the equivalent Monandaeg from Máni, the

Germanic god of the moon

- Tuesday - Dies Martis was changed to Tiwesdaeg; the German equivalent Mars was known as Tiwaz or Tyr
- Wednesday - Dies Mercurii changed to Wodan's day or Wodensdaeg (or better known in modern times from the northern Germanic equivalent as the god Odin)
- Thursday - Dies Iovis for Jupiter transformed into Day of Donag or Dunresdaeg (also better known in modern times in its northern Germanic equivalent as Thor)
- Friday - Dies Veneris for Venus became Frigedaeg from the Germanic goddess Frija or Frigg
- Saturday - Saturnus, which had no Germanic equivalent, was kept in its original form.

Many of these Germanic equivalents found their way through time, and evolved into what is known as the modern days of the week. Exploring other languages, Romance languages in particular which were derived from Latin, keeps many of the original names such as the modern Spanish word for Tuesday: "Martes" which is much closer to the original dies martis. Regardless of the passage of time, it is easy to see that the names of the days have their roots in Rome.

# Remote Beauty of Northern Quebec



**JESSICA KEUNG**  
2B CIVIL

SMALLEST VILLAGES

Welcome back readers of the Iron Warrior Engineering Newspaper. I hope you are all having a happy Hell Week and a jolly good time studying for those midterm examinations. I know I am not. So what better way to procrastinate by reading (and writing) about some of the smallest villages in Canada and learn something new about all the different places in this country? You never know when this information about obscure villages in Canada can come in handy. This week we will head to northeastern Quebec to the small village of Ivujivik.

Ivujivik is a small Inuit community in the Nunavik region in northern Quebec, Canada. It is the northernmost settlement in Quebec and the northernmost settlement in any Canadian province; only settlements in the Canadian territories are more northern. Inujivik in Inuktitut means "Place where ice accumulates because of strong currents" or "sea-ice crash area" and the place is aptly named. This village is surrounded by imposing cliffs and the tormented waters of Digges Sounds. This place is where the strong currents of Hudson Bay and the Hudson Strait clash; where during particularly strong tides, hapless animals are crushed under the violent movements of the sea ice. But due to the strong currents of the sea, it prevents the water from completely freezing over thus allowing hunting to happen year round.

This small Inuit community has a population of 370 people as of 2011, and in 2001 96% of the people there were considered aboriginal. In 2006, this village had 42.9% of the population under the age of 15 and the median age was 19.1. This is common in many Inuit

communities, where there is a large youth contingent. In 1962, Ivujivik established a cooperative to help support the local economy by developing new activities such as sculpture, crafts, and tourism focusing on hunting and fishing. Atlantic salmon and arctic char fishing is available as well as caribou hunting opportunities.

There are not many ways to get to Ivujivik. Ivujivik is located 2000 kilometres north of Montreal. There are no roads that link Ivujivik to the North American road system and there are no roads that link all the other communities in the Nunavik region together. The only way in and out of Ivujivik is through the Ivujivik Airport. This airport is served by Air Inuit which has flights out to Akulivik, Inukjuak, Kuujuarapik, Puvirnituq, Salluit, Sanikiluaq, Umiujaq, and Montreal.

In February 2006, Lydia Angiyou, a resident of Ivujivik, saved her seven year old son and two of his friends from a polar bear attack outside the local youth centre. A local hunter heard the commotion and saved Lydia by shooting the bear down. It is believed that she was able to fight off the bear with her bare hands and save her child because of the phenomenon called "hysterical strength." Polar bears are not common in the populated area and Lydia Angiyou was awarded the Medal of Bravery by Governor General Michaëlle Jean for her actions.

Canada is filled with small towns and villages with a rich and vibrant histories, with stories to tell from generations ago. Canada has now changed, it can be seen just by Ivujivik; the Inuit people, who were formerly nomadic, now establish settlements all over northern Canada. The next small town and village that we will be exploring will be Mayo, Yukon, located 400 km north of Whitehorse, situated within the traditional territory of the First Nation of Na-Cho Nyak Dun.



Ian Schofield

**Ivujivik's remoteness and isolation makes it attractive as a tourist site for those looking to get away from the busy hustle.**



Itluu Itidluie, Cape Dorset

**Artwork like this serpentine carving offers another economic opportunity for Ivujivik.**

# Cecilia Payne, a Forgotten Giant



**BRIGITA GUBINS**  
1B ENVIRONMENT

ON THE SHOULDERS OF GIANTS

Cecilia Helena Payne was born May 10, 1900, in Wendover, England. Her education began at St. Paul's Girls' School. At the age of 19, she was awarded a scholarship to Newnham College within Cambridge University, where she studied botany, physics, and chemistry. Payne completed her studies at Cambridge, but did not receive a degree because of her sex; Cambridge only awarded degrees to women after 1948. Her interest in astronomy was sparked when she attended a lecture by Arthur Eddington on his 1919 expedition to a remote island of the coast of west Africa to observe and photograph the stars during a solar eclipse.

As a woman in the United Kingdom, Payne's only career option was to become a school teacher. Knowing this, she left England in 1923 to pursue a degree in the United States. After meeting Harlow Shapley, the Director of the Harvard

College Observatory, Payne began her studies at Radcliffe College (now Harvard College Observatory) on a fellowship encouraging women to study at the Observatory.

In 1925, Payne became the first person to receive a Ph. D in astronomy at Radcliffe College. Her doctoral research was in the composition of the various layers of stars, analyzing the spectral classes to their temperatures by applying Indian physicist Meghnad Saha's ionization theory. In Payne's research, she showed that common metals in the Sun's spectrum displayed similar relative abundances to those found in Earth's spectrum, agreeing with the belief at the time that the Sun had a similar composition to the Earth. However, in the course of her research, Payne discovered that hydrogen and helium were vastly more abundant than the other metallic elements, hydrogen by a factor of approximately one million. Her thesis concluded that hydrogen was the primary constituent of stars, and thus, it was the most abundant element in the universe.

The review panel for Payne's dissertation included astronomer Henry Norris

Russell, who vehemently defended the accepted belief that the Sun and the Earth were of similar compositions. Russell dismissed Payne's research as incorrect, as it was considered too controversial, and dissuaded her from presenting the conclusion that the Sun was predominantly composed of hydrogen. However, four years later, he came to the same result by different means and published it. While Russell briefly acknowledged Cecilia Payne's work in his paper, he was still often given credit for her discovery.

Cecilia Payne is just one of the many Harvard Computers, a team of women researchers analyzing the stars and working to develop a classification system based on the data made available by the latest technology, spectroscopy. This team was started by the Director of the Harvard College Observatory, Edward Charles Pickering, (Director from 1877-1919) who chose to hire women as skilled workers to process astronomical data. While often referred to as "Pickering's Harem," the Harvard Computers were some of the most brilliant minds in early 20th century astronomy, sadly ignored by the world because they were women.



Payne's ideas were often ignored by her male peers.

## Retro-Video Games Part II

### The rise of handhelds and consoles



**VINCENT MAGAS**  
2B MANAGEMENT

HIT REPLAY

Hit Replay returns this issue with an article close to the hearts of many! We pick up where we left off from the last issue on video games! Still fresh in our memories are the 8-bit soundtracks, giant pixelated screens and epic time consuming madness of the early consoles and handhelds! Many of you reading this may still remember the early days of games like Contra, Pokémon, the Legend of Zelda, and more.

As we mentioned in the last article, by the late 80s and the dawn of the 90s, the status of arcades and their game manufacturers slowly dwindled. Arcades themselves started closing their doors, as large national chains such as Chuck E. Cheeses, and Dave and Busters took their spots. Many video game manufacturers turned their gaze elsewhere, and saw new potential far from arcade centres in the homes and hands of video game enthusiasts everywhere.

It is not hard to argue that the fall of arcades was caused by the video game giants SEGA Enterprises Limited and Nintendo for their introduction of their home systems in the mid-80s, paving the way for the home entertainment systems and eventually the hand held gaming systems. Nintendo's release of the Famicom in Japan, later known as the Nintendo Entertainment System (NES) in North America, caught the attention of many. Sega similarly released the Sega Genesis (known as the Mega Drive in Japan) won the hearts of gamers in the late 80s. These two consoles would later establish foothold in the gaming world and propel the industry towards home entertainment systems.

The inevitable shift that these consoles caused, started what became known as the Nintendo—Sega console wars. Nintendo dominated the North American and Japanese markets with their Nintendo Entertainment

System (NES) and eventually the Super Nintendo Entertainment System (SNES); releasing games such as Super Mario Brothers, The Legend of Zelda, and Metroid which would later establish themselves as staples of the gaming community. As of December 2009, the estimated count for total sales of the NES consoles top out at 61.97 million units worldwide. Sega competed releasing systems such as the aforementioned Sega Genesis, and Sega Master Systems. Sega introduced their own plethora of games that gained popularity such as Sonic the Hedgehog, Contra, and their own arcade game ports of the Street Fighter and Mortal Combat games. While Nintendo dominated the North American and Japanese markets, Sega became more popular in Europe, South America, and Australia. Not surprisingly, more games were also released for the Sega Master Systems and the Genesis in these markets. The Sega Master System by comparison,

has sold approximately 15 million units worldwide as of 2012.

On April 21 1989, Nintendo released a device in the market that would forever change the face of the gaming industry. It was on this day that the original Game Boy first appeared in Japan, created by the mastermind Gunpei Yokoi and his team the Nintendo Research & Development 1. The Game Boy was subsequently released in North America on July 31, and in Europe on September 18 1990. The handheld device debuted with games such as Super Mario Land, Tetris, and Alleyway. The device became the best-selling item created by Gunpei. The Game Boy paved the way for hand held devices in the gaming world. Until today, it has left a lasting legacy; its predecessors such as the Game Boy Advance, SP, and even today's Nintendo DS iterations are well loved.

For the next ten to fifteen years, the gaming industry would see massive advances in home consoles and hand

held devices. Mega corporations such as Sony (in the mid-90s) and Microsoft (in the early 2000s) would enter the introducing their own gaming consoles, the PlayStation and XBOX respectively. These two consoles would very quickly earn their place in the fast growing industry and establish a new era of gaming consoles.

Nowadays, with 4K resolution, wide-screen TVs, wireless controllers, fully-customizable gaming keyboards and endless lines of graphics cards, it is easy to forget the long road that the gaming world has been on. It is safe to say however, there are many out there who miss those 8-bit tracks and lovable pixel characters! It is for example not hard to run into GameBoy games or SNES games at conventions such as Toronto's FanExpo and Anime North. Looking forward to the future, it's without a trace of doubt that many of these games are here to stay, and gamers will inevitably Hit Replay!



# Black Sorcery: The Old Time Witches



**CAITLIN MCLAREN**  
3N CHEMICAL

## 5 THINGS YOU DON'T WANT TO KNOW

To all you Harry Potter fans, the idea that people used to burn witches seems unfair and horrible. That's because witches have been changing their image recently. If you were around in old times, you would know exactly why people used to hate witches.

### Navajo Witches Used Ground Corpses as a Poison

In Navajo folklore, a witch is by definition someone who magically poisons people. Reasons for poisoning people can include: hatred, rivalry, theft, shits, and giggles. Of course, being witches, there was no reason to use normal poison. Instead, they would use "corpse powder," which is... exactly what it sounds like. Witches would obtain corpses and grind the bones into powder—finger bones and the back of the skull were considered especially powerful. Baby bones, especially bones of twin babies, were the best source, which is sad. Other sources of corpse powder include dried fluids from incestuous necrophilia, probably in order to fit maximum horror in minimum words.

To poison people, the skin-walkers would blow the powder into their faces or throw it down the chimney of their house. If you breathed in the dust, your tongue would swell up and blacken and you would die horribly.

In their spare time, skin-walkers

would put on animal skins and turn into werebeasts. They would then perform petty crimes such as housebreaking, assault and battery, and disturbing the peace.

### Catalan Witches Were Perverts

In Catalonia, it wasn't hard to become a witch back in the day. All you had to do was roll around in the sand, naked. Witches' powers would diminish with time, so to replenish them, they would draw magical marks on their butts every so often. They would do this on the full moon, no pun intended.

Witches had the power to see through solid objects. Why yes, they did have the power to see through peoples' clothes. This is probably what worried the Inquisitors so much.

They also would have witch dances, wherein they would be naked (notice a theme here?) and dance in tight circles, slamming their asses against each other. Of course, they had sex with demons as well.

### Icelandic Witchcraft Was Disgusting

Witches in old Iceland were deeply into biohazards. In a previous column, we discussed nabrok, which were pants made of a dead man's skin. However, that is only the tip of the iceberg.

For example, supposing that there is a lock that you can't open. You probably aren't doing something legit in the first place, so you don't have anything to lose. First, you go to a graveyard and dig up a corpse. Take some of the corpse's fat, and put it in your mouth. You now draw a sign, lay it on the lock, and then

blow into the keyhole while reciting a magical charm. This is called a bellyfat whistle, which is ridiculous! It isn't possible to whistle with your mouth full of food.

If you want to exorcise a ghost, you should mix blood from a man, a fox, and a seal, and then draw a magical sign on skin from a horse's head. Alternatively, draw a different sign on the skin of a bitch (a female dog, you idiot). When you are attacked by a lightning ghost (and I am not sure what that is, but it sounds badass), wave the skin at the ghost while spitting and peeing at it.

If you are a woman and want to steal random shit, you can raise a kind of goblin to do the work for you. First, dig up a rib from a graveyard, wrap it in wool, and keep it in your shirt. To feed it, you will have to carve yourself a third nipple on your thigh, which it will drink from. You can then send it to drink milk from your neighbours' cows, and spit the milk into your containers. To get rid of it, just send it to pick up sheep poo until it explodes.

### Greco-Roman Witches Were All About Body Fluids

The Ancient Greeks were famous for inventing logic, and the Romans for being practical and hard-headed, but in fact they were quite superstitious and were terrified of witchcraft. If you met their witches, you would be too.

Greco-Roman witches were into love spells and would often steal their crushes' hair to make love potions. Hair isn't so bad, but when they were done with their lovers they would turn them into animals. If someone annoyed them, or

their lover left them, they would sneak into their house at night and pee on their face. Oh, and then stab them.

Witches would also remove peoples' body parts, such as ears and noses, while they were asleep. They would patch the wounds up with wax or other random things, so the people wouldn't realize it until much later.

### English Witches Were Horrible

In ye olde Englande, witches used incredibly nasty items for mundane purposes. For instance, to make a new building lucky, you should place the dried body of a cat inside the walls. If you think that's bad, the even older custom was to have a human sacrifice and brick up a person inside the foundation.

A Hand of Glory (mentioned in Harry Potter) was a severed hand of a hanged man, preferably a murderer. To preserve it, sometimes you dry it; other times you pickle it in a mixture of human and animal pee. There are a few different uses – making a candle from corpse fat and putting it in the hand would either give light only to you, or paralyze everyone around you. It will also unlock any doors you come across.

The candle should be made of a mixture of corpse fat, various herbs, and dried horse poo. Alternatively, set the hand itself on fire.

If you have a weak stomach...well, to defend yourself against people using these things, smear your door with a mixture of cat gall, chicken fat, and owl blood. Damned if you do, damned if you don't.

And that, ladies and gentleman, is why they used to burn witches.

# Shape Memory Alloys Can Withstand 10 Million Cycles



**SHERWIN KWAN**  
4B MECHANICAL

Shape memory alloys (SMAs) are materials that, after being deformed, return to their original shape when heated. An alloy is a material which combines a metal and another element. Many alloys have multiple solid phases—several different ways the atoms of the two elements can

be arranged. For instance, low carbon-steel (iron-carbon) may be found in the phase of pearlite, martensite, or austenite depending on temperature and cooling rates.

What makes SMAs unique is that there are two solid phases which can be transformed into each other by heating or cooling. By convention, the same names are used as for the phases of steel: the phase stable at high temperatures is called "austenite", and the phase stable at low temperatures is called "martensite". Such a

reversible transition allows the SMA to return to an earlier shape after being deformed, by simply heating them to return them to the austenitic phase. Notably, titanium-nickel alloys have been found to have shape-memory properties.

SMAs have been proposed for many applications, including medical implants to keep blood vessels open, safety systems such as taps which automatically shut off when the water gets too hot, and aircraft components. However, one of the barriers to adoption of SMAs is that they are prone

to fatigue; generally, after a few thousand cycles of deformation the constant transformations will either lead to crack formation or a change in the transformation temperature, causing the material to fail or become permanently deformed.

Recently, a team of scientists from the University of Kiel and the University of Maryland demonstrated that a titanium-nickel-copper (Ti-Ni-Cu) alloy could be used to create SMAs which could last for 10 million cycles. The breakthrough was discovering, in an experiment with thin films, that an alloy rich in titanium (containing Ti<sub>2</sub>Cu) exhibits more consistent stress-strain characteristics than an equiatomic (equal numbers of titanium and nickel atoms) alloy. After observing phase transformations using electron microscopes and X-rays, the scientists came to the conclusion that the causes are likely epitaxy and low cofactors. In other words, during the transformation from one phase to another, the Ti<sub>2</sub>Cu precipitates (which happen to be compatible with both phases) allow the nuclei of the new phase to form in an organized, repeatable manner, and it also happens that the two phases have a density and shape such that grains of the new phase grow in an equilibrium manner around the nuclei. Unlike other SMAs, which often have imperfect transformations with martensite "left over" after a transformation to austenite, essentially 100% of this Ti-Ni-Cu alloy transforms from phase to phase. Thus, phase transformations are reliable and repeatable, even for millions of cycles.

This discovery has the potential to make SMAs viable for applications where service life is an important consideration. Perhaps one day we'll see doctors recommending the use of SMAs in mission-critical implants as a safe, low-risk treatment.

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# Jays Red Hot, But Hardly Flawless



**ELIZABETH SALSBERG**  
3A NANOTECHNOLOGY

**THE BENCHWARMER REPORT**

Following a fairly busy off-season for Anthopoulos and Co., it looks like we are finally starting to get something out of these massive trade manoeuvres and big free agent signings. After a relatively slow start to the season, the Jays have bounced back over the past 3 weeks, winning 14 of their past 17 games, storming to within 2.5 games of the A.L. East Division lead (the Rays are in first, with the Yankees a mere game behind them, while the Orioles are just one game behind the Jays).

The bats are going, and that killer batting lineup we've been expecting to see since spring training has finally taken shape, if not quite in the way we might have expected. Josh Donaldson and Russell Martin, the two major off-season acquisitions have shown why the Jays' brass went after them. Donaldson is hitting .305, while Martin has had some phenomenal timely hits, including a home run in extras against the Red Sox to steal a victory. Not to mention that he also happened hit another timely home run literally the next day.

While the new boys have certainly been good, we can't neglect the old crew either. Jose Bautista, Edwin Encarnacion and Dioner Navarro have also played well, as has the lower part of the order. Kevin Pillar has finally showed up, consistently manufacturing hits and providing heads-up base running and highlight-reel defence. Chris Colabello has robbed previously injured/possible still

injured off-season signing Michael Saunders of his job in left field. Even Ryan Goins has been pinched in a bit offensively, in addition to his sensational Johnny Mac-like defence at second.

Things are rosy as far as offence is concerned. Starting pitching has generally also been solid, though of course there is still room for improvement; many starters have not lasted more than 5 innings (just enough for a win). Regardless, youngster Aaron Sanchez has improved tremendously this month from May (it's amazing what happens when you have run support), while newcomer Marco Estrada has proved his worth, running a no-hitter into the eighth inning in the series opener against the Orioles.

With bats and starters going the way they are, it's not too much of a surprise that this group is playing great baseball, raking in win after win. Which is what makes it interesting to analyze what happens when they have lost.

The sore issue is the bullpen. Historically, Jays manager John Gibbons' inherent strength has been relief pitching... so what gives? The answer: He has next to no pieces to work with. Never mind not having a designated closer, we don't even have a designated set-up man, nor do we have a reliever we can rely on to eat up innings if a starter runs out of gas early. When the Jays lose, or when they come close to losing, it is very often attributable to relief pitching.

The starter leaves the game, maybe with one batter on base. Next thing you know, bases are loaded and the tying run is at the plate with no outs, while the next poor sod is hastily warming up in the bullpen. We can't get relievers in and out fast enough. And it's costing us games.

Take Aaron Loup for example. Though

he's been reliable in the past, it's been the polar opposite this season. In the second game of a three-game set against the O's, Loup took the mound in the ninth inning, only to let the O's cash in the go-ahead run, leaving runners at second and third. Ryan Tepera came on in relief of Loup, promptly giving up a double to pseudo Jay-killer Manny Machado and two more Baltimore runs for good measure. In the likely scenario that you've never heard of this guy, the Jays selected him in the 19th round of the MLB draft in 2009... that tells you all you need to know right there. Final score? 5-2 Baltimore. Why? Lack of good relief pitching.

The A.L. East is a tough division. The standings are tight, with four teams all within four games of the lead. If we're going to have meaningful baseball in September, two things have to happen: One, Castro needs to regain his spring-training form and make it back up to the big leagues, bringing more heat out of the bullpen with fellow youngster Roberto Osuna, whose been a bright spot in an otherwise dark place. Second, the Jays brass need to sign a reliable reliever. Either a designated, experienced closer on the order of Jonathan Papelbon (formerly on the Red Sox, now with the Phillies and only signed through the end of this year), or a reliever capable of eating away multiple innings (though this is typically much harder to find). Else, the existing bullpen will have to find a way to stay competitive and reel in games.



Keith Allison

**Russell Martin has delivered at critical times for the Jays.**

The O's, the Yanks and the Rays all have superior relief. And so far it's shown. Not just in the standings, which are very close, but in divisional games, which are always critical for making the postseason. If Anthopoulos is serious about really "going for it," he should try to trade for Papelbon before he becomes a free agent. If he performs well, and Rogers is willing to cough up a ton of money, then we'll be set for the next couple years too. Shouldn't be too hard considering the Martin signing...

Regardless, if the Jays do not improve in relief pitching, they simply will not make it to the postseason. There is still a piece missing, and it needs to be addressed. With everything else clicking, it would be a real shame to waste this potentially fantastic opportunity.



# China to Use Aerial Drones to Monitor Entrance Exams



**BRIAN CHAN**  
3A NANOTECHNOLOGY

Now at the University of Waterloo, food and labelled drinks are not permitted to be brought into examination sites. The primary reason for this new rule is that these things can distract people, and secondly, these can be used as tools to help students cheat on their exams. I think that this is pretty fair. But, in a country on the other side of the world, drones and spy gear, among other things, are being used by exam proctors to catch students cheating in university entrance exams. Now I think that is overkill, but it also makes me wonder why this might be necessary.

Due to the large population in China, each year millions of high school students have aspirations to become the new Bill Gates, Steve Jobs, etc, etc. The only problem standing in their way is the requirement of a university degree. Getting into university here in Canada may seem difficult, but in reality it isn't. In Canada, you don't have to compete with millions of other students graduating secondary school. The weight of this motivates a massive amount of cheating; those exams

determine where your position in society will be.

The proctors know that the students will go to great lengths to cheat, and so, due to the fact that rapidly evolving technology is making it increasingly difficult to police the students, drones were brought in to watch over the them. These bots have scanners that ensure that no type of electronics devices with transmitters that can easily aid students are being used by the exam-takers. If anyone is trying such a tactic, the drones will alert the proctors and the student will be reprimanded.

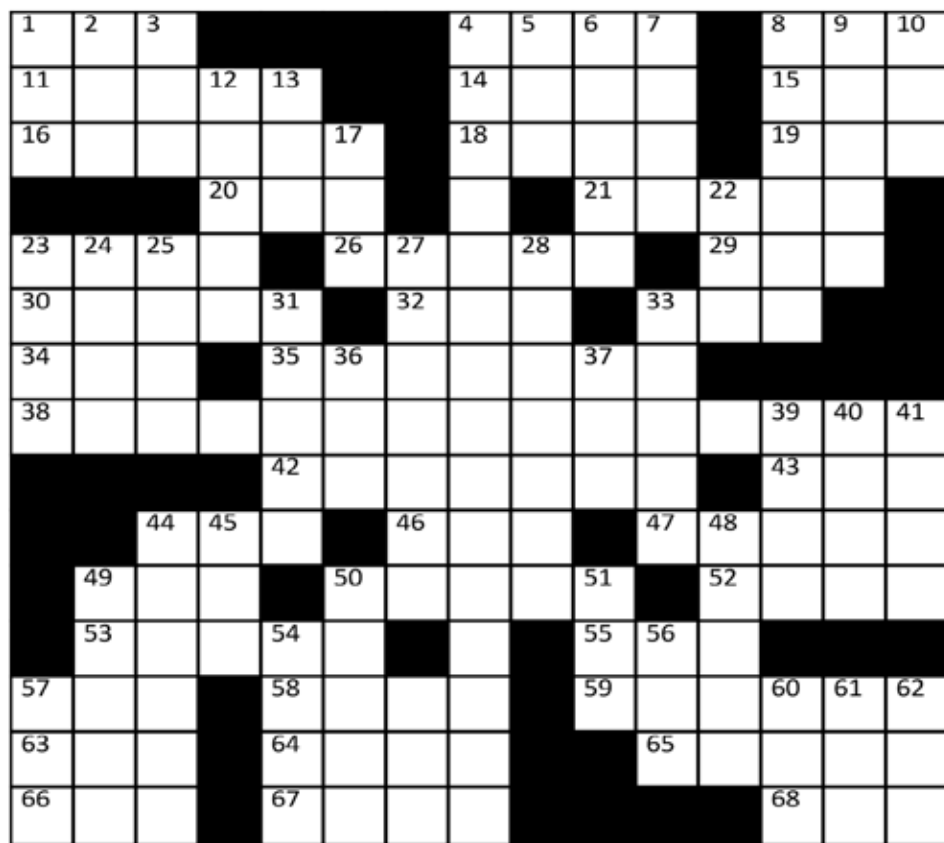
This, however, does beg the question as to why the students will go to such lengths to cheat that drones are required in order to ensure no cheating occurs. It is because of the increasing pressure that the students feel; placed onto them by their parents and the knowledge that failure is not an option. It is because those exams are the only way to get into university. Failure on the exam means no degree, terrible job prospects, and a life of regret. Maybe it really isn't the fault of the students that so many of them are willing to cheat. Maybe it's just because of the huge pressure that the exams place on the students. Just some food for thought.



# The Iron Crossword

Sing Me a Song

**CAMERON SOLTYS**  
2B MECHANICAL



**Across**  
**1:** Grabbed with mouth  
**4:** "Raise \_\_\_ glass" Artist P!nk single  
**8:** Increments once each year  
**11:** Brand of beverage, or walking discription  
**14:** Absence of difficulty  
**15:** Slang for the country where 66 across is celebrated  
**16:** The cigarette most doctors are alleged to have smoked  
**18:** Standardized test for law-school hopefuls (abr.)  
**19:** Internet shorthand for surprise  
**20:** Japanese onomatopoeia for cat noise  
**21:** Plain-looking rock with a beautiful interior  
**23:** Old name for the US agency that provides Medicaid (abr.)  
**26:** First word in the title of the song that opens with that famous guitar riff  
**29:** For each  
**30:** Changes made to a document  
**32:** Felt when near at something magnificent  
**33:** short form for A and T, or C and G  
**34:** What humans breath  
**35:** First MLB player to get 40 home-runs and 40 steals in a season

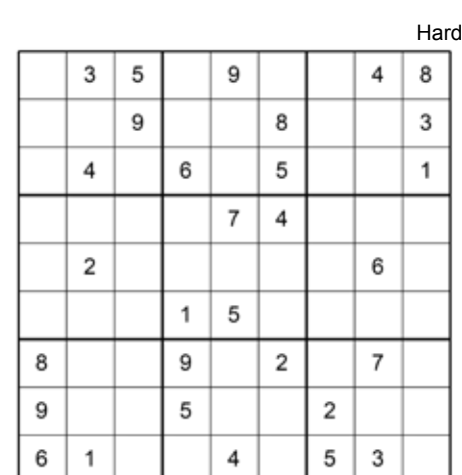
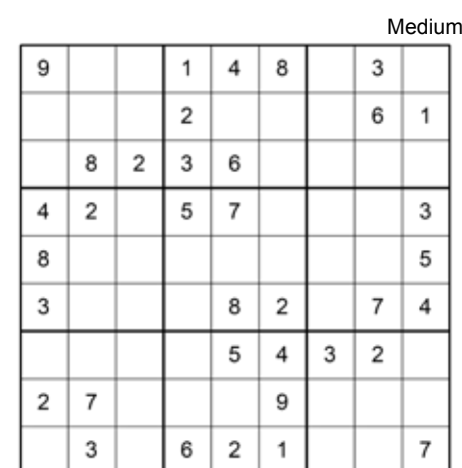
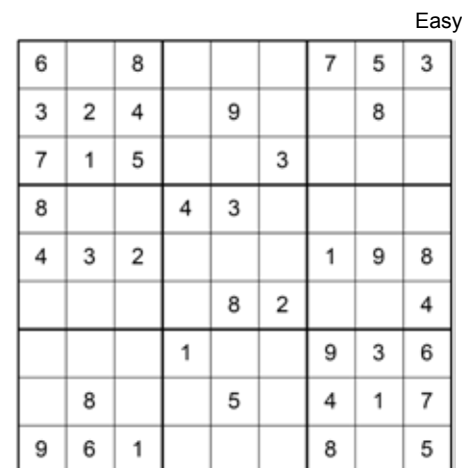
**38:** Childhood rhyme about Bubonic Plague  
**42:** \_\_\_ alcohol \_\_\_, which will never be drunk by engineering students (2 wd.)  
**43:** The predecessor to the NHL (abr.)  
**44:** To not tell the truth  
**46:** Audio compression format optimized for speech coding  
**47:** A being requiring an exorcism  
**49:** A method for monitoring a brain using scalp electrodes (abr.)  
**50:** Informal name for someone higher than you in the military hierarchy  
**52:** Look at something you arn't supposed to  
**53:** Often done when rhythmic music plays  
**55:** Where Finn and Jake live  
**57:** Used to make a Canadian treat  
**58:** Great Indian singer Mohammed  
**59:** Suitable for a fancy party  
**63:** Might be played by 9 down  
**64:** Recognizable symbol  
**65:** Modern day middle-eastern country previously under French Mandate  
**66:** Celebration in country of 15 across  
**67:** "We stand on guard for \_\_\_"  
**68:** Version of a popular card game consisting of 100 unique cards (abr.)

**Down**  
**1:** Media service of Dr Who and Sherlock  
**2:** Group engaged in the pursuit of Irish independence (abr.)  
**3:** In Canada, Horton is the most famous  
**4:** Beatles song about a peculiar transportation method  
**5:** Social security payment available to most elderly Canadians (abr.)  
**6:** Important statistic for those with mobile data  
**7:** An interwoven network of passageways  
**8:** Typically the zinc nail in a potato battery  
**9:** A person who might play 63 across  
**10:** A technique for measuring electrical activities in muscles (abr.)  
**12:** French spelling of Canada's Upper House  
**13:** 1000 light-years (abr.)  
**17:** Signal for help  
**22:** Police force which operates in rural Ontario (abr.)  
**23:** "Do you \_\_\_ what I \_\_\_?" (Same word)  
**24:** 402 in Roman numerals  
**25:** A type of dense snow found in glaciers  
**27:** A jellyfish-looking creature which is actually a collection of animals  
**28:** An enthusiastic or eager person  
**31:** Found on both fish and dragons  
**33:** Long piece of lumber  
**36:** Observatory which is operates the 12m radio telescope on Kitt Peak, Arizona (abr.)  
**37:** Following ABC  
**39:** "Lean \_\_\_" Bill Wither song (2 wd.)  
**40:** Adorns a foot  
**41:** Pull  
**44:** Jump towards (2 wd.)  
**45:** Previous name for the bank now known as Tangerine  
**48:** A strong adhesive which must be combined before using  
**49:** Excel function that returns a date when given a start date and a number of months  
**50:** \_\_\_ Boys, California rock band  
**51:** A person who is often drunk  
**54:** In videogames, an action which does more damage than expected  
**56:** Suffix indicating being full of a quality  
**57:** Sergeant (abr.)  
**60:** Before  
**61:** Performed an action  
**62:** Single from Norwegian singer Alexander Rybak's *No Boundaries* album

# Sudoku

#2015-08

**CAMERON SOLTYS**  
2B MECHANICAL



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

## THE IRON INQUISITION

Cameron Soltys, 2B Mechanical

*"If you were a supervillian, what would your power be?"*



*"Invincibility"*  
Jennifer Li, 4A Mechanical



*"Breaking hearts or giving out exponential assignments"*  
Sarbajoy Majumdar, 2B Management



*"Knowledge in itself is power"*  
Tarique Plummer, 2T Biochemistry



*"Mind reading"*  
Dana Toameh, 2T Health Studies



*"Know the future and what others are thinking"*  
Xim Zhi, 3B Chemistry



*"Hack any computer system"*  
Michal Kononenko, 2B Nanotechnology