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THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY

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The Return of Hack the North



Myo @ Hack the North



It's always exciting to attend hackathons. There's a sort of creative tension in the air that you hardly feel anywhere else. You can almost hear the gears whirring in the hackers' heads as you pass by, as they put their mental energies to use towards troubleshooting that code snippet that suddenly stopped working, prototyping an electrical design that is as efficient as possible with the parts they have on hand, or coming up with a sales pitch that is bound to blow away the competition. Such was the atmosphere last weekend in E5, where Hack the North, a hackathon attracting students from all around the world, was hosted.

For those who don't know, a hackathon is an event where participants brainstorm, build, and pitch their ideas for solutions to any problem they can imagine. With only 36 hours to develop a competition-ready product, the pressure is on for hackers who, more often than not, get very little sleep. Each product is judged by important guests from the tech world, who are usually founders or CEOs of their own companies.

And important guests were there—Alexis Ohanian, the co-founder of Reddit; Eric Migicovsky, the CEO of Pebble; Steven Woods, the engineering director of Google; and Mike Kirkup, the director of Velocity were only a few of the 18 guests present to judge or to speak at the event.

For tech companies, hackathons represent an interesting opportunity to find the most talented hackers, and ultimately

to recruit them. Students can also take the opportunity to get in touch with tech industry leaders, such as Google, Microsoft, and Facebook, and secure exciting future job prospects for themselves.

Most students, however, attend hackathons to be able to collaborate with other bright minds on their projects. To help them implement hardware solutions, hackers at Hack the North were given access to a variety of cool gadgets to play around with, including Oculus Rifts, Arduinos, Raspberry Pis, Pebble smartwatches, Myo armbands, Intel Edisons, and drones, only to name a few. Some employees from the companies who attended the hackathon were also going around, helping the hackers with any technical questions they might have had.

With all the support these hackers had access to, you can expect that the hacks they developed during the hackathon's

short 36-hour time period were brilliant. Some of the finalists included an Iron Man-inspired hack that integrates a way to interact with your phone inside a motorcycle helmet, a device that vibrates when a cyclist comes too close to an obstacle, and an app that uses both Pebble and Uber technologies to track how many drinks you've had.

I'm personally hoping to see some of these hacks develop into companies. To simplify the transition from hack to viable product, Hack the North has introduced a new prize category this year, presenting a "fellowship for continued learning" to the team whose product shows the most promise two months from now, an idea born of the collaborative spirit of the hackathon. In the words of Kevin Lau, co-founder of Hack the North, "Encouraging collaboration, not competition, is our core value."



Department of Mechanical & Mechatronics Engineering

Over 1000 hackers participated in a 36-hour marathon of building, innovation, and collaboration.

Francesco Polizzi

Letter from the Editor

When Faced with the Next Chapter



MEAGAN CARDNO
EDITOR-IN-CHIEF

It is the end of September already, yet I can't tell if it feels as though these past few weeks have gone by quickly or slowly. With the term starting as late as it did, it feels like Orientation Week both happened just yesterday, and was also half an age ago.

Our first issue of the term also marks a milestone for me as my first 'official' issue as Editor-in-Chief, as our previous EIC and I worked conjointly on the frosh issue. I have to thank my Assistant EIC, Leah, and EIC of Spring 2014, Nina, for their continued help and support throughout our (rather heavily extended) production weekend. Having two former EICs at my disposal definitely made the weekend much easier, sickness notwithstanding. I hope that everyone is remembering to drink their OJ, and keeping their hands decently washed.

This issue features the triumphant return of many columns that were on hiatus between streams. Ashlyn delves into the personal and professional life of Chemical Engineering professor Dr. Ting Tsui in the newest entry of *Prof Personalities*, while Elizabeth has her eyes set on the officially post-season Blue Jays in a special *Birdwatch* edition of *The Benchwarmer Report*, and David delves into what exactly defines "Smart" in *Perspectives*.

We also welcome a new addition to the world of Iron Warrior columns — *The Calder Report* will be discussing the details of politics south of the border, so for those of you who are similarly confused about the difference between an Elephant and an Ass, be sure to check it out!

As an obligatory bit of reminder, especially to all you first-year readers, don't be afraid to come out to our meetings (every Wednesday at 5:30 PM in E2-2347) if you are interested in getting involved with the paper in any way. We are always interested in more writers, editors, and contributors of all sorts!

Hopefully everyone's term has been off to a reasonably good start. If it hasn't, don't worry — I like to think of October as the month of change and adjustments. Reflect on your experiences these past few weeks, note what things went well and what things sort of crumbled in your grasp as you panicked at the last minute. As the autumn leaves begin to change colour and fall from the branches, so should your routines begin to change, and your

poor habits dropped as you identify them as unhelpful.

You should also eat plenty of delicious vegetables, because autumn is great for that. They will give you all the nutrients you need to complete that homework due this week (make sure you've started that already, not two hours before its due) and to shine during those co-op interviews (pay attention to your posture!). Plus, they are really quite tasty—and significantly cheaper than meat! I can't believe I spent such a large portion of my childhood with a violent disdain for veggies.

In other news, it appears as though my editorials this term will become an odd mixture of bizarre metaphors, and me giving you pro-tips on your health. Just make sure that you do as I say, not as I do. Don't ask me how many hours of sleep I get a night.

Even if you are not a first-year student, I still believe the analogy holds true. As Albert Camus said, "Autumn is a second Spring, when every leaf is a flower." Expect, for the academic, autumn is even more of a spring than even spring is, as it marks the beginning of a new year of class. We welcome a new wave of students to our campus, begin new courses, and think about the next year of our academic career.

Autumn is also the time of many fresh academic starts. Perhaps you are looking for (or even already found, lucky duck) a job for the winter co-op term. Maybe you are striving for an improvement in your grades from previous terms. Perhaps you are a first-year just hoping that you have a handle on this university business. Autumn presents an opportunity for all of these things to occur.

Even outside of the purely academic matters, autumn brings change to our lives. We also find our social lives changing with the seasons. Old friends returning to our lives from co-ops or study terms abroad. New faces on campus can lead to new friendships entirely. The change in perspective from the long sigh of summer can even mean the evolution of previously established relationships into something entirely new. Autumn bears more fruits for us than just the final harvest of peaches. Dang, am I ever going to miss fresh peaches.

At the same time, I believe that it is an important matter to note that autumn is not a season of creation — autumn is a season of change, of refinement. The beautiful leaves and sweet fruits that we are able to enjoy in autumn are not new products that suddenly appear to us. They are the products of the labour put forth in seasons past. In the same way, remind yourself that the

effort you invest now in what matters to you will be repaid in kind come next season. Recognize that actions which may appear small now can lead to big results in the future. Be wary of what seeds you plant now, as they may just affect your future in a way larger than could imagine right now. Even the mightiest oak once came from a stray acorn finding its way into the ground.

But enough of the extended, cliched analogy. What is the point that I am trying to make? Well, the same way other folks find themselves engrossed with spring fever, I find myself afflicted with a particular enthusiasm and emotional peak during autumn. It's my personal favourite season. I find myself filled with unprecedented optimism and motivation. Suddenly, I am filled with a desire to take on everything the world would dare to throw at me — sometimes even more than I can feasibly handle in my already saturated schedule.

Is this a good thing? That's debatable. After all, challenging our personal limits is a crucial part of this period of our lives. While there are still associated risks with failure (because of course if we removed that risk, failure would hold no consequence), they are usually far less severe than what we can face in the world of full-time employment.

Of course, we mustn't be careless. Blind optimism does have very real risks with it, and consequences are still consequences. Such is the nature of fresh starts — eagerness can get the better of us, and we find ourselves too keen to achieve everything we've dreamed and more.

Over-extension of our capabilities can lead to even more disastrous outcomes than missed opportunities. It can take a great amount of courage for one to realize when they have bitten off more than they can chew, let alone properly digest.

In this time of new opportunities and development, be aware of when you are beyond your recommended physical or mental capacity. Nobody is without their limits, and now is the time to find out exactly what yours are.

As engineers (or, technically, potential future engineers, but it's not quite as catchy to say), nothing should satisfy us quite like optimization. Use this autumn as a time to optimize yourself. Optimize your efficiency. Find your balance between academic pursuits, maintaining a social life, and your personal care. It might need tweaking over the months, even years to come. Fortunately, there is always next autumn to anticipate.

So a new chapter in life begins. All we can do — all we *should* do — is take it one page at a time.

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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On Careless Consumption of Content



**THE FLAWED
PARADIGM
3B SKEPTICISM**

I'm sure everyone knows that much of what we are taught to desire in advertising is far from the truth of what we are given—the favourite is those photos of juicy, delicious hamburgers that make our mouths water, which are actually plastic painted and dressed with oil.

In today's day and age of mass consumption, there is potentially no worse offender for feeding our non-selective appetites than the internet. The internet presents to us information in an all-you-can-eat buffet style, compared to the meagre, impoverished days of our parents and ancestors. Information used to be a rare, cherished commodity. Books were only for the rich, which could in turn only be read by people with enough education to understand them. The introduction of libraries — public libraries

— was incredible in just how common people could begin to learn and understand the world in the same way that the wealthy could.

The internet presents a curious conundrum here. While it offers the same allure of knowledge that the traditional library did during its heyday, if not in an even more accessible medium, it does not come with the same securities that we once enjoyed with the old \$0.10-per-late-day paperbacks. Of course, I'm certain many of you will understand where I am going with this—as the internet is free for all people to access, it is similarly free for all people to contribute to. And, alas, some of these contributions are less helpful than others.

The internet has grown beyond a mere platter of knowledge for the browser to enjoy—it has become an overwhelming sea of information, whose scope reaches beyond what any of us can even imagine. And, as cruel as it may sound to say—the majority of that sea is absolute garbage. The voices of experts in a field can

be accessed just as easily as those who know nothing of what they are talking about, and it is not always easy to tell who falls into which category. Completely incorrect information can be presented as if it were gospel, and the truth can be presented in an uncertain matter, causing people to doubt it.

Unlike the library, the internet also operates on fundamentally different principles. Instead of being primarily a place of knowledge for knowledge's sake, it has become place of information for business' sake, where extending profit margins is favoured above all else, often at the cost of the quality of content produced.

It can be a sad life for those who truly wish to contribute to the internet in a meaningful and altruistic way. Success online is not measured in impact, but in outreach. Only the numbers designating more viewers, readers, visitors, and supporters for your content count if you ever hope to be significant. By allowing all users to create content, there becomes an

insurmountable signal-to-noise ratio for content that consumers may wish to peruse, often deterring them from searching beyond the surface of what they are presented. Ask yourself—when was the last time you went to page 2 after a Google search?

It becomes the job of search algorithms to present what they determine to be the 'best' content. What do they designate as 'best'? Well, relevancy of course comes into play. Most search engines use keywords as criteria, but after that point it's really all up to the algorithm itself in order to sort through the thousands upon thousands of potentially relevant pieces of media.

What other factors are used to filter down the content? Recency is a big one. Media that is 'fresh off the press' is favoured over old news—so that means that if you want your content to remain relevant, you gotta keep producing that content, or else it will be lost to the ages.

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Controversies, Hack the North, and Inclusivity



**FILZAH NASIR
3B ENVIRONMENTAL**

On September 18-20, UW hosted Hack the North for the second time, a hackathon which brought together students from across North America to create a unique software or hardware products from scratch.

Hack the North is an annual event sponsored by the Faculty of Engineering and one that is meant to be a place to show the best of UW. However, not everything went according to plan this year. Two hackathon attendees were removed from the hackathon due to inappropriate online comments around bombs, referencing Ahmed Mohamed, the 14-year old from Texas who was arrested for bringing a clock to school because his teacher assumed it was a bomb.

The news of Hack the North (HtN) events went viral, with a large contingent of those online vociferously speaking out against the decision. This included one prominent Hack the North co-founder and UW student. Users of Reddit and 4chan decided to partake in their own brand of internet vigilante justice, which included the sending of threats to the person they believed primarily responsible for the decision to remove the students.

I would like to start with a qualifier. Whatever your opinion is regarding the decision to remove two students from Hack the North due to inappropriate Facebook comments around bombs, this was in no way parallel to the situation in Texas, where a fourteen year-old Muslim boy was arrested for bringing a clock he had developed to school. One was two people being removed from a fun, voluntary event, because they specifically referenced the creation of a bomb. The organizers who removed them made it clear they were aware the comments were an attempt at humour but deemed them inappropriate enough for removal. Ahmed's arrest, on the other hand, was the humiliation of a young boy by his own educators (people whom he trusted and who were in a position of power over him). Unlike at HtN, no attempts were made to discuss the situation with Ahmed or to investigate

if there was a legitimate concern for safety. The decision to arrest him was rooted in Islamophobia.

These events are not the first controversies HtN has faced this year. Earlier in the summer, a Reddit post which questioned what role gender played in the decision in accepting applicants went viral. The post was filled with comments suggesting that HtN and tech companies in general were prone to hiring women over more qualified male counterparts in an effort to meet diversity quotas. [Pause. This isn't true. There is a great deal of data and research available which proves over and over again that the tech world is biased against women and minorities, not towards them. I am not going to share this evidence again for those unconvinced]. Once again, the same prominent HtN co-founder repeatedly commented that gender played no role in the selection process and that "there was literally no bias." Because those screening the HtN applicants have found a magical ability to rid themselves of inherent human bias.

What do these two controversies have

in common with each other? Well they both serve to make minority students (women, Muslim students, etc.) feel uncomfortable at HtN. It sends the message that these students are not welcome at this prominent UW event. Although the students who made the inappropriate jokes were removed, the dominant narrative around the situation continues to be the idea that this was the wrong decision and was the result of someone acting too quickly. The idea that the students who were upset by the news of Ahmed Mohammed may not be able to digest these comments as humour is completely lost in the discussion.

It should be noted that while the HtN team published an official statement which stood by the decision to remove these students, they did not speak out against the content of these comments and the impact they may have had on students. Meanwhile, the discussion around gender bias at the event was full of sexist and demeaning comments from people including HtN attendees as well as UW students. The comments implied, among other things, that female HtN attendees were only accepted to the

event because of gender. Although the discussion was clearly a significant one and revealed a great deal of persistent issues present in the tech world, there was no official response from HtN organizers.

Hackathons do not exist in a bubble. UW does not exist in a bubble. As much as we would like to believe that STEM is a meritocracy, just like the rest of the world, it is not. As much as Hack the North organizers would like to believe that their event is perfectly open to everyone, this is simply not true.

Here's the problem: Hack the North is a really prominent event for UW. It's an event sponsored by the entire faculty. All the messaging around Hack the North makes it clear that this is an important event to be at if you are a UW student, particularly if you happen to enjoy coding. Yet, we continue to allow these events to remain uncomfortable for at least a portion of students. If events such as HtN are so important to the UW community and students, why can we not take the few extra steps required to make these events inclusive to all UW students?

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Mindfulness in Modern Media (or the Unfortunate Lack Thereof)

Continued from CARELESS on page 3

Afterwards, content by ‘significant’ forces on the internet are going to be favoured over the content of nobodies. So if you don’t already have an established audience consuming your content, don’t expect anybody new to just happen upon it by accident.

So, what do these two factors together mean for content producers? Well, it creates a certain ‘recipe’ for success. Financial success. You must establish an audience for yourself, and produce content that they enjoy consuming— and content that they will continue to consume, as you cannot lose said audience

if you wish to continue to remain relevant. The easiest way to maintain this is by producing nearly formulaic content, so that your audience is not deterred from the bread-and-butter content that they have come to enjoy, and the content creator themselves can pump out content more regularly due to not having to take the time to create something original. Use the same mould, slightly twisted to a new flavour or subject, and you just earned yourself another month on the internet’s big-wig list.

But what does this also encourage? It should be obvious— it encourages the creation of oversimplified, easy-to-digest content. It’s the reason why bullet-

list, BuzzFeed-style articles are shared time and time again, over lengthy paragraphs of text that explore multiple sides of an argument in detail, and aim to deliberate rather than tell you what to think (or, more simply, the articles that aim to “show” rather than “tell”). It’s the reason why a two-minute Youtube video telling you why [insert controversial topic] is bad will be watched and shared far more readily than a twenty-minute video explaining in particular details why that same topic is complex. and as not black-and-white as we would like to think it is.

This also encourages the creation of bland, nearly content-less content.

Whenever an online series is aimed to be maintained past their planned lifetime, they become so formulaic that they can be completed in a Mad-Libs style.

So, what is our responsibility, as consumers of said media? Well, not an easy one. It’s not something that will be fixed by one person deciding that they won’t be another consumer of easy-bake content. It will require a shift in the entire media consumption habits of the internet— which, we have likely all come to know, is no small task. Until then, it simply becomes something to be mindful of when searching the internet in any matter. Practice safe consumption, and remember— you are what you eat.

Refugee Review: The Situation in the EU



THEERAN KATHAN
2A NANOTECHNOLOGY

In the summer of 2015, Europe experienced an influx of refugees unparalleled since the Second World War, as a result of the current situation in Syria. Four million Syrian refugees have left Syria, most of them are now living in camps in the neighboring countries: Jordan, Lebanon, Turkey and Egypt. As the camps get more and more crowded, many refugees have turned to the EU for asylum.

As an increasing number of people are displaced due to the hostile situation in the Middle East, the number of refugees seeking asylum grows. As per the Dublin Regulation, the EU’s current policy is to put the refugees in whatever nation they land in. This policy has been criticized as it puts a greater economic and social strain on the EU border nations (France, Greece, Bulgaria), whereas relatively more stable nations (England, Belgium etc.) take in extremely few refugees as a result.

Germany is a notable exception to this. Since the start of the refugee crisis, Germany announced that it will accept all Syrian refugees. As a result, German plans to take in 800 000 refugees in 2015, more than the entire EU in 2014. However, due to the overwhelming number of refugees, Germany placed

temporary border controls earlier this month. The UK, in comparison, has stated that it will only allow 20 000 Syrian refugees into their country over the next 5 years.

Of course, these numbers are hard to quantify properly. As Germany processes Syrian refugees faster than other refugees, a market has grown around the purchase of fake Syrian passports. These passports are rumored to cost between \$1000 and \$2000 in countries such as Turkey. German authorities admit as much as 30% of the refugees taken in may in fact be using false passports.

Many find Canada’s failure to give a prompt response to the refugee crisis quite disappointing. Canada itself has only resettled about 2 500 refugees so far, despite raging support for refugees on the municipal and provincial level. Toronto’s mayor, John Tory, has called other mayors to take on organizing municipal help for refugees, saying “This is the Canadian way to respond”. Calgary’s mayor, Naheed Nenshi, has criticized our current policies, saying “we’re a country of generosity and we’re a country of opportunity”. Montreal’s mayor, Denis Coderre, has also said his city is ready and willing to welcome more refugees.

At this point, all Canadian political parties have made assertions to increase that number over the coming years, with the conservatives pledging to bring in 20 000 refugees over the next

4 years, the Liberals pledging to bring in 25 000 refugees “as soon as possible” and the NDP pledging to bring in 10 000 refugees “out of harm’s way and to Canada by the end of the year”. Yet many believe these policies to be too little too late.

Meanwhile the countries bordering the Persian Gulf are oft-quoted as having taken in no refugees during this time, an act called “especially shameful” by amnesty international. And yet this is a misrepresentation. Saudi Arabia claims to have received around 2.5 million

refugees (the actual number is probably between 100 000 and 250 000). The lack of representation of these refugees stem from the facts that refugees aiming for the Syrian Gulf find it relatively geographically inaccessible: it shares no land borders with Syria, nor is it accessible via the Mediterranean.

The pope himself has taken a stance on the refugee crisis, appealing to all the parishes, religious communities, monasteries etc. to take in one family of refugees, during a Sunday address in Vatican City earlier this month.



Freedom House

Refugees fleeing Syria encounter more hardships as they attempt to seek asylum in the EU.

Canadian Mining Operation in Argentina Leaks a Million Litres of Cyanide into River



NINA FENG
4A ENVIRONMENTAL

LEAFY THOUGHTS

Toronto-based mining company Barrick Gold, operating in San Juan, Argentina, has spilled approximately 1.072 million litres of a cyanide solution, affecting the rivers Potrerillos, Jachal, Las Taguas, and Blanco. Attributed to a valve failure, the September 12 spill was originally reported as being around 224,000 litres, almost a fifth of what the final report stated. At just under half the volume of a standard Olympic-sized swimming pool, the leak has pushed the company to issue a suspension order to company operations.

Cyanide, used in extracting gold from processed rocks in the mine, can be fatal to humans at around 1.5 milligrams per kilogram of body weight. It functions by inhibiting cytochrome c oxidase, a protein used in cellular respiration, without which an organism effectively cannot use oxygen. Lower doses cause weakness, vertigo, and headaches, prior to loss of consciousness. Higher doses or prolonged exposure leads to deep coma and ultimately cardiac arrest.

The Veladero mine, at which the incident occurred, is one of the largest gold mines in the country. It was discovered that a floodgate, which should have stopped the spill from reaching the river, had been open during the spill. Barrick has determined that the spill poses no threat to the health of local communities living downriver, and that immediate ac-

tion was taken in order to stop the spill when it occurred. However, other environmental impacts cannot yet be discounted, with the Argentine government advising locals to drink bottled water until investigations have been completed.

Considered the largest gold mining company in the world, Barrick Gold has struggled to maintain a good or even trustworthy relationship with environmental groups and communities. Labeled as one of the “12 Least Ethical Companies in the World,” the company is now facing a lawsuit for potential environmental damages stemming from this spill. With details shrouded in secrecy, it has been suggested that the gravity of the incident has been downplayed by both the company and the government.

A report published jointly by MiningWatch Canada and the International

Civil Liberties Monitoring Group last month has determined that Barrick Gold is one of a number of companies whose influence has led to attacks and repression on environmental activist groups in South America. Despite this, due to continuing support of mining activities for economic growth, Barrick has remained successful, given rapidly rising gold prices.

Investigations on the incident are still underway, and for the time being, it is still unclear how dire the situation in Argentina is. Locals are not unreasonable in doubting the word of the company, especially given that they’ve received mixed messages from the government. Perhaps this incident will spur further action for the protection of environmental affairs in Latin America... or perhaps not.

Canada's Choice, Our Choice



DONOVAN MAUDSLEY
2A MECHANICAL

On October 19th the 42nd Canadian Federal General Election will be held, but what does that mean for you? It means that you can have your voice heard. Any Canadian citizen who is at least 18 years of age can cast their vote and make a difference in the election. In Canada the country is divided into 338 electoral districts, with representatives from each party trying to win your vote and get elected to a seat of National Parliament. If a party can win over half of the seats in the house, they become a majority government. If no party can do this, Canada will either have a minority government made up of the party with the most seats, or a coalition made up two parties with similar views. The leader of the governmental party is then sworn in as the Prime Minister.

Our last general election was on May 2nd 2011, and resulted with a majority Conservative government led by Prime Minister Stephen Harper. Elections Canada estimates that 58.5% of the country came out to vote that day, but that only 38.8% of people aged 18-25 voted. Being 17 at the time, I went with a friend and it only took around 10 minutes in total to complete. To me that seems like a small price to pay to have a say in something this important.

In Canada this election we have five major parties: The Conservative Party led by the Right Honourable Stephen Harper, the New Democratic Party led by Thomas Mulcair, the Liberal Party led by Justin Trudeau, the Green Party led by Elizabeth May, and the Bloc Quebecois led by Gilles Duceppe. The first four parties operate nationwide while the Bloc Quebecois are a separatist party operating entirely in Quebec.

This year the Canadian dollar has seen a drastic decrease in value, and is valued at

\$0.75 USD at the time of this writing. On Thursday the 24th of September the dollar hit an 11 year low before slightly rebounding. Canada's economy has also been in a period of decrease during the first half of 2015, meaning we are in a recession. Job growth has slowed, as well as general import and export totals. Expectations for the third quarter of 2015 are positive though, with many institutions predicting a rise out of recession.

The Conservative party does not believe we are in a recession. Their economic stance this election is that the economy is uncertain, but that Canadians need to trust them moving forward. This includes their reduced corporate tax rates and changes to Old Age Security benefit eligibility. They are also still committed to many controversial issues: the military mission against ISIL, the construction of the Enbridge Northern Gateway Pipeline, and anti-terrorism Bill C-51. Socially they have promised to increase health funding to provinces starting in 2017. Waterloo is currently a Conservative riding, with Peter Braid running for re-election.

The New Democratic Party, or NDP, is vocal about helping the middle class. They are committed to lowering child care costs, not raising personal income taxes, raising taxes on big business, and cancelling income splitting which only benefits the wealthiest 15% of Canadians. They want to end the bombing campaign in the Middle East, opting for a humanitarian aid campaign, repealing Bill C-51, and would oppose the Northern Gateway pipeline. Other promises include decriminalizing marijuana, balancing the budget immediately, and restoring health care increases. Diane Freeman, a University of Waterloo Engineering graduate, will be running for the NDP in Waterloo.

The Liberals have promised not to balance the budget immediately, choosing instead to run modest deficits to allow for mass investment in infrastructure. They have also promised tax breaks of up to 20.5% to the middle class, higher taxes for the wealthiest Canadian



The Canadian Press

Thomas Mulcair, Stephen Harper, Elizabeth May, and Justin Trudeau are head of the four major parties operating in Ontario.

ans, and increased child benefits for families with below average income. Business taxes would not be affected. Legalizing marijuana for sale and taxation to increase federal revenue has also been promised. Similar to the NDP they would like to transition the military campaign in the Middle East to a humanitarian one, however the liberals supported Bill C-51 and have only promised to make amendments to it. Bardish Chagger is the Liberal candidate for Waterloo.

The Green Party is very environmentally focused, but do have platforms for every major issue. Of particular note is their plan to fully fund university education nationwide. They also wish the ban unpaid internships and boost trade apprentice programs. They have proposed a carbon pricing through a fee-and-dividend system and oppose the Northern Gateway. Economically they have promised to eliminate personal taxes on low incomes, reduce small business taxes, and raise corporate taxes. The Greens are represented by Richard Walsh in Waterloo.

As I mentioned before, voting is a relatively easy process (way easier than a work term report). You need to make sure that you're voting in the correct riding, or electoral dis-

trict. If you are registered to vote you will get a voter information time telling you where to vote and what riding you're in. If you're not registered you can register online or at a polling station. You then need to be able to prove your address. You can do this with government issued photo ID (your driver's license), two pieces of ID with one address (your health card and student card), or by taking an oath in the presence of someone who knows you, lives in the riding, and has ID (you still need two pieces of ID). Then you just need to mark your X and your voice will be heard.

If you aren't going to be voting in your home riding, say you're away at school or something like that, you can participate in special ballot voting. This enables you to vote in your home riding from another riding. You still need to be able to prove your home address, and you must know the name of the candidate you wish to support, not just the party. Special ballot voting will be held in MC 2036, the SCH Laurel Room and SLC 106 from October 5th till 8th. On campus there will also be a local candidate debate and meet and greet on Monday October 5th from 1-4 pm in the SLC.

(Ex)-Canadian Citizens



CAITLIN MCLAREN
3B CHEMICAL

Bill C-24, the controversial citizenship act which passed in 2014 and came into force earlier this year, is now being used for the first time to revoke a Canadian citizenship.

To say that the bill was controversial is an understatement. Not only did it make the process for obtaining citizenship harder, but it granted the government the power to take away citizenship from a person who either had or was eligible for dual citizenship.

Zakaria Amara, a leader of the so-called "Toronto 18" who plotted bombings in

2006, is now (among a few others) having his citizenship revoked. This was the intended use of the bill, meant to be used against terrorists, spies, traitors, and members of armed groups at war with Canada.

Few people have sympathy for Mr. Amara, or indeed for any of the above. However, opponents fear that the scope of the bill may be gradually expanded in the future, or its provisions misused (i.e. by trumping up charges against those considered by the government to be troublemakers). Many argue that the law creates a "two-tiered" citizenship under which immigrants—and their children—hold a lesser status.

Others hold that this law, rather than improving Canada's security, simply ignores our responsibility to prevent terrorism. Terrorists do not lose their ability to commit acts of terrorism by losing their citizenship;

the act, in a way, declares them "somebody else's problem." In fact, while deporting a terrorist who emigrated to Canada from elsewhere makes some sense, foisting a Canadian-born radical on another country is quite unfair to said country, who played no direct part in that radicalization. One suspects that this hypothetical country would be none too pleased.

Amara was born in Jordan and thus can, under Bill C-24, be deported when his prison sentence is finished (it is for life). Real Canadians are not terrorists, they say, and thus terrorists are not real Canadians, or not for long. However, it would be perfectly possible for a home-grown terrorist to be immune to this treatment. Needless to say, many find this discriminatory.

The bill was introduced and passed by Conservatives, and is strongly opposed by

the NDP and the Liberals, who both say that they would repeal the Act if elected.

Meanwhile, what about Canadians who leave Canada? Assuming they commit no acts of terrorism, of course, they should retain their citizenship... but not their right to vote. After five years of living outside of Canada, Canadian expatriates lose the right to vote. The Ontario Court of Appeal has overturned an earlier ruling that declared the rule unconstitutional. Using the logic that those relatively unaffected by their voting choices ought not to vote, the government will not allow over a million long-term expatriates to vote in the upcoming election. As above, the Liberals and the NDP disagree with the Conservatives on this issue.

What does all this mean? Maybe that, in the mind of the government, citizens are who the Powers That Be say that they are.



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Prof Personalities

Dr. Ting Tsui



ASHLYN LOW
2A NANOTECHNOLOGY

PROF PERSONALITIES

Professor Ting Tsui is a well-known and well-respected professor from the Chemical Engineering department, loved by his students for his fun-loving attitude and evident enthusiasm for his classes. Completing his education in the United States, then working in the semi-conductor fabrication industry, he soon moved to Canada to pursue his research at the University of Waterloo.

This month, the Iron Warrior took some time to get to know this awesome professor a little more personally.

Here's what he had to say:

Which courses do you teach?

This semester I am teaching NE 100 (Introduction to Nanotechnology Engineering). It's going pretty good, first years are always fun, and this is my first time teaching this course. This year we are focusing on public speaking and technical report writing, in addition to other technical topics. In the past I have also taught NE 113 (Introduction to Computational Methods), NE 318 (Mathematical Methods for Nanotechnology Engineering), CHE 121 (Engineering Computation), and CHE 241 (Materials Science and Engineering).

Why did you choose to pursue a career in Engineering?



Dr. Ting Tsui spends his free time traveling, especially to places where he can scuba dive!

It's just a lot of fun. I still remember my first engineering project was when my dad gave me an old phone and said "Here, take it apart and have fun with it." When I say old phone, I'm talking about 30 or 40 years ago. Those phones had bells in it and lots of mechanisms, so you can take the whole thing apart with a screwdriver. I still remember I was about 6 years old and I was so fascinated by it. I also thought it was so cool when my mom showed me that when you use a magnification glass and put it under the sun, you can actually burn things! I'm sure most kids are like that; they become interested by taking things apart and finding out how it works.

What is your favourite part about being a lecturer?

It's just fun and relaxing. Handing out candies, seeing everybody enjoying themselves, it's great.

What are your current research interests?

Right now I do research on small scale mechanical properties- basically having small structures and understanding how the materials' mechanical properties change as the size shrinks to the nanometer scale. I've been doing that for years, and now I'm also starting to work with bacteria and looking at cell adhesion on surfaces. The surface will have different topographies, so we want to see how the cells attach to different topographies. The reason is because with a lot of bio-implants, one of the problems when you implant your surface is that bacteria may adhere to the surface and an infection

might develop.

What was your favourite memory as an undergraduate student?

I studied in South Carolina at Clemson University. It was a long time ago but one of the greatest things, which you guys don't have now, was that we had all you can eat food all the time. We would go to the cafeteria all day and we just kept eating and eating. We had all you can eat fried chicken and all the classic southern American food, it was so great. Fried chickens, beef liver, chicken liver, oh it was so good. It's like you work so hard; the next best thing other than sleep is eating a lot.

Clemson was also a good NCAA football school. That was another exciting thing when I was in undergrad, because for American football, they have their stadium that can hold more than 80 000 people, not like our stadium here. So on the weekend you had thousands of people just come in to the stadium and it was a lot of fun.

Do you have any hobbies?

Well, it's one of the things that change from before and after you have a child. Before, I loved scuba diving and underwater photography. I've scuba-dived in Hawaii, California, Florida, Sicily, just here and there, whenever I can find water that's not murky. I do a lot of lake diving too. My best and craziest experience was diving with sharks in the Bahamas. This guy is like feeding sharks right in front of you and you have about 10, twenty-foot sharks just swimming around you. I'm surprised I'm still alive.

I used to travel around a lot as well; that is another thing that's different before and after childbirth. My wife won't let me out of town now, she hides my car keys and passport - no I'm just joking. But before I came to Waterloo, I was working in Belgium in Europe for a few months. If you look at Belgium on the map, it's almost in the middle relative to the rest of Europe. So you have whole weekends to travel across Europe, and it only cost about 100 euros round trip.

Since I've had my child, I haven't really had a chance to do that anymore, but playing with kids is also a lot of fun, especially when they've learned to walk.

Do you have any advice for your students?



Professor Ting Tsui teaches both Chemical and Nanotechnology Engineering courses

Well most of you guys are pretty smart, so by the time you get here you know how to study. One of the things that I think you have to start thinking about now is the career move; where to get a job, if you are going to grad school, things like that. For example, it seems like today you'll be ok with a Bachelor's degree but in another 20 years it may become the norm to have some sort of Master's level, since so many people are in graduate school now. So I just want to encourage students not to just look a little bit ahead, like what am I going to do in the next 5 years after graduation, but more like when you have a wife or husband, kids, things like that.

Another advice I have is to gain some travel experience. I know some students who have graduated from here and gone to Europe or California for graduate school. So it's nice, it's like you get tired of Waterloo's cold weather and snow, and then you can go travel somewhere new.

Pharmaceutical CEO Buys Rights to Drug, Raises Price by Over 5,500%



NINA FENG
4A ENVIRONMENTAL

Martin Shkreli, former Wall Street hedge fund manager and CEO of Turing Pharmaceuticals, rose to an impressively new level of despicable after purchasing the drug Daraprim and raising the cost per tablet from \$13.50 to \$750.

Upon receiving immediate and punitive criticism, Shkreli defended his actions, stating that the decision was made in order to stay in business and turn a profit on the drug, which has been in circulation for 62 years. While the cost of production for each tablet is below \$1, Shkreli maintains that distribution and patient relations costs will hike up the price, and

that other profits from the new price will fund future research programs. This is a move that he's also pulled in the past - as CEO of Retrophin, he raised the price of Thiola, a drug used to treat kidney disease in children, from \$1.50 to \$30 per pill. The company has since stated that it may lower the price somewhat - but when and by how much is unclear.

Shkreli has been slammed by medical associations, journalists, as well as politicians for the price hike. Democratic presidential candidate Hillary Clinton has responded by proposing a plan in order to prevent rapid increases in drug prices, while Republican candidate Donald Trump has stated that Shkreli "looks like a spoiled brat," and that "He's zero. He's nothing," condemning his actions as being "a disgrace". Collect Records, a music label for which he is an investor, has

also cut ties with the CEO.

Used to treat toxoplasmosis, a parasitic disease caused by infection with the protozoan *Toxoplasma gondii*, the drug Daraprim is most often used by very young children and persons who are immunocompromised and therefore susceptible to infection, most notably those who suffer from HIV/AIDS. Capable of infecting most warm-blooded animals, 23% of Americans and up to half the world's population is infected with it. It can be transferred through improperly cooked food, contact with infected cat excrement, and during childbirth from mother to child. Though it is nearly asymptomatic in healthy adults, it typically causes flu-like symptoms, confusion, and headaches, though severe infections can cause serious brain and eye damage, which can be life-threatening.

Along with the price increase, the tablets are now only available to patients at Walgreens Pharmacies, and healthcare facilities can no longer obtain them from the general wholesaler, but instead must go through a Daraprim Direct program. This is to prevent reproduction by generic drug companies.

This is greatly contrasted with other countries, who are generally unaffected by the price hike in the US, where prices for each tablet can be as low as a few cents. The UK, for example, uses a different drug buying and production scheme where prices are negotiated between the government and manufacturers in order to balance profiting and patient benefit. Sudden increases in price cannot occur as they do in the US, where private companies can also serve to buy and distribute drugs.

Volkswagen Admits to Circumventing Emissions Tests



CAMERON SOLTYS
2T MECHANICAL

Car-maker Volkswagen (VW) has been at the top of the news for the last week or two in a high-profile scandal that has so far seen its stock prices drop 30% and put the emission-production statistics of nearly every car on the road into question. According to the BBC, the company "...has admitted that about 11 million cars worldwide are fitted with [a] so-called 'defeat device'..." that can allow its vehicles to cheat on emissions tests in the US. Specifically, the emissions of nitrogen oxides in diesel-burning cars were up to 40 times above the test limit during normal operation.

The revelation comes after several months of rather accidental investigation and study. Last year, the non-profit International Council on Clean Transportation (ICCT) wanted to prove to Europeans that diesel cars could run clean. After European tests showed strange results, the ICCT decided to try again using the US's high-standard and rigorously-enforced emission tests. They worked with the California Air Resources

Board to test the vehicles in laboratory conditions and found that, as expected, the cars—a VW Jetta, VW Passat, and BMW X5—passed the test.

The ICCT also performed a second set of tests with the West Virginia University. These tests were different; they were performed on the road in realistic conditions using a probe stuck in the exhaust pipe. According to Bloomberg Business, this test was supposed to check if VW "...had gamed the emission test..." It wasn't an unprecedented idea; in an earlier case, long-haul trucks had been fitted a device that increased engine power (and nitrogen oxides production) only when they cruised at constant speed for extended periods. The ICCT test showed that both VW vehicles had substantially higher emissions than the laboratory test showed, while the X5 did not.

Volkswagen was contacted, and it tried to replicate the results. After testing, it claimed that the performance discrepancy was caused by software problems, and issued a recall to install a software patch. The California Air Resources Board continued to scrutinize the compromised cars and found that the patch did not work. VW proposed other technical explanations, but none were satisfactory

for regulators. As the 2016 model launch approaches, those regulators have to approve each model before it can be sold. This is a process that Bloomberg describes as "...routine... for most automakers." But for Volkswagen, they decided that they would not certify the new cars until the emission anomaly could be resolved.

At this point Volkswagen admitted that it had designed what the Environmental Protection Agency (EPA)—the US agency responsible for emissions standards and testing—called a "defeat device". The device was a software algorithm that determined when it was undergoing emission testing by monitoring speed, engine operation, and the position of the steering wheel. When the algorithm identified that the car was undergoing testing, it caused the engine to operate in a different and cleaner mode. Eh Hohenberg, an associate professor at the University of Alberta suggested that this mode "may result in poor throttle response, less torque, less horsepower, worse fuel economy," in a report by the CBC, explaining why the cleaner operating mode was disengaged outside the test environment.

The fallout from the scandal has already been fast and damaging. Volkswagen says that 11 million cars are outfit with the

device world-wide, and 500,000 cars have been recalled in the US. Chief executive Martin Winterkorn has stepped down, though he denies wrongdoing, and the company has set aside \$79.6 billion CAD to cover the costs of the scandal. Other high-ranking personnel in the company are implicated in the cover-up. The fines that the EPA could issue are \$37,500/car, or \$18 billion total. Class-action lawsuits from owners who bought Volkswagen because of the supposed environmental-friendliness of the cars have cropped up. Volkswagen will be recovering from the lost trust and financial damage for a long time.

This is the second major scandal to hit the automotive industry in recent times. In 2014 General Motors (GM) recalled 30 millions cars in North America because of faulty ignition switches that could cause the cars to turn off. This was more cars than GM sold worldwide that year. They also paid compensation for the deaths of 124 people. The problem had been known about for at least 10 years. Both this scandal and Volkswagen's involve severe ethical lapses on the parts of executives and engineers within the company. We can expect to see case studies of the pair taught in first-year "Introduction to Engineering" courses very soon.

ION Transit Update



ALEXANDER LEE
3B NANOTECHNOLOGY

You may have noticed heavy construction going on in and around the university, and elsewhere in Waterloo. All this construction may also have been interfering with your daily lives, in your commutes to and from school and other locations. You may also have been wondering about the reason for all of this construction. Well, the answer to that question is that Waterloo is working on ION, the transit system that will connect the city centres of Waterloo, Kitchener and Cambridge.

The ION project is currently in its first stage, which will consist of a light rail from Conestoga Mall in Waterloo to Fairview Mall in Kitchener, and then bus transit from Fairview Mall to Ainslie Street Terminal in Cambridge. As a result, there has been heavy construction around the proposed railway, which will pass through the university campus.

This construction has caused a number of disruptions throughout Kitchener-Waterloo. Of particular note is that many of the bus routes have been rerouted to avoid going through areas with construction. There is extensive construction along King Street from Victoria Street to William Street, so all of the stops there are closed. The affected routes are Route 6, Routes 7CDE, and Route 200. Ad-

ditionally, construction has also forced detours from Victoria Street to Charles Street, affecting routes 1, 3, 4, 6, 7ABF, 8, 11, 22, 34, 200 and 204. A number of stops have been moved or completely closed, so double check your usual bus route carefully and see if you're affected by the detours. Waterloo Park has also come under heavy construction, so if your usual path to campus involves walking through the park, be prepared for delays due to construction.

It is not currently known when the construction will be finished, but it has been ongoing for the past 5 months, since March. The expected date that the ION project will be finished is late 2017, so those of us in third and fourth year will likely not be able to experience the benefits that the ION project is expected to bring. However, for the rest of you, hopefully ION will make your time here at Waterloo more convenient and accessible... when it finally finishes.



Nina Feng

Construction for the light rail system as seen in front of E5.

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New Term, New Team!



HANNAH GAUTREAU
PRESIDENT

Hi everyone and welcome (or welcome back) to campus! For those of you I have not met yet, my name is Hannah Gautreau and I am your Engineering Society President this Fall. I am in my 3B term of Management Engineering and I'm so excited to be on term with the rest of the EngSoc executive, commissioners, and directors to work on making Fall 2015 the best it possibly can be!

My major goal for this fall is to work with the faculty and the students to increase mental health awareness and mental health resources on campus. I've been working hard this summer to get these initiatives started, and I am making a lot of progress! I am working very closely with Counselling Services to bring more mental health supports into Engineering. So far all of the executive as well as some commissioners and directors have received QPR Training, which is essentially the mental health version of CPR. I am also working with Engineering counselling to bring the Mates program over to Engineering. The Mates program is a peer mental health mentoring program where students are able to seek help from students who are specially trained to help students on this level.

I am also working on increasing communication between EngSoc members and the executive. I am working with my communications commissioner to make it much easier to get information to all students. We have developed infographics that get posted to Facebook every week so all you need to do is like Waterloo Engineering Society on Facebook to get all of the information that you need! In addition to this, I always want to hear your

new ideas! If there is something that you would like to see happen within EngSoc, send an email to myself or any of the other Executive and we are happy to help you make it happen.

A couple of other things you can look forward to in the following weeks are a brand new practical study skills workshop, and business cards going on sale in the EngSoc Office! We are partnering with the Student Success Office to make a crash course workshop about scheduling, exam prep, and problem solving skills. You will get to apply these skills to your school work with help from upper year students! We are also working to finalize the details of selling business cards in the orifice. You will be able to get a generic Engineering design or even submit your own!

If you have any questions about this article, the society, or just want to come say hi, I'm almost always in the EngSoc Office, so stop by anytime!

Engineering Society Meeting 1 Summary

The first council meeting of the term took place on Wednesday, September 23rd. The room was full, and there was a lot of great discussion. The winter 2015 Actuals were presented, and the fall 2015 Budget was approved. There were also elections for the Teaching Excellence Award Committee and the Council Review Committee. There were also changes made to our financial policies.

For more information about the meeting, including the winners of the elections and the budget, be sure to check out the meeting minutes which will be available on the EngSoc website at engsoc.uwaterloo.ca. If you have any questions, please contact the Executive at executive.b@engsoc.uwaterloo.ca. The next council meeting will take place on October 7th, at 5:30pm in CPH 3607. See you there!

Get ExcitED for Education!



ANSON CHEN
VP EDUCATION

Hello, everyone! It is wonderful to be back on campus and I hope you're all ready for a term of fun, plentiful sleep, and ACADEMIC SUCCESS! Yes, it is possible to have all three, and I am here to help you make this happen.

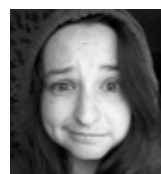
Three things I will be working on throughout this term are: better communication on academic-related matters, improvements to the online Exam Bank, and addressing your academic concerns. If you are not yet subscribed to the EngSoc mailing list, do so now at this link: bit.ly/engsocmail and you will receive mini academic blurbs from time

to time as part of the weekly emails. It is my goal to use these to communicate important changes and decisions related to scheduling, curriculum, WaterlooWorks, and more. Secondly, the Exam Bank is one of EngSoc's most widely-used services. I am working with a director this term to implement more user-friendly navigation, online submission, and raffle prizes for those who submit exams.

Finally, if you have any concerns regarding academics or co-op, don't hesitate to let me know at vpeducation.b@engsoc.uwaterloo.ca. Alternatively, tell your Academic Class Reps, and they will tell me as I will hopefully be meeting with them at some point during the term.

Eat well, sleep generously, and work with focus. I'll see you in the EngSoc Office or around campus!

The VP INside Scoop



TERESA LUMINI
VP INTERNAL



Hey everybody!

The first couple weeks of class have been pretty busy, making sure the calendar is in order and getting things ready to give you an awesome term of events and services! This term we introduced the University Life 101 and University Life 201 workshops for first and second years to help them through their transition to university life and living off campus, and the feedback was really positive! The content for both of these presentations have been posted on both the Waterloo Engineering Society Facebook page and EngSoc Facebook group for your viewing pleasure. With the help of many directors, we're trying to introduce a more diverse range of events starting Dungeons & Dragons and Magic: The Gathering

events as well as blood donation runs and bubble soccer. Some more helpful events are being introduced this term such as Jobmine-a-thon, Interview Skills in the Tatham Centre and more technical workshops. We're also putting a large emphasis on mental health this term and preparing for Mental Health Awareness Week which will be the week after the first years' midterm week.

Finally, two new positions have started up this term under the VP Internal portfolio, which are the POETS Coordinator and the Workshop Manager. The POETS Coordinator is in charge of all POETS bookings, working with the Keyholders to keep POETS awesome, and the primary source of communication for all things happening in and with POETS. The Workshop Manager is in charge of approving all workshop content and ensuring the directors running the workshops have everything they need to bring you useful information about things like soldering, MATLAB, SQL, and much more!

Upcoming Events Calendar

Wednesday September 30	Thursday October 1	Friday October 2	Saturday October 3	Sunday October 4	Monday October 5	Tuesday October 6	<p>Check out up-to-the-day event postings on the EngSoc website at engsoc.uwaterloo.ca/event-calendar</p> <p>NEW FEATURE: CCA events being offered by CECA. See uwaterloo.ca/career-action/ for details and to register</p>  
<p>Textbook Sale 10:30AM - 1:30PM</p> <p>Spirit 2017 – Coffee, Tea and Biscuits Social 6 - 8:30PM, POETS</p> <p>Vim Workshop 6 - 8 PM, POETS</p>	<p>Interview Skills Workshop 6 - 9 PM, Tatham Centre</p> <p>EngProv 6 - 7:30 PM, POETS</p> <p>Blood Runs 6:45 - 8 PM</p>	<p>First Year Fridays</p> <p>First Year Conference 6 - 10PM</p> <p>Movie Night 5 - 10PM</p>	<p>First Year Conference 6 - 10PM</p> <p>Bubble Soccer 12 - 3PM</p> <p>D&D 3 - 6PM</p> <p>CCA</p> <p>Further Education Bootcamp 8:30 AM - 9:30PM, RCH</p>		<p>SSO Workshop #1 6 - 7:30 PM</p>	<p>Coverall Day! 11:30AM - 1:30PM, Outside POETS</p> <p>Charity Grilled Cheese 12 - 1PM, Outside POETS</p> <p>DIY Room Decor 6 - 8PM, POETS</p> <p>LaTeX Workshop 6 - 7PM, Multimedia Lab (CPH 1346)</p>	
<p>Coverall Day! 11:30AM - 1:30PM, Outside POETS</p> <p>EngSoc Meeting 2 5:30 - 7:30PM, CPH 3607</p> <p>Coffee House 8 - 11PM, POETS</p>	<p>Enginuity 12:30AM - 1:30PM</p> <p>MATLAB Workshop 5:30 - 6:30PM, CPH 1346</p> <p>Solidworks Workshop 6:30 - 8:30PM, WEEF Lab</p>	<p>First Year Fridays</p> <p>Interschool Oktoberfest 5 - 10PM</p>	<p>Day at THE MUSEUM</p> <p>D&D 3 - 6PM</p> <p>Hockey Night in POETS 7 - 11PM</p>		<p>Thanksgiving</p>	<p>Charity Grilled Cheese 12 - 1PM, Outside POETS</p> <p>Trip to the Movies 6 - 10PM</p>	

2015: A Space Budget



DON TU
VP FINANCE

Hey! Hey, you! I'm Don Tu and you should read this article!

Alright, thanks for giving me your attention! I was trying to think of how to start my Executive Update but couldn't think of a good way. 'Hello everyone' just seemed so cliché. Oh, what's that? I have a word count? Sorry, let's get this article started.

My name is Don Tu, and I have the privilege of being your Vice President of Finance this term. I'm in charge of things like the termly Engineering Society budget, Novelties (our merchandise store in the CPH Foyer),

RidgidWare (our electronics shop, also in the CPH Foyer), the Student Deals program, and a whole lot more.

Over the summer, I was working to expand our Student Deals program. If you weren't aware, the Student Deals sticker allows you to get deals with stores around campus. With the help of my awesome A Society counterpart, Abdullah Barakat, the Engineering Society added Menchie's and Marble Slab Creamery to our list of Student Deals partners! You can get your very own sticker in the Engineering Society Office for free, and be sure to check out the full list of partners at engsoc.uwaterloo.ca.

In more recent news, the termly budget was approved at the first Engineering Society Council meeting this past Wednesday. This means that

everyone was happy with how the money was allocated, and our lovely team of directors have the greenlight to fund all of their super-sweet events and services!

If you had your heart-set on getting a pair of lovely coveralls like you saw in Orientation Week, never fear! Coveralls will be on sale in the CPH Foyer on October 6 and 7 from 11:30 am to 1:30 pm! We'll be selling coveralls, as well as some snazzy patches that you'll be able to sew onto them. Save the date!

And if you're looking for ways to get involved in the Engineering Society, why not be part of the Sponsorship Committee? Six members will be elected at the next Engineering Society meeting. You'll be responsible for allocating over \$9000 to student teams and organizations on campus!



That's all I've got this week. I hope you learned something from my update and check back with me when the next Iron Warrior article comes out!

If you have any questions, concerns, comments, or thoughts, you can reach me at vpfinance.b@engsoc.uwaterloo.ca.

See ya!

The EXTremest VP



KIERAN BROEKHOVEN
VP EXTERNAL

Hey everyone!

Kieran, your VP External, here with my first Iron Warrior update. I'll be giving you an idea of what my job is and how I plan on doing it.

As the term opens up I'm spending all my time out of the city at conferences but I promise I am still around sometimes. Our Engineering Society is

a member of the Canadian Federation of Engineering Students (CFES), as well as the Engineering Student Societies' Council of Ontario (ESSCO). We go to about 7 conferences each year for purposes like exchanging best practices, professional development, and so on. As VP Ex my job is to represent Waterloo within both of these organizations, so I spent the last two weekends at the President's Meetings of each.

ESSCO and CFES have lots of opportunities for you to get involved, including conferences! Keep an eye out for applications for the Professional

Engineers of Ontario Student Conference, details can be found on essco.ca. **FIRST YEARS:** Check out the First Year Integration Conference coming up in February! This term I am pushing to do more events with other engineering societies, including a patch exchange and a visit to some other schools' events.

The second main portion of my responsibilities is outreach, including charities. Over the summer the student body voted for water.org to be our charity for the year, so our lovely charities directors throughout these three terms will be raising money for that cause!

One regular charity initiative is selling grilled cheese at lunch, so come by and grab some on Tuesdays! One thing I've added to the outreach portfolio is group trips to the blood drive. We also have Education Outreach, which means we go do science experiments with kids at THEMUSEUM to get them interested in STEM.

I'd love to hear any feedback, questions, or ideas you have about what I'm doing this term. Feel free to shoot me an email at vpexternal.b@engsoc.uwaterloo.ca or come by our office at CPH 1327!

See you soon!



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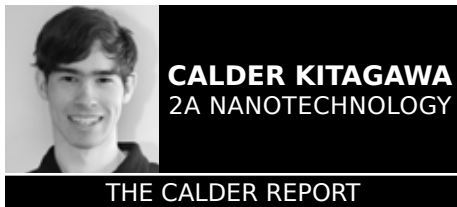
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CO08998

America's Presidential Election 2016



CALDER KITAGAWA
2A NANOTECHNOLOGY

THE CALDER REPORT

The American Presidential Election consists of a "heroic" competition between an Ass and the Elephant in the room, at least so long as Deez Nutz isn't around (look him up). However, until the elephant in the room emerges victorious from the stampede of trying to be the biggest, reddest and Trumpiest we might as well enjoy the show.

The number of Asses this time round are pretty sparse, and current front runners Hillary "I'm sorry my emails are insecure" Clinton, Lincoln "the most honest" Chafee, Martin "fundamentally democrat" O'Malley and Bernie "politically correct" Sanders don't have a whole lot to worry about in terms of competition, at least until the circus arrives, although that isn't stopping them from slinging at least a bit of mud.

Meanwhile, the twenty strong herd is busy fighting for the spot of alpha male, or alpha female as the case may be for some. The competition is fierce but leading the race is the Trumpiest and most racist Donald "Erect a wall across the border to Mexico" Trump. However, he faces at least some competition from the surprisingly camouflaged Ben "I'm so blue I'm red" Carson and Jeb "I'm another Bush" Bush, not to mention everyone's favourite Ted "I'm not Canadian anymore" Cruz. This is an incomplete list but suffice it to say they are all really just different takes on the same rhetoric. This year the Grand Old Party is having a Grand Old time in debates and county fairs, receiving far more coverage than the democrats due to their personalities.

What's the difference between an Ass and an Elephant, you may ask? Well, generally speaking, the Asses are like the Conservative party before Stephen Harper and the Elephants are the Conservative party after Harper, assuming he chose to repeal gun laws, same-sex marriage, universal healthcare and the right to choose.

But enough with bringing Canadian politics into this - unless Rob Ford wants to "weigh in" - below is a table showing each parties general stances on various issues.

Democrats

Economically the Democrats are buddy-buddy with the Liberals and NDP Canada. Just imagine they are all Thomas Mulcair pushing his plans for universal healthcare, social programs, tax brackets that focus on helping the lower classes and taxing corporations and the rich. That being said they are also worried about the environment and keeping jobs state-side, and unlike Trump they haven't suggested walls, which is a pleasant surprise. Rather ironic that the colors are so backwards across the Canadian border, though Canada has the gun-control, abortion laws and same-sex marriage laws the Democrats would like to implement. And unlike the "Trump"-eting elephants they are quite content to let illegal immigrants remain in Canada to start on a road to citizenship. So in summary, Red or Orange in Canada = Blue south of the border.

Republicans

The Republicans are a brand of Harper, but only if that Harper were from Texas and not Canada. They are all for the laissez-faire economic structure - pardon my French - which focuses on free markets and very limited government spending. They aren't cutthroats and do try to provide a minimal level of support but they believe a free market is a good market. Depending on how purple you want to get you can find Republicans who vary their opinions on most social and environmental policies. However, when the constitution is involved things really come to a head (and by head I mean Head of State issue). If the Republicans were to get the presidency they would try to enforce a much stricter alignment of laws with the constitution, including upholding the right to bare arms and total religious freedom. This then yields leeway to open up debates on abortion and same-sex marriage which as Canadians we know are difficult issues to discuss.

So why do we care?

As Canadians, worrying about the American election may seem somewhat pointless, especially when someone decides to call an early one in your nation *cough Harper cough*. However, the financial and political impact this election has on Canada is profound. Every American election has serious implications on our trade relations with the States, and if they start going one way on social policy and we start going in a drastically different direction, there may be friction that no amount of Canadian oil can lubricate. Canada has always taken a more liberal stance on social policy and so far that hasn't caused too much issue, but economic changes may lead to some rather unfavorable trade relations and foreign exchange rates that would be preferable to avoid.

Why are we discussing the US election over a year in advance?

TL;DR because the US is.

As for the actual reason, it has to do with the most confusing trainwreck of an electoral system that was devised in the days when men on horses had to ride around to communicate the result. In the briefest terms possible, the American election undergoes a series of steps. First, presidential candidates announce that they will be running and register with a party (you can register alone but the sheer cost of the election makes it not worth it (unless your name starts with T and ends in -rump)).

Once that is over Caucuses and Primary elections are held, during which parties in each state vote for who they want to nominate for president. Often times they are closed to non-party members but in some cases they aren't. There is then a childish fight of "me-first" between states who want to be first in line to nominate a candidate. Eventually, when the dust clears and all that nonsense is done with, both parties will hold Conventions where the state votes are tallied in addition to the votes of party VIPs. A decision is made on who wins, although typically everyone else drops out because they lost in too many states.

Finally, we can start the real election now. You might think the storm is over but it is just beginning. Now the votes for President occur. This is done via the Electoral College which "distributes" 438 Electoral College votes loosely based on population, but not really, to the different states. On election day you go to the poll and vote. The winner in the State gets all the Electoral College votes that State has, even if they only won by 10 votes. Once this is done the Electoral College representatives vote in the College. What does this mean? Well, people who represent each of the states cast the votes they have for the candidate that won in their state. But that would make too much sense. They actually have no obligation to follow what the people of their state told them. They always have but nowhere is it stated this is a requirement. Those votes are tallied and we finally have a president.

Basically, a vote for President in the States can have a disproportionately high value in some states due to this system, which was devised to handle a problem which no longer exists. Ergo in the name of engineering efficiency it should be replaced with a better system but it hasn't been because America and History. (You may be able to tell I am rather passionately angry about this whole system.)

So getting back to the point, the American election coverage has started because the process takes a really long time and in order to resolve everything they need the 1.5 year campaign to get it all done. Just be glad we finish in just under 80 days.

In Summary AKA TL;DR

The Good Old Party is back to its loud old self in debates and the Democratic Asses are getting ready to fluke it out in an almost two year electoral process which is wildly inefficient and full of hilarious, ludicrous and often racist (I apologize to both Mexicans and Muslims) comments. But this is just the beginning; we still have over a year to go before the most convoluted election system in the Western world kicks into gear. So stay tuned.

Signing off - Calder

Canadian Company Club Coffee Creates Keurig-Compatible Compostable K-Cup



ETHAN ALTER
2A NANOTECHNOLOGY

Toronto-based company Club Coffee has created the world's first compostable coffee pod, the PurPod100. Certified 100% compostable by the Biodegradable Products Institute (BPI), the pod degrades completely during industrial composting processes and can be used with the popular Keurig 2.0 home coffee brewing system.

Keurig's own coffee pods, known as K-cups, are notorious for being environmentally harmful. K-Cups are neither recyclable nor biodegradable, and generate tons of plastic waste each year.

"Some pods claim to be partially biodegradable, while others tout some recyclability - but none of those claims are backed by independent third-party validation," said Club Coffee CEO John Pigott.

Club Coffee is the only company that has earned the BPI certification for coffee pods and was developed with the help of the University of Guelph's Bioproducts Discovery and Development Centre.

The harmful nature of Keurig's coffee pods has been known since 2010, with their creator John Sylvan going on record as saying he "feels bad" about inventing them. A 2014 viral video titled "Kill the K-Cup" has since brought wider attention to the problem.

Keurig has announced their own recyclable pod to be released in 2020.



Sunday's Super Blood Moon Barely Visible Due to Clouds



MOON MOON
2A MOONING

Sunday night was notable for the occurrence of the Super-moon in coincidence with a total lunar eclipse. The

event resulted in a slightly better-looking moon (up to 30% brighter and 14% larger!) adopting a shadowed, reddish tone in the sky.

It was slated to begin shortly after 9 pm, peaking after 10 pm, and lasting for over an hour before shifting back to normal moon colour close to 1 am.

Unfortunately, much of the event was shrouded in clouds in Waterloo.



Here we see a sh*tty picture of the moon shortly pre-eclipse.

“Smart”



Congratulations! You have been accepted to one of the leading innovative engineering universities in the world! Surely, being the type of person to have gotten into your program, you have been called “smart” at some point in your life. And almost surely, being surrounded by hundreds of other students who have also been called “smart” at some point in their lives, you are bound to start to wonder how “smart” you really are. But have you ever stopped to think what “smart” actually means?

I’m going to take the STV 100 route and try to make you think about all of the connotations you have associated to the word and asking a bunch of almost meaningless theoretical questions without actually defining it. Almost everybody would agree Einstein was “smart”. Almost everybody would agree that Tesla was “smart”. Is intelligence definitively linked to knowledge or innovation? Is that student who has memorized a book on statistical thermodynamics and can respond to rhetorical questions the professor asks without any intent of having a student answer during lecture by regurgitating something in the textbook “smart”? Is a student who has no knowledge of calculus but can experiment with COMSOL and invent a concept for a novel microbot “smart”?

All in all that was probably not a very definitive discussion. We are engineering students. We need to agree on a definition before discussing something. Well, Google defines “smart” as “having or showing a quick-witted intelligence”. So what does intelligence mean? Google defines it as “the ability to acquire and apply knowledge and skills.” Well, doesn’t almost everybody have this ability? If you’ve ever worked as a tutor I’m sure you have discovered that almost anybody can learn anything if they are taught it in a way they can understand it. Perhaps we can interpret having intelligence as simply the ability to understand knowledge given to us in a more “raw” form and the ability to apply that knowledge and make connections in more unique ways? All in all, I guess we could agree that intelligence is an inherently ambiguous term that is usually associated with a high degree of knowledge and the ability to use it in ways that most people wouldn’t think of using it. Or I guess we can just “leave it as an exercise to the reader”.

Anyways, in university, you’ll learn a lot about smart people and being smart. You will first realize that you will eventually lose some part of your identity. Whether it is being the best piano player or the best person at math at your school, most likely you will find somebody here who is better than you here who will take away that part of your identity. But that is quite normal. You’re surrounded by some of the best people in Canada. You have two options: work hard to try to regain that part of your

identity (which might be a bit unrealistic depending on the field), or just move on and try your best without letting it get to you. Also, you will learn that in most engineering programs here, unlike every other faculty, your rank in your program will be released, which may help deflate your ego even more. The faculty justifies it as being helpful for students to see where they stand in comparison to their class, to see whether or not they’ll be on the Honours list, or to add to their resume. On the other hand, I personally don’t see how you would feel anything other than crappy for any rank less than 1, or super pressured to keep it up if you are 1 (and the pressure does start getting to you).

You will also learn that some people try to appear a lot smarter than they actually are and that confidence is extremely important. Imagine if you had to pick between two surgeons to perform a surgery on you and you had very little medical knowledge. One surgeon is extremely confident and gives you a very simple and straightforward explanation of what is going on, while the other one appears to lack confidence and gives very ambiguous answers. Most likely you would choose the confident one, even though if you think a little deeper, medicine in reality is extremely ambiguous and the other surgeon might be more trustworthy as they try to give you a more full explanation of your condition. Confidence is extremely important. It is also important to remember not to be scared of people. Be confident and don’t be scared of approaching profs or upper years. They probably

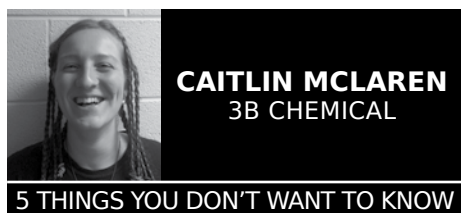
don’t have it together any more than you do and talking to them might impart useful knowledge and opportunities.

That being said, also remember not to be a jerk. No matter how smart you think you are, you will eventually come across something in your program you will need help with. For your own good, don’t try to sacrifice passing a course for your ego. Just go to office hours and get help from a prof or TA. Furthermore, remember not to be a jerk to your classmates, because I can guarantee over the course of these five years you will need something from them, and nobody is going to help you if you’re being a jerk to them.

Don’t be scared of your courses and workload or ever think that “I can’t do this” or “I’m not cut out for this”. I learned in first year that a lot of the barriers I thought were placed on me by others or were there due to the limits of my mental capabilities were really just placed there by myself. I had convinced myself before coming here that I would never be able to learn programming because it was too complicated and syntax was confusing. Now after first year I have umm... let’s just say “exploited loopholes”, designed metasurfaces using programming, and basically use MATLAB almost every single day.

So remember, don’t be scared of university, don’t think you aren’t cut out for your program, don’t be a jerk, and don’t be scared of other people. And remember to always make time for fun. You’re gonna be here for five years, so you might as well enjoy yourself!

Five Things You Really Don’t Want to Know: The Title Says it All



Hello! If you aren’t familiar with this column, please take note of the title, and don’t say I didn’t warn you. Also, if you see your ancestors here, please don’t take offence. It isn’t my fault that all humans, no matter where they are from, are disgusting, perverted, and a little bit dumb. Without further ado, let us begin our exposé on human history.

Ancient Hawaiians, Persians, Egyptians, Everyone Practiced Incest

well, some of them, anyway. For the most part, people didn’t marry their sisters. However, for the upper classes, it was a different story.

In pre-contact Hawaii, class was everything. Upper class men would want to marry wives of equal or better status, and for the Big Man himself, who could be equal? Obviously, the solution for a very high-up chief dude would be to marry his own sister. In fact, it was considered best for him to marry as close a relative as possible, the sister being the most ideal case. This was believed to increase the strength, intelligence, and supernatural power of the resulting children.

Ancient Persian nobles had other ideas. While marrying your sister was a good idea, and kept property all in one family, it was metaphysically better for a son to marry his mother. This was because he came from her body, and logically should return to it.

Of course, the Egyptian royal family

liked brother-sister marriage for the simple reason that it kept their divine bloodline as concentrated as possible.

And the Hapsburgs... and the Incas... Rich people, man.

Ancient Egyptian Mummies had Secrets

While everyone is envious of really attractive people, it has to be admitted that beauty has its drawbacks. Beautiful people might be stalked or objectified, but at least nowadays that tends to stop when they die.

In Ancient Egypt, bodies were preserved after death so that its owner would have a happy afterlife. However, the relatives of beautiful people soon ran into a problem. Namely, professional embalmers would have intimate contact with the corpse, by the nature of their job, and some of them would abuse that privilege. By “privilege,” I meant “the body.”

Necrophilia became such a problem that when an attractive person died, their families would let their bodies decompose for a few days in the hot Egyptian sun, to discourage that behaviour.

Note: there are recorded cases of it happening anyway.

Condoms were Weird in Ancient Times

Contrary to popular belief, the ancients did come up with the idea of condoms (it isn’t particularly complicated, after all). The Chinese made them out of oiled silk, which doesn’t sound so bad, but the Japanese made some out of animal horn. You did not misread that- it said animal horn.

In Europe, they made them out of sheep intestine or bladders. Yes, they did remove them from the sheep beforehand.

Again, none of these sound particularly horrifying, until you realize that they were

all quite hard to make. As a result, they were all re-usable.

Actually, they had more purposes than just the obvious. There are several examples of old-fashioned condoms in museums today, which were found in old books. Someone, somewhere, was using them as bookmarks.

The Chinese Used... Interesting Things as Medicine

In the mountains of Tibet, there are a number of caterpillars, just minding their own business. However, they are soon cruelly interrupted by a fungus bursting out of their heads, killing them. At this point, humans come and grind them up for medicinal use, which at this point is adding insult to injury.

Other ingredients in traditional Chinese medicine included liquefied human placenta. To make matters worse, it was processed by being buried underground for several years before consumption.

While the following is superstition rather than medicine, a method for keeping your wife from being jealous (i.e. while you were cheating on her) was to wrap a toad in one of her used menstrual pads, and bury it in front of the toilet. This seems entirely legit.

Meanwhile in legend, an old man ate nothing but honey for years until he died. After his death, his body was preserved in honey for a hundred years, before being exhumed and used as medicine. This probably did not happen, but it does elicit the question: who came up with that?

To relieve bone pains (if you are a supervillain), the cure involved ground-up bones of babies, which is sad. Another disease had to be cured by a piece of human skull, which, according to doctors, had to be stir-fried before making it into broth.

It is hardly surprising that many

Confucian philosophers were against the use of human body parts as medicine, declaring their use to be “very rude and inhumane.” “Rude” is not perhaps the obvious choice in words, but I suppose it does apply.

In Fact, All Ancient Medicine was Dodgy

It was a common characteristic. In ancient times, wherever you went, you would find doctors with very, very strange ideas.

For example, in Ancient Greece, dogs would sometimes be used in medicine. Not as stress therapy, but to lick open wounds. Meanwhile, Alexandrian doctors did experiments by cutting pigs’ veins and arteries and observing the noises they made (the pigs, not the blood vessels).

In ancient Rome, drinking the still-warm blood of a dead gladiator was considered good for inducing pregnancy. Other ideas were just bizarre – for example, Pliny claimed that semen was good for scorpion stings. Then again, this was the same guy who said that you should fill cavities with the ashes of mouse, raven, and sparrow dung.

The Pharaoh in Egypt had a special doctor who had one job – giving him enemas, or in layperson’s terms, sticking things up his ass. In fact, this doctor’s official title was “Neru Pehut,” which means “Shepherd of the Asshole.”

Other ancient doctors should be looked upon with awe. For example, the Iraqi doctor Ahmad ibn Abi al-Ash’ath was one of the earliest to describe how full stomachs behave while digesting food. How did he find out? Animal experimentation, of course – using living lions. Seriously, dude, didn’t you have access to cats or rats or anything? Possibly he was just showing off.

Chien-Shung Wu



BRIGITA GUBINS
2A ENVIRONMENTAL

GIANTS YOU NEVER LEARNED ABOUT

Imagine being an expert in a very specialized area, such as beta-decay radiation, going and solving a problem with the standard model of particle physics because it relies heavily on your speciality, beta-decay radiation, sharing your results with your colleagues, and then being “forgotten” when those same colleagues win the Nobel Prize for solving that problem with the standard model. If that sounds unfair to you, the woman who is credited today as the queen of nuclear research faced this type of issue time and time again in her life. She was passed over for the Nobel Prize, denied a research position at UC Berkely, and fought to make the same salary of her male counterparts.

Wu was born in China in 1912, and attended a girls’ school founded by her father, who would go on to encourage his daughter to always strive for excellence and the best education. At age 11, Wu was sent to Suzhou Women’s Normal School, and while the option for the less competitive normal curriculum was available to her, Wu chose to enter the teacher training program, intending to continue her studies in university after finishing secondary school.

Graduating at the top of her secondary school class, Wu enrolled in China’s National Central University (later renamed Nanjing University) after completing her mandatory year of teaching from the teacher-training program in 1930. First studying mathematics, Wu quickly transferred to physics. Not only was she one of the star pupils of the school, she was very active in student politics, leading multiple protests against her government’s *laissez-faire* attitude to the high tensions between China and Japan, as well as other major issues of 1930s China.

Graduating (again) at the top of her class, Wu remained in China, completing 2 years of graduate-level studies in physics, and worked as an assistant at Zhejiang University. She became a researcher at Academia Sinica’s Institute of Physics, where she worked under the mentorship of Professor Gu Jing-Wei. Her supervisor had studied in America, earning her PhD at the University of Michigan, and persuaded Wu to do the same. Wu’s application was accepted, and with funding from her uncle, Wu set sail for America in August 1936, seen off by her parents and uncle. Between a world war, civil uprising in China, and restrictions on travel, she would never see her parents again.

Landing in San Francisco, Wu was told that at the university of Michigan, her intended institute of graduate study, women were not even permitted to use the front entrance. Being the outspoken feminist that she was, Wu was having none of it and decided to study at Berkely, where she had been introduced to the Radiation Laboratory by physicist Luke Chia-Lu Yuan, instead.

Wu’s research and studies progressed quickly, producing a 2-part thesis. The first explored *bremsstrahlung*, the electromagnetic radiation produced by the deceleration of a charged particle when deflected by another charged particle, typically an electron by an atomic nucleus. This became her first work with beta-decay, a topic on which she would later be considered an authority. The 2nd part of Wu’s thesis investigated the production of radioactive xenon isotopes, produced by the nuclear fission of uranium. This would later secure her a position in the Manhattan Project’s Substitute Alloy Materials (SAM) Laboratory at Columbia University.

Being unable to secure a position at a university on the completion of her PhD in 1940, Wu remained as a post-doctoral fellow at the Radiation Laboratory. In 1942, she moved to the east coast of the United States with her colleague (and now-husband), Yuan, where Wu accepted a faculty

position Smith College, a private women’s college in Massachusetts, while her husband worked on radar technology for RCA.

In 1944, during World War II, Wu joined the Manhattan Project’s SAM Laboratory, which supported the Manhattan Project’s gaseous diffusion program for uranium enrichment. In September 1944, a newly commissioned reactor had run into an unexpected problem; periodically shutting down. Another physicist on the project, John Archibald Wheeler, suspected that a fission product, xenon-135, was the root of the problem, being a potential neutron poison. Wu’s thesis work at Berkely on the radioactive isotopes of xenon was found to confirm this suspicion.

In her post-war research years, Wu continued her investigations into beta-decay. At Columbia, Wu had established connections with the Chinese community, and met theoretical physicists Tsung-Dao Lee and Chen Ning Yang. Lee and Yang’s work led them to question a law predicted by the Standard Model, the law of conservation of parity. Essentially, this law said that two particles that were so similar, theta and tau, that would ordinarily be considered the same particle decayed into two different states in different modes of decay. Lee and Yang’s research agreed with the law that parity was conserved for electromagnetic and strong interactions, but disagreed with the general assumption that it would also hold true for the weak interaction. Lee and Yang went to Wu for her expertise in experimental applications and Beta decay, as their model predicted that the Beta decay emitted from their sample material would violate the conservation of parity. While Lee and Yang eventually confirmed their theory (and Wu’s results) through experimentation, Wu had designed and conducted for them the experiment which would go on to earn them the Nobel Prize.

In later life, Wu became far more outspoken, protesting Taiwan taking political prisoners and fighting for gender equality. She spoke at a symposium at MIT, asking her mostly male audience if they thought



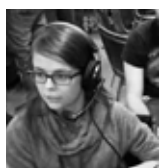
Manny Warman

Chien-Shung Wu is most remembered for designing the “Wu Experiment” to disprove the then-accepted Law of Conservation of Parity.

nuclei had preferences for masculine or feminine treatment. When referred to by her husband’s name, Wu would either not respond or correct them to “Professor Wu.” After 30 years and numerous achievements to her name, Wu’s salary was finally adjusted to be the same as that of her male colleagues, 4 years before her retirement at age 70. She continued to be politically active until her death in 1997, protesting the Chinese communist government’s crackdowns on the people after incidents such as the Tiananmen Square massacre of 1989.

For being the first ever person awarded the prestigious Wolf Prize in physics, holding the position of President of the American Physical Society, and having received the Pupin Medal, National Medal of Science, Comstock Prize in physics, American Association of University Women’s Woman of the Year award, and John Price Wetherill Medal (I could go on here, but you get the idea), Chien-Shung Wu has received so little recognition in the STEM community for her contributions.

Medicine with Heart: The History of Aspirin



MEAGAN CARDNO
3B NANOTECHNOLOGY

CHEMHISTORY

The medical benefits of salicylic acid have been known long before it was ever referred to by that name—willow bark, meadowsweet, and myrtle were used as early as 400 BC in Egypt to reduce fevers, and later further used for the reduction of pain, fevers, and inflammation.

By the in the 1700-1800’s, the developing organic chemistry field became better at isolating salicylic acid. In 1763, Edward Stone, an English chaplain, noted that both the willow tree and the the Peruvian cinchona tree shared a similar bitter flavour, and suggested that they both might possess similar therapeutic qualities. By drying the bark of both trees, he was able to isolate the two ingredients we have come to know today as quinine and salicin—both known for their bitter flavour. This then popularizing the use of willow bark as a less effective, but inexpensive alternative to the cinchona tree’s bark.

By 1828, German pharmacologist Joseph Buchner was capable of extracting nearly pure crystals of salicin from willow bark. But it wasn’t until 1838 that Raffaele Piria, an Italian chemist,

discovered an extraction method that obtained an even more potent form of salicin—salicylic acid.

Salicylic acid came with its own share of side-effects, however. It was particularly known for its irritation of the gastrointestinal tract, due to its rather corrosive nature, and was for a time ignored in favour of other developing analgesic drugs. It wasn’t until 1853 that Charles Frederic Gerhardt first synthesized a crude form of acetylsalicylic acid (ASA) by reacting acetyl chloride and sodium salicylate together during his study of acid anhydrides—although he simply named it “salicylic-acetic anhydride” and did not pursue any further research with the chemical.

However, controversy arose when it came to Bayer industries accreditation of the synthesis of the chemically pure form of ASA in the late 1800’s. Bayer credited it to Felix Hoffman in the year 1897, but in later years this was objected to by Jewish Arthur Eichengrün, who claimed to be lead investigator whose contributions were neglected by Nazi influence. Presently, Bayer’s position stands that Eichengrün and Hoffman were ‘equals’ on the project, and Hoffman remains named as inventor on the US Patent for the drug. As Eichgrün left Bayer in the year 1908, and never attempted to claim rights until the year 1949, he unfortunately never received any percentage of

profit from the sale of aspirin.

The drug name “aspirin” is derived from the botanical name of meadowsweet, *spirea ulmaria*, a known source of salicin; the “a-” denotes the acetylation of the acid, and ‘-spir-’ from *spirea*, ending with a typical ‘-in’ to make the drug easier to pronounce.

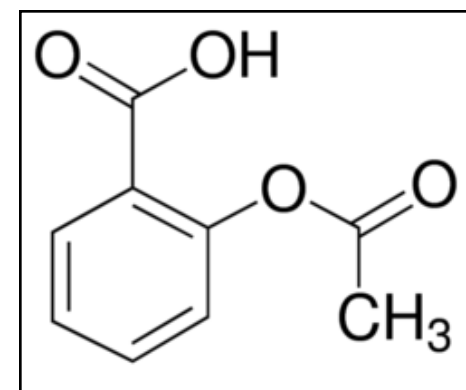
Aspirin itself works in multiple different ways within the body in order to cause its known analgesic (pain-relieving), antipyretic (fever-reducing), anti-coagulant, and anti-inflammatory properties. It’s primary mechanism involves the irreversible inhibition of both forms of the cyclooxygenase isozymes present in our body: COX-1 and COX-2.

These two isozymes are known producers of prostaglandins (hormone-like, pro-inflammatory lipids) and thromboxanes (lipids known for their role in blood clotting). In addition to their mentioned inflammatory effects, prostaglandins are also responsible for the transmission of pain signals to the brain; thus, the inhibition of their production is also associated with pain reduction. However, Aspirin is most famous for its affect on platelets, reducing the formation of thromboxane A2, thus making it useful in reducing the likelihood of heart attacks when taken in low doses over a long time. As an added effect, aspirin-modified COX-2 isozymes are known to produce lipoxins in place of prostaglandins, which are

primarily known as anti-inflammatory chemicals.

The irreversible mechanism for the inhibition with the COX isozymes is what makes aspirin different from other non-steroidal anti-inflammatory drugs (NSAID)—aspirin’s acetyl group becomes covalently bonded with the COX isozymes serine groups within the active site, thus preventing the inhibition from being reversed.

While in the present day, other NSAIDs such as acetaminophen and ibuprofen have reduced aspirin’s relative monopoly as an analgesic, aspirin still remains strong to this day for its role in preventing heart-related events, such as cardiac arrests or stroke.



The chemical structure of acetylsalicylic acid, commonly known as Aspirin.

Point Vs. Counterpoint

Pineapples on Pizza: Delicious or Digusting?

POINT

NACHIKET SHERLEKAR
4A NANOTECHNOLOGY

There is a widely held opinion that the consumption of pineapple as a topping on pizza is socially and morally reprehensible. The pineapple has suffered many insults as a result of this backwards thinking, despite the huge popularity of flavours of pizza such as Hawaiian, of which the pineapple is a major component. It is about time that a case for the humble pineapple as a pizza topping was brought forward.

Accusations against the fruit range from silly ("Pineapples are tropical, not Italian!") to downright illogical ("Pineapples are fruits and fruits don't go on pizza!"). People making such accusations are committing a great blunder by ignoring the fact that tomatoes themselves are a fruit, and enjoy a high status when it comes to being a component of pizza.

In addition, it is the nature of food and cuisines to evolve into something beyond what was originally envisioned by their creators. While pizza was indeed invented originally in Italy, and had nothing to do with pineapples back then, the dish has come a long way since. Claiming that pineapples do not belong on pizza since they are not traditionally Italian would be silly, especially considering the fact that pizza as it is served in many parts of the world today looks nothing like traditional Italian wood-fired brick oven pizza.

When making pizza, as with any other food, one should be concerned with the balance of flavours and texture. Pineapples help to achieve this goal by serving as a great contrast to salty meats such as sliced ham, through a combination of juicy sweetness with a little bit of sour and zest, as is the case with the Hawaiian. Here's a fun fact: the Hawaiian pizza is actually a Canadian invention! This piece of information should only add to the appeal of this great flavour. Indeed, the Hawaiian

pizza is the most popular pizza in Australia, accounting for 15% of pizza sales.

However, let us not limit this magical fruit to the one variety of pizza we are used to associating it with. There are plenty of other combinations one can come up with: imagine a perfectly baked pizza pie base with the choicest tomato sauce and cheese, along with deliciously juicy thick-cut Canadian bacon, and spicy jalapenos to balance the sweet and sour tang of the pineapple. If that doesn't sound delicious, then you might be a terrible person.

So the next time you eat pizza, whether you're baking it at home or dropping by the local pizza store, give the humble pineapple a shot: you won't regret it.

THEERAN KANTHAN
2A NANOTECHNOLOGY

Pizza in today's day and age holds an unparalleled level of reliability: pizza is the go-to party meal, "I love pizza" is an uncontroversial statement to make, and pizza parlours are ubiquitous on Canadian streets. This is for good reason. Pizza succeeds because it allows all to enjoy, by providing a rich mix of crust and unobtrusive salty flavour. At worst, if there is a topping that one doesn't enjoy, the remedy is a simple removal of the offending element. Thus pizza is, by definition, able to be enjoyed by almost everyone.

Pineapples utterly destroy this feature of pizza, that which makes it so reliable.

COUNTERPOINT

Pineapples cannot be removed from pizza, as even after the corporal entities are removed, the juice lingers in the pizza, altering the flavour irreversibly, and thereby ruining the ability to tailor one's slice by removing the topping. In addition, the sour taste and watery texture are so far removed from the known crisp and salty nature of pizza itself, that the reprehensible pineapple taste is impossible to ignore, and cannot be reconciled with the rest of the pizza.

The argument for pineapples on pizza also states that the topping in question adds variety to the taste, balancing salty flavour. This is, on the surface, true. The sour yet sweet, watery pineapple does in fact balance out the salty flavour of the pizza. But anyone who has eaten pizza knows that with pizza it is assumed that some manner of drink is provided as well. Soda is a common choice, and it shares those same pizza-balancing elements with pineapple: it is watery, sour and sweet. So we find in the vast majority of pizza consumption cases, pineapple is entirely unnecessary.

Pizza proponents might state at this point that soda and pineapple are therefore equal, and one can't be argued for over the other. This is ridiculous. If someone suggested pouring soda onto pizza as a topping, everyone would unite against such a ludicrous idea. This is for obvious reasons, while the rich flavour of pizza is complemented by the different taste of soda, mixing them together ruins them both. Much like an artist can find colours that complement each other beautifully, yet when combined form a hideous hue, so too does the tongue find pineapple and pizza. Therefore we as a community must maintain the purity of our pizza. Pineapples may have a place at the table – inside a fruit salad perhaps, but not so close to the pizza as to ruin the experience. So Remember! Keep your pineapples away from your pizza in order to maintain the artistic integrity of the meal.

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.



Steven Depolo on Flickr

Are pineapples and pizza a match made in heaven, or just a bizarre choice of topping?

The Personal Side of Some Great Thinkers



LEAH KRISTUFEK
4A CHEMICAL

Sure you may use these equations every day, but have you ever given thought to the personal lives of the great minds who conceived them? Once upon a time these people were lowly students just like us. Here we bring you a few quick facts about some of our forefathers in science and their personal struggles in a world not yet going their speed. Sometimes funny, sometimes tragic, it sure was one heck of a ride!

Bernoulli: Math ran in the family

Making big leaps in science and math can seem like a venture in chance, but for some it runs in the family, and boy can it ever get competitive! If you have ever taken a fluids course you may be familiar with Bernoulli's equation. This formula was conceived by Daniel Bernoulli and published in his book *Hydrodynamica* where he discussed, among other things, hydrodynamics, a term he invented. He was the son of one of the early developers of Calculus, Johann Bernoulli (keep in mind, this is the 1700's), and nephew of Jacob Bernoulli who was a forerunner in the discovery of the theory of probability. Things soured between father and son

in 1934 when both submitted separate entries for the Grand Prize of the Paris Academy. The two were declared joint winners and Daniel, who was at the time 34 years old, was subsequently banned from his father's home! Relations between the two were strained from that point on, all because of a single science contest!

Jacques Monod: War time resistance leader, peacetime Nobel winner

When World War II arose, Jacques Monod was a lowly Paris scientist struggling with deciding his research goals. As war threatened his home, Jacques fought back as a part of the French resistance. Eventually he rose to the top, becoming the chief of staff for the French Forces of the Interior, a group that undermined the German invaders in any way they could. He continued his scientific efforts after the war, helping scientists in communist countries. In 1965, Monod, along with Francois Jacob and Andre Lwoff, won the Nobel Prize in Physiology or Medicine for their work in gene expression. Their research resulted in the transcription model for DNA, which is generally accepted today.

Leonhard Euler: Blindness only increased his productivity

A fast friend of Daniel Bernoulli,

Leonhard Euler made leaps and bounds of progress in fields such as mathematics, mechanics, fluid dynamics, optics, astronomy and music theory. He won the Grand Prize of the Paris Academy; not once, not twice, but 12 times! However, in 1938, at the age of 31 he lost most of the sight in his right eye. Sometime later, in 1966, a cataract in his left eye was

discovered leading quickly to complete blindness. However, instead of slowing or even stopping his research this event caused him to turn out even more papers than ever before with the help of scribes. Euler had an incredibly good memory and was able to do vast calculations in his mind, releasing an average of one mathematical paper a week in 1775.



Portrait by Jakob Emanuel Handmann (1718-1781)

Leonhard Euler was frequently called 'the cyclops' after he lost most of the sight in his right eye after an illness.

Welcome to Waterloo Engineering, First Years!

So, what's with Co-op and Jobmine?



LEAH KRISTUFEK
4A CHEMICAL

For many of you, it has been a long journey making it to this point. 12 years of school, pushing for the top marks, applying to universities and waiting to see if you'll make it in... Now you have made it! However, this is only the beginning of a new journey. One that will alternate between four to eight months here with your school friends and four to eight months working, and adventuring outside of these wonderful poured concrete walls.

For those of you who are 4-stream you will be beginning co-op this January. This means that you are already enmeshed in critiquing your resumes and applying to jobs. Here are a few tips and tricks to get you well on your way to a successful round of job applications!

First of all, Jobmine. This is the online job board that you use to look at and ap-

ply to jobs. Most of you will have had your first encounter with it this past weekend. You will have uploaded your resumes in PDF form to apply to your jobs. While this can be frustrating, keep in mind that only a few years ago we had to use HTML resumes. (I could never get the bullet points to show up correctly, this resulted in just hours of fun).

What if you don't want the stress of job applications bungling up your weekend? Prior to the job application period, jobs are posted on jobmine with the status 'approved'. By searching under 'approved' instead of 'posted' you can look at upcoming jobs, shortlist them and start crafting your job application before the actual application period begins.

Writing a cover letter can give you an extra edge for jobs you are especially interested in. Write it poorly however, and it can get your application rejected. Try to write a new cover letter each time. Generally cover letters follow business letter format (your address, date, their contact information) and consist of 3 to 4 paragraphs.

The first paragraph would include a brief paragraph about who you are, what job you are applying to. The second paragraph should tie what you feel you have to offer with what their job is. Sometimes it is better to have one paragraph restating in your own words what the employer is looking for and what they value and then address those in a second paragraph. In the final paragraph you want to thank the employer for taking the time to read your cover letter and reiterate why you are the person for the job.

There are a lot of great resources for perfecting your resumes and cover letters. CECA (Co-operative Education and Career Action) has many resources and EngSoc holds resume critique sessions where upper years look over resumes. Don't be afraid to ask friends and family to read over your resume to catch things you missed! Grammar and spelling are important as mistakes give a bad first impression.

As time goes by, employers will look at the applications submitted to them and eventually you will get selected for an in-

terview! This interview will show up on Jobmine, but you should also receive an email. Many of you are probably wondering what sets your resume apart. The reality is that for a first year, your greatest strength is your personality. An employer is looking for someone who they will get along with. Be professional, but don't be surprised if part of your interview is an informal conversation about your hobbies!

At the end of first round, rankings occur. Waiting for rankings can seem like ages but don't despair. There is a glitch in Jobmine which allows you to see if you might have an offer for a given job. If an application remains in the 'active applications' part after it has shown as 'rankings complete' then you likely have either been ranked or have an offer. If the number of applications in active applications plus your remaining applications add up to more than your original number of applications, then you likely have an offer.

Well that's all for now, best of luck first years (and everyone else reading this), hope you have an amazing term!

Birdwatch: Jays Clinch Playoff Berth, Eye Division & League



ELIZABETH SALSBERG
3B NANOTECHNOLOGY

THE BENCHWARMER REPORT

Welcome, everyone, to the first Benchwarmer Report of the term, and the first of a special series: Birdwatch! During the unbearably long break since last issue, the Benchwarmer has kept a close eye on the local birds... and the bird feeder has been far busier than usual over the past little while, with the Toronto Blue Jays tearing up the American League.

On Saturday September 26, 2015, the Jays clinched their first playoff berth in

22 years. Following back-to-back World Series titles in 1992 and 1993, there's been an interminably long drought. No more, Jays fans—the drought has ended, and it's ended in style. Bounce-back starting pitching, a timely return from Marcus Stroman, exceptional hitting and great defense have made this team among the most feared in baseball.

With eight games left to play, the Jays have a four-game lead on division archrival, the New York Yankees. They are also just a game behind the Kansas City Royals for the American League lead.

The Jays will wrap up their season with one more game at home against the Tampa Bay Rays on Sunday, before heading over to Baltimore for a 4-game set with the O's.

They will cap off the season at Tropicana field down in Tampa. The Yanks finish playing house with the Chicago White Sox Sunday, and host the Boston Red Sox for 4 games, finishing up with three games in Baltimore. The Royals have games against the Indians, Cubs (make-up game), White Sox and the wild-card chasing Minnesota Twins.

With the White Sox and Red Sox being nobodies, the Yanks will be chasing us right to the bitter end. Despite clinching, the Jays need to stay focused, particularly considering their struggles at Tropicana field. Whatever happens, it's going to be right down to the wire. With that, let's take a look at some potential first round scenarios:

Win the A.L.

If the Jays win the A.L., they will face the winner of the one game wild card face-off. New York and Houston would square off if it was played today, but the Minnesota Twins and L.A. Angels are just a game and a half behind. Regardless, there is a fair chance the Yankees could win this one. A division series against the Yankees would be absolutely phenomenal—a very close matchup indeed, between two teams who know each other all too well. This series could go either way, and the Yankees certainly have substantially more postseason experience amongst them than the Jays. That being said, the Jays owned the Yankees this season, with a whopping 13-6 record against them this year. These could be good odds for the Jays to move on.

Win A.L. East, 2nd Overall in A.L.

In this more likely scenario, the Jays finish with the second-best overall record in the league. This lines them up for a date with the Texas Rangers in the division series. Though the Jays had the upper hand in the season series, winning 4 of 6 games played, the Rangers have an added attraction in the form of shiny new ace Cole Hamels. Between Hamels and Gallardo, that's two difficult starters in a five-game series. Though Hamels has struggled a bit with Texas, look for him to bounce back in the playoffs. Nevertheless, the Jays can answer with some great starting pitching of their own, not to mention killer offense. The Jays have good odds to win this one, should it play out.

Play in Wild Card

By far the least desirable option, first and foremost, because it's a one-game playoff. Though it's likely the Jays could win this one should they need to, they'd be in a bit of a bind for the division series: first, they would play the eventual A.L. Champions, the Kansas City Royals. Second, and more importantly, ace David Price would need to pitch the wild card, and thus would not be available to pitch until the fourth game of the division series. This could seriously hurt the Jay's chances of moving on to the League final.



Tom Szczerbowski

The Blue Jays will be attending their first postseason in twenty-two years.

Who wants Horoscopes? You want Horoscopes!

FELIX SUMMERBEE
3N HUFFLEPUFF

Aries

Your efforts to take the time to plan for the future are commendable, but do not forget to enjoy the present moment too. Friends and family will appreciate the time you spend with them.

Taurus

Those around you value your advice and are eager to listen to it. Do not let that respect for you be wasted; be earnest and truthful with them, and allow them to grow as people.

Gemini

Stresses in your life may appear to be at their peak, but know that a great reward awaits after the ends of these trying times. Seek help when needed, and keeping optimistic will be your primary tool to succeeding.

Cancer

The time has come to look back and reflect on how you've acted recently, as you may have been a little too indulgent in personal pleasures. Know when and where is appropriate for indulgence, and when restraint is necessary.

Leo

If there has been anything you have secretly wanted to try to seek out, now is the opportunity to take the first leap. Fortune is in your favour; all you need to do is be bold enough to go forwards.

Virgo

Be wary of neglecting your personal health as you strive for perfection in life. Be sure to allow yourself time to breathe, as you will find your effort even more effective than before.

Libra

There is little advice to be given other than praise. You have done well to reach where you are now— simply continue onwards as you have been, and you will continue on the path to success.

Scorpio

A new, potentially intimidating opportunity may present itself to you in the near future. Neither caution nor courageousness can be counselled; you must simply use logic to decide whether or not the opportunity is one to accept. Think carefully.

Sagittarius

Try as you might to schedule or brace yourself for the next few weeks, be ready for wrenches to be thrown in at any moment. Remain flexible and calm when faced with complications, and your good sense will bring you through to the end.

Capricorn

Be careful of allowing your personal emotions to conflict with your usual logical thought. If you find yourself incapable of facing a problem impartially, walk away from it until you calm your thoughts.

Aquarius

When faced with challenging times, don't shut out loved ones under the premise of not troubling them with your own issues. Keeping to yourself worries them more than you realize. Remain open with them, and they will support you just as you would do for them.

Pisces

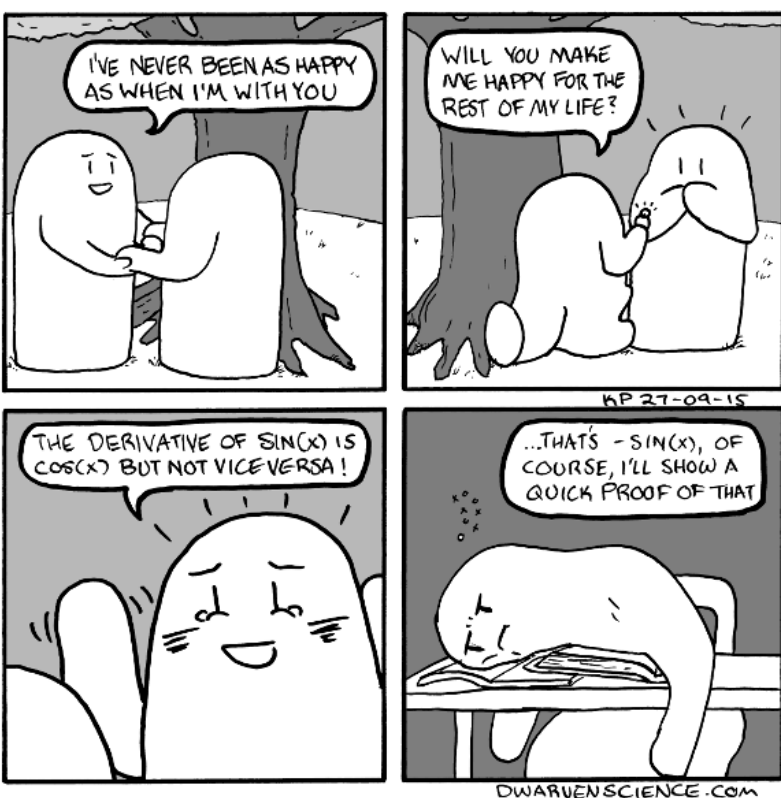
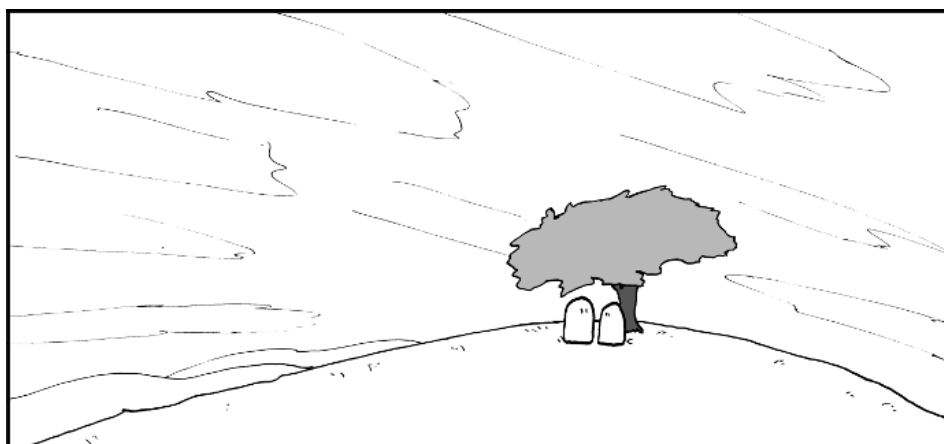
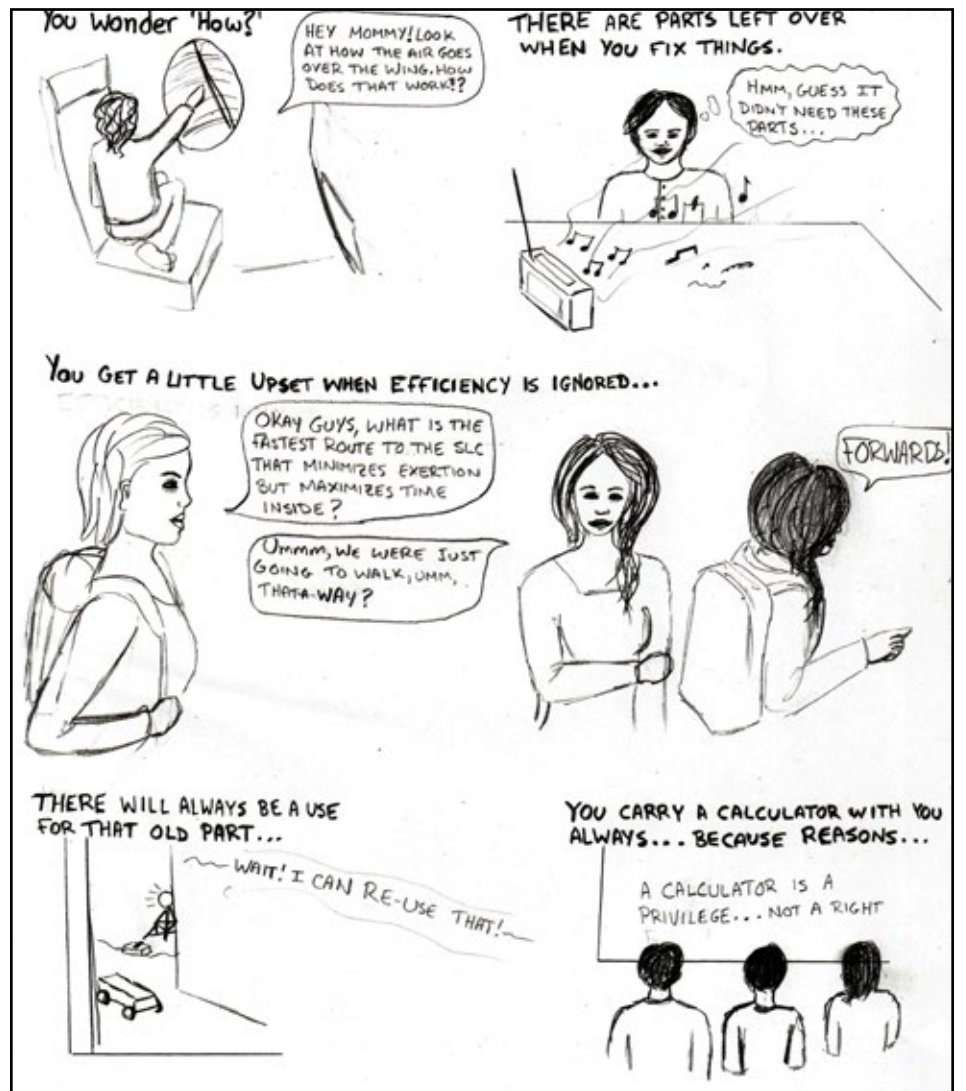
Patience. You might feel pressured right now to rush to finish the tasks before you, but know that good work rarely comes from haste. Allow yourself enough time to produce the quality of work you expect from yourself.

Editor's Note:

These Horoscopes are provided for entertainment purposes only, and as such, they come with no guarantee of accuracy or usability of the information and advice contained within. Read at your own risk! Or enjoyment.

Engineering might be the thing for you if:

LEAH KRISTUFEK
4A CHEMICAL



Et tu, Bonaparte?

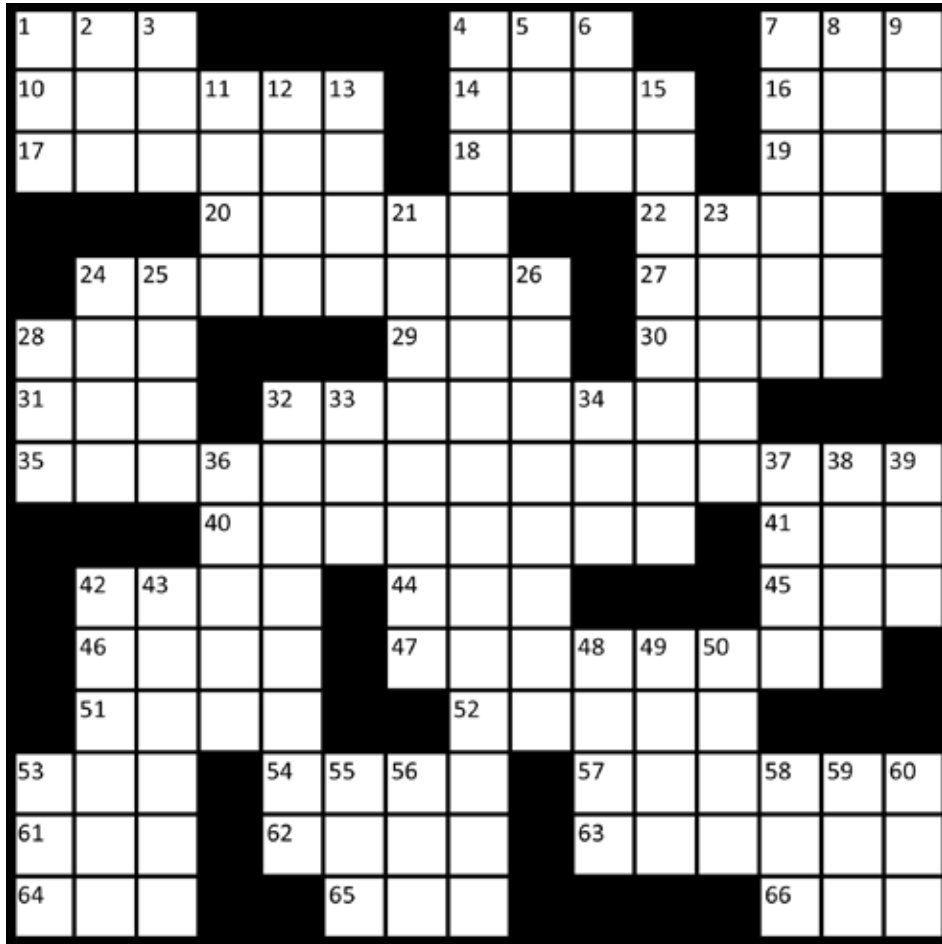
BRIGITA GUBINS
2A ENVIRONMENTAL



The Iron Crossword

Sci-Fi Bonanza

CAMERON SOLTYS
2T MECHANICAL



ACROSS

- 1 Pull suddenly and sharply
- 4 A computer storage device suitable for frequently-accessed data
- 7 TV network specializing in made-for-television movies for women (abbr)
- 10 A line of sleep-aid drugs that use the same active ingredient as Benadryl
- 14 A group collaborating on a project
- 16 Provides useful services to motorists
- 17 Nation of moose and igloos
- 18 A VW-owbed luxury car manufacturer
- 19 Medical imaging technique that uses non-ionizing radiation
- 20 The French version of the station of Dr Who and Sherlock
- 22 Abbr. that might describe a table of contents
- 24 Valley where the browncoats suffered a decisive defeat
- 27 Genre of video games like Papers, Please
- 28 ___ City community construction game
- 29 Obsolete high-speed ethernet protocol (abbr)

DOWN

- 30 Official title of the leader of the Kingdom of Bulgaria
- 31 Abbreviation indicating that the entirety of an email message is in the subject line
- 32 As ___ goes on, the clock arms ___ (2 wd)
- 35 Jedi Knight with the highest-ever known midi-chlorians count
- 40 Also known as goosegrass, a herb traditionally used for skin ailments and light wounds
- 41 A vase sometimes used for precious ashes
- 42 American association that regulates student-athletes in college sports (abbr)
- 44 Apples' equivalent to Google's Android
- 45 Costal formation that occurs when a rising sea drowns a river valley
- 46 Wyatt ___, 1994 Western directed by Lawrence Kasdan
- 47 Explosive related to a famous science award
- 51 A partnership between EASA and the aviation industry to enhance safety (abbr)
- 52 The largest artery of the body
- 53 Also known as "Star Wars" (abbr)
- 54 A one-hundred year old juvenile hero

- 57 DreamWorks's Fiona, for instance
- 61 Money used in country of 64 across
- 62 Turn or slide violently in a direction
- 63 Some monkeys see, hear, or speak it (2 wd)
- 64 Old name for current capital of country that uses 61 across
- 65 Software for anonymous internet communication
- 66 A closed segment of a differentiable curve

DOWN

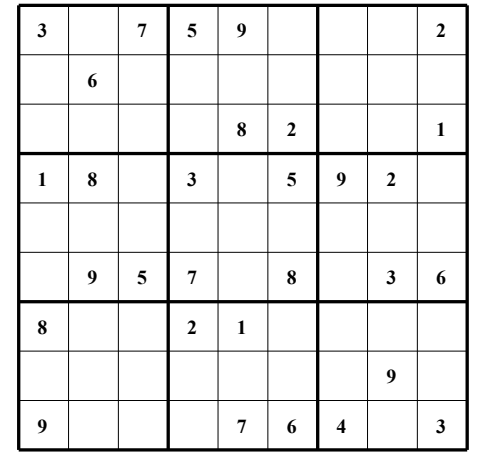
- 1 Organizers of Toronto Frisbee games (abbr)
- 2 Class of submarines built for the Yugoslav Navy to transport special forces in shallow water
- 3 Alcohol often combined with a malaria-preventing drink
- 4 TV show that followed a space crew stranded 70 000 light years from Earth
- 5 Video game subgenre of Asteroids and Space Invaders
- 6 Your grandfather's only son
- 7 Greek symbol that represents a still-anticipated video game
- 8 Jeanne d'Arc, as an example
- 9 Salt sometimes used to treat iodine deficiency
- 11 Islamic term meaning patience
- 12 Software that allows one to extract data from a database (abbr)
- 13 An organization dedicated to reducing corruption in sea-based industries (abbr)
- 15 Fighting forces composed of non-professional fighters
- 21 How you might start a sentence about the message of an audio-visual piece (2 wd)
- 23 Miley Cyrus will be ___! (2 wd, 1 abbr)
- 24 Biblical name for Mount Hermon
- 25 Watson of Harry Potter fame
- 26 Hurray Hurray Awww...
- 28 As opposed to land
- 32 Fish ancient Egyptians associated with rebirth
- 33 Suffix of the medicinal chemical in 3 down
- 34 Short form for a mmo stat indicating damage or strength
- 36 Ex. Plymouth Horizon and Dodge Omni
- 37 Middle name Tiberius
- 38 Smallest of the Great Lakes
- 39 Single-stranded biological information storage
- 42 Required
- 43 The hallmark of The Strip
- 48 The first stage of the Iron Armor Pokémon

Sudoku

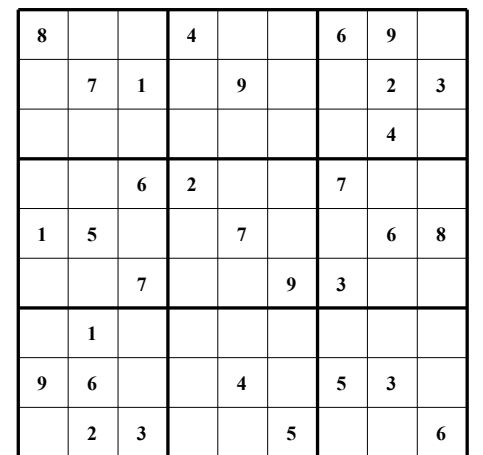
#2015-11

NINA FENG
4A ENVIRONMENTAL

O.W.L.s



N.E.W.T.s



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

- 49 Online game made by Wizards of the Coast
- 50 Association to encourage the exchange of ideas in the call-center-travel-industry (abbr)
- 53 2005 remake of the 2001 film Dhill
- 55 Key used to type such characters as æ, †, ▼
- 56 ___ opera, southern Chinese tradition involving ferocious masks
- 58 When astronauts leave their spaceship (abbr)
- 59 Name soldiers gave to the standard gun in the book WWZ
- 60 Campus building mostly frequented for Tim Hortons according to a FEDS survey

THE IRON INQUISITION
Leah Kristufek, 4A Chemical

"What would you study if not your current program?"



"Econ at Laurier - I've taken a couple of econ courses and I'm really good at them!"
Mike Magliocchi, 3B Computer



"Advanced Thugology - I'd be an excellent thug."
Jakub Dworakowski, 4A Mechatronics



"CS - Saying that is kind of a cop out isn't it?"
Matt D'Souza, 1A Software



"Geography of the Great Lakes - It's basically rocks for jocks."
Thomas Willert, 2B Mechanical



"Mechatronics - I like cars...and robots."
Spenser Dobrik, 1A Software



"I would become a highschool math teacher."
Melissa Ferguson, 4A Mechanical