

# THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY

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## Professor Al-Hammoud Wins Teaching Award

Every term a professor, lecturer, or laboratory instructor who has done an exceptional job of going above and beyond for their classes is selected to receive the Waterloo Engineering Society's Teaching Excellence Award. This award is given to an instructor who has shown immense dedication to ensuring their class' success, has employed unique and unconventional teaching methods, and has allowed opportunities for experiential learning. The winner is selected based upon the number, and quality, of student applications received as well as information collected through the course critiques. This term, based on exceptional student nominations and overwhelmingly positive course critique scores, Professor Al-Hammoud was selected as the winner.

When her CivE 105 class was polled about Professor Al-Hammoud, we got a huge number of responses most of which couldn't be included because there isn't enough space! There were common themes in all of the responses: her stu-

dents can genuinely tell how much she cares about their success; almost every response included this answer. Also, it is evident that she goes above and beyond to ensure everyone understands. Above all, it seems students truly appreciate her enthusiasm for the course. Here are a few submissions:

"[She] explains one concept in multiple ways until the students understand. Really takes the time to get to know every student. Always available if you need help. Very friendly and positive. Gives clear and concise answers to questions and makes sure you understand the concepts. Best professor I have ever had."

"Rania demands attention and responds with energy and an interactive lecture, even using props. She is easy to talk to if you have questions and is extremely generous in her office hour scheduling. You feel that she wants everyone to succeed and that she truly enjoys what she is doing and has a passion for her area of expertise."

"She cares about her students, holds



help sessions even on weekends to ensure that her students have all the tools needed to succeed and she goes above and beyond when explaining new concepts with examples and detailed notes."

"There are a lot of profs that simply don't have a good attitude or don't care when it comes to teaching, and it definite-

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## Bastille Day Attack in France



CAITLIN MCLAREN  
3T CHEMICAL

July 14th is known in France as Bastille Day: it commemorates the storming of the Bastille prison during the French Revolution, and is a national holiday in celebration of freedom and democracy. In Nice, like everywhere else in France, people were celebrating and enjoying a fireworks display.

The Promenade des Anglais was packed with people when a 19-ton truck charged into the crowd at top speed. At first, people thought it was out of control, but as the truck continued without stopping, it became clear that this was a deliberate attack. Police fired on the truck as it continued for two kilometres down the Promenade; a heroic motorcyclist attempted to open the door, but failed and was crushed under the truck. Another individual jumped onto the back of the truck, drawing fire from the driver as the police surrounded the truck and riddled it with bullets, killing the driver. In the cab,

the police discovered an automatic pistol, two semiautomatic rifles, ammunition, and a fake pistol and a dud grenade as well. The truck was stopped, but the streets were full of bodies and injured people. At the time of writing, 84 were dead, including 10 children, and more than three hundred were hospitalized.

The driver was identified as Mohamed Lahouaiej Bouhlej, a Tunisian national who had lived in France since 2005. While he was known to the police as a petty criminal, and had been arrested for violent assault, he had no known connections to terrorist organizations or known radicals, and was not known to be religious. While he was married and had three children, his wife had left him because he was physically abusive and they were in the process of divorce.

After the attack, police arrested seven people; his ex-wife was also taken in for questioning, but later released. Bouhlej had sent texts to several people before his rampage, some of which appeared to be planning with co-conspirators, and others were messages to his family. In the days preceding the attack, Bouhlej apparently sent £84,000 to his relatives in Tunisia - an

action which surprised them. He also made more frequent phone calls and insisted that everything was "normal". According to his family, Bouhlej was psychologically disturbed, and they had insisted that he visit a psychiatrist in Tunisia about his drinking, drug use, and violent behaviour. Both his family and his former psychiatrist nonetheless expressed shock that he would carry out such a terrible atrocity. As he was not known to anti-terrorism intelligence, it would appear that if he was radicalized, it would have occurred very quickly. The attack was recently claimed by ISIL, also known as Daesh, who called Bouhlej an "Islamic State soldier"; however, that is not necessarily conclusive, as ISIL frequently claims attacks that they have only tenuous connections to.

The attack came at a significant time; security measures in France were very tight during the 2016 UEFA European Championship, which France was hosting, and were just relaxing; President François Hollande had not long before declared that he would not extend the state of emergency that France had been under ever since the November 2015 Paris attacks; now, of

course, the state of emergency has been extended for another three months. The state of emergency gives the authorities the power to search private property without a warrant and to place people under house arrest. Hollande is facing a great deal of political backlash in the wake of these attacks; many French citizens feel that security measures were not strong enough and poorly planned. Currently, Hollande has stated his intentions of calling up France's reservists and intensifying Operation Sentinelle, in which soldiers patrol the streets.

France received an outpouring of sympathy from around the world as they recover from their third serious terrorist attack in the last year and a half. World leaders, religious leaders, and public figures all condemned the attacks and expressed sorrow over the loss of life. The Promenade des Anglais in Nice is now open again, the bodies removed and the blood cleaned; it is filled with mourners and shrines honouring the dead. Things are going back to normal, very slowly, and it may never fully return to the way it was before. This is definitely not the first shocking attack France has suffered; hopefully, it will be the last.

## Military Coup Attempt in Turkey



RAEESA  
ASHIQUE  
2N ELECTRICAL

Turkey's latest military coup attempt began on the evening of Friday, July 15, followed by several hours where it appeared that troops were in control, with the occupation of important strategic locations in Ankara

and Istanbul. There were tanks outside the Atatürk airport, jets and helicopters flying over the capital, and troops blocking the bridge over the Bosphorus strait, which connects the European and Asian sides of the country. They also took over media outlets, announcing that the "Peace at Home Council" was now in charge and would be enforcing a curfew and martial law. It was a violent night of shooting and explosions, resulting in at least 232 deaths at the time of

writing, and 1400 others wounded.

At the time, President Recep Tayyip Erdoğan was vacationing at the seaside resort of Marmaris, from where he dialed into CNN Türk via Facetime, saying "I urge the Turkish people to convene at public squares and airports. I never believed in a power higher than the power of the people." He later flew into Atatürk, giving a press conference wherein he promised that traitors would "pay a heavy price". From the

time of his arrival, it became clear that the government was regaining control and that important military leaders were on the side of the democracy. Groups of soldiers began to surrender Saturday morning, key locations were regained, and it was over by Saturday evening.

Turkey has a history of coups: there have been four since 1960. In order to be

CONTINUED ON PAGE 6 AS TURKEY

# Letter from the Editor

## Ideas Start Here



**BRYAN MAILLOUX**  
EDITOR-IN-CHIEF

Hello readers!

It's finally the end of term! You can feel it in the air: no one goes to class anymore, people are usually stuck in labs doing end-of-term projects, and you can see students acting like zombies everywhere on campus. (Literally – if you see people running around with Nerf guns it's because they need to protect themselves from zombies.) The end of term is great because it means that we can look forward to our tiny two-week vacations! On the other hand, it sadly means that this is our last issue of the term. We'll be away for the month of August, but we'll be back for Orientation Week – be sure to pick up a copy of the Frosh issue!

I have a bunch of thanks to dish out to basically everyone who helped me not fail this term. First and foremost, SO many thanks go to Donovan Maudsley, without whom I would have gone insane for sure. (I swear, after editing a paper for eight hours straight by yourself, you start to hallucinate some pretty weird stuff. Or maybe it's just some chemical residue from the renovation work here in E2. Who knows?) Donovan has helped out immensely with everything from layout (he laid out Issue 2 almost entirely by himself!) to copy editing, to general office improvements. I couldn't have had a better assistant editor, and I'm happy to hand the torch over to him for Winter 2017!

A huge thanks also goes to all the Iron Warrior staff writers for this term. To Ratan, who introduced us to the incredibly informative Hardcore History podcast in (Ra)Tan Lines; to Tiffany, who brought musicals galore to us in Discover Broadway; to Ashlyn, who once again explored the passions and thoughts of instructors in Prof Personalities; to Caitlin, who informed us of more things we didn't want to know; to Brigita, who taught us how easy it is to stay green in Leafy Thoughts (hope your grandma gets better!); to Elizabeth, who acted as correspondent to the sports world in the Benchwarmer Report; to Cam, who wrote an out-of-this-world column called Space Cam; to Tom, who answered all the important questions in the Iron Inquisition; to Sarah for managing the social media; and to Gabrielle and Raeesa, who let us know about world events. (Sorry again Raeesa for giving you so little advance notice for that PCP!) And to everyone else who contributed this term through articles and copy editing – thank you too!

It has honestly been a great term, and I wouldn't have had such a good time if it weren't for you guys. Thanks for making the Iron Warrior so awesome!

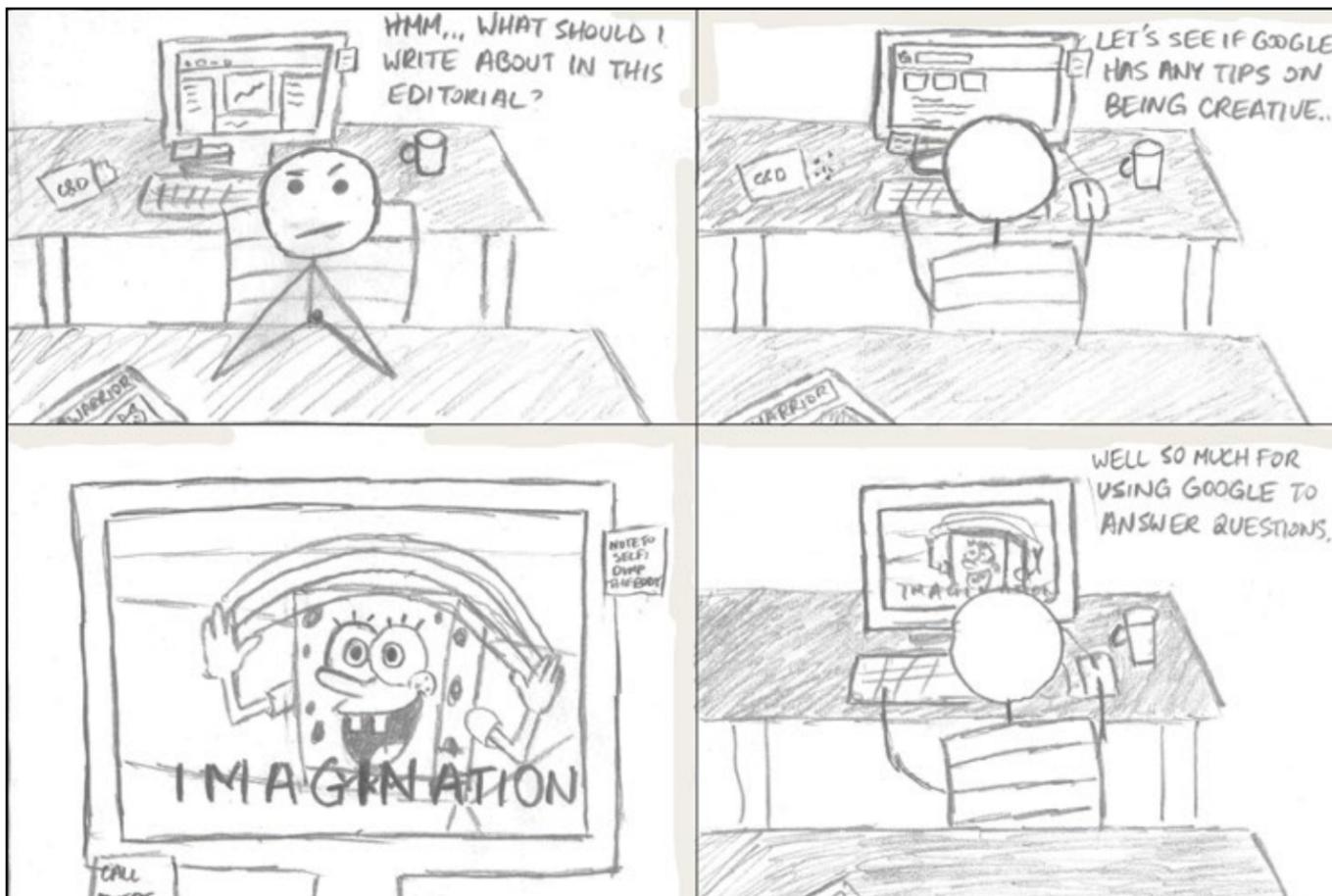
Now, the subject I'd like to talk about in this editorial is the creative process, and why it can be so hard sometimes to figure out what the heck to write about. I'm sure a lot of people have no trouble with this at all – they're constantly just spouting out random opinions about anything and everything. An unstoppable barrage of ideas comes at you and you wonder where it all came from. For others, it can be more difficult to come by

the initial spark that determines what you will write about. I'm definitely in that second boat, and after writing four of these editorials already, the difficulty of finding subjects to write about has me wondering how to make that searching process easier.

So, as with many other questions, I turn to Google to pool together some ideas. (Which is a whole other debate in itself that I don't even want to get into.) The first hit says, in short, "Practice. A lot." Which makes sense – this is something I even mentioned myself in one of my earlier editorials. And yeah, it has been increasingly easy to come up with subjects to write about over the course of the term. But I'm not satisfied with this answer, mainly because two people who do this all the time (Dan Carlin from Hardcore History and the Youtuber CGPGrey) often have this problem as well. They both mention that while it might be easy to come up with a very general topic to investigate, finding which subtopics to cover and which angles to cover them from is always very challenging.

Another Google result says that basically ideas should come to you in the shower (or doing other low-key activities), and you should be jotting them down somewhere as soon as you think of them. Well, ok, I like this idea (apart from the problems of bringing a notepad or a smartphone into the shower). But the last Google search basically suggests "Sit down and brainstorm for a while", which is exactly the opposite of the last site's advice.

So which to pick? Well, I guess, as with most things on the Internet, we'll just have to try both and see what happens.



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# Hillary's Best Week Ever

## Clinton Gets Absolved and Nominated



**GABRIELLE KLEMT**  
1B GEOLOGICAL

Much has been happening to make Hillary Clinton happy lately. In case you've been living under a rock for a good two years now, you probably know that Hillary, who recently became the Democratic Party candidate for the 2016 election, has been in some hot water over things she did as the United States Secretary of State.

"How could a lovely old grandma like Clinton be in hot water over anything?" you ask, shocked. Although it does seem like the extent of hot water she deals with is for making tea, Clinton has been getting heat for her use of a private email server while serving

as Secretary of State. (Just kidding, Clinton seems like the kind of grandma you'd be scared to give your report card to.) Also for the Benghazi thing but you didn't seriously think we were getting into that did you?

It appears that using your own private email server when working in a public position is a rather fishy move because, as you might have guessed, all her emails were totally private – the digital version of burning your paper trail. Although it's possible she just didn't want anyone knowing about her subscription to Wait But Why, it's also possible she was sending stuff via email that she shouldn't have.

Luckily for our pal Hillary, possible future President, the head of the FBI said that they would not recommend bringing charges against Clinton for her "extremely careless" email behaviour. To think, all this time

I thought extremely careless email behaviour encompassed deleting emails instead of archiving them! Glad to know even if my habits get worse, I won't be charged! Apparently, you just can't be charged for carelessness if you're an official because it would set a really dangerous precedent, and they would need to start prosecuting a huge number of people in public positions! Should I be upset about this? Probably, but sadly it's so common that it's become common-place for people in positions of power to be more on the incompetent side.

Unfortunately, most of the States isn't completely satisfied with Hillary's absolutism in this matter, and it seems fair considering they only don't want to charge her because they'd have to start charging other people. A lot of other people. I say those people can probably afford it, but most peo-

ple don't listen to me.

In other Good For Hillary news, she got the thumbs up from her old campaign rival Bernie! He turned down supporting the Green Party candidate in favour of his old nemesis. Although the two stood on stage at a joint rally together to proclaim their friendship and unite forces against the Trumpinator (I'm not making up most of that sentence), they seemed as un-united as ever. Let's just say that their faces were talking just as much as their mouths and it looked very uncomfortable. Ah well, perhaps time will make better friends of them. Let's just hope that it's sooner rather than later, Bernie is really no spring chicken! I'm kidding, if Stephen Hawking is going to live to see that teeny space probe launched to Alpha Centauri, Bernie is going to live to see Hillary as a close friend!

# Police Violence Prompts Vigilante Retaliation

## Police Officers Killed In Response to Murder of Unarmed Black Men



**CAITLIN MCLAREN**  
3T CHEMICAL

July has been a tragic month for racial violence in America. In Baton Rouge, Louisiana on July 5, an unarmed black man named Alton Sterling was shot by the police at point blank range; his death was recorded by bystanders and the video caused outrage all over the country. The very next day, a black family was pulled over by the police for a broken tail light in Falcon Heights, Minnesota; when the father, Fernando Castile, informed the police officer that he was legally carrying a licensed weapon, the police officer fatally shot him in front of his girlfriend and four-year-old daughter. His girlfriend, Diamond Reynolds, live-streamed the incident; she was handcuffed by the police afterwards, although she had committed no crime.

These two incidents sparked renewed protests all over the country; activists from the anti-police brutality group Black Lives Matter protested peacefully in many cities around the country. The protest in Dallas on July 7 was also peaceful at the beginning, with police and protesters treating one another respectfully. However, at about 9:00 P.M., shots rang out around El Centro College, initially wounding three police officers. The shooter made his way into one of the college buildings, shooting more police officers along the way. The building was evacuated and a two-hour standoff began, but negotiations with the shooter failed and at about 2:30 A.M. a police bomb disposal robot carrying a small amount of C4 was deployed and police detonated the explosive, killing the shooter.

The shooter was identified afterwards as Micah Xavier Johnson, an army veteran who had been discharged under unclear circumstances in 2014; his family and friends suggest that he was suffering from PTSD.

Johnson was reportedly interested in black nationalism and harboured deep distrust and hatred towards police officers. He had briefly been a member of the New Black Panther Party several years before, but had been expelled for bad behaviour and violent rhetoric. For these reasons, he was reportedly persona non grata in the Black Lives Matter movement, which holds to nonviolent principles.

When Johnson's house was searched, numerous weapons were discovered, as well as body armour and bomb-making materials, suggesting that he had been planning such an attack for a long time. His violence was directed almost exclusively towards police officers; five officers were killed and nine more wounded; two civilians were also injured. The names of the deceased were Lorne Ahrens, Michael Krol, Michael Smith, Brent Thompson, and Patrick Zamarripa. The latter three were also former members of the armed forces.

The killings shocked the entire country,

drawing condemnation from all sides. President Obama called the attack "despicable" and a "tremendous tragedy"; furthermore, he attributed it to "racial hatred". Leaders in the Black Lives Matter movement denounced the killings as well. Some parties criticized the movement, arguing that it is creating an anti-police atmosphere that leads to acts of violence; however, the movement, including the Dallas branch, vows to continue, saying that while the killings were tragic, police violence, especially against the black community, is a systemic issue that needs to be eliminated.

Whatever one's opinion on the solution to these problems, there is a deep rift between the police and the black community, and the body count is only growing. The deaths of Alton Sterling, Fernando Castile, and these five police officers are all symptoms of this disease, and it is in everyone's best interests to resolve it as soon and as peacefully as possible.

# More Trouble In Rio de Janeiro

## Water Issues and Civil Unrest Ahead of Games



**GABRIELLE KLEMT**  
1B GEOLOGICAL

What's new in the most (questionably) exciting city of the summer? Well, just weeks away from the kickoff of the Summer '16 Olympics, Rio has discovered some unpleasant truths about what's lurking in the water and this time we're not talking severed limbs! Brazil is having an economic meltdown, and some upbeat news as well.

First and foremost, that water everyone's been talking about has gotten slightly worse. Although it was bad enough as just a sewage and garbage-filled slurry, apparently the water around Rio just wasn't bad enough. Recently, scientists have detected a form of "super-bacteria" growing just off the coast of some of the city's most stunning beaches. One of the areas with the greatest concentrations of bacteria will be the site of the Olympic sailing competition.

Scientists have been looking for bacteria at five beaches over the last year and believe that the bug identified has been coming from hospital sewage. This superbug has been appearing at hospitals and resistant as it is to antibacterial drugs, it is becoming a major issue for doctors and scientists. It's now believed that sewage coming from the

hospitals, and infected people, goes to municipal facilities and then out to Guanabara Bay – site of the Olympics.

It seems that Rio de Janeiro's only woes don't come and go with the tides either. The recent serious economic downturn in Brazil has left very little money in the Olympic budget. While most Olympic venues are ready and waiting for their big moment, the

city and citizens might not be. The state government, responsible for policing, has been pushed to near bankruptcy due to the major recession – dare I say depression – that's hit Brazil. An under-funded police force might be one thing, but many civil servants from doctors to firefighters are also not being paid and are threatening strike action.

Alarming news is coming out of the po-

lice departments about lack of toilet paper, and even gasoline for cars. All this while the unhappy populous plan protests for the day of opening ceremonies and police and firefighters welcome tourists with signs warning them they are not entering a safe place. Many people have expressed concern about Rio's ability to cope with an emergency event, should it occur during the games.

It seems like many people will be watching from home this year, something encouraged by the public that will only further detrimentally impact Brazil. Not being able to cash in on the Olympic tourists would be a major loss to an already starving economy. It's a wait-and-see game at this point; too late to call it off, but maybe too late for success.

On a more positive note (see what I did there), Katy Perry has released a new power anthem, "Rise", for the summer games. And they don't use the term "power anthem" all the time in that business, so you know it's pretty great. Definitely watch the version with all the athletes falling and then getting back up to succeed again; I may have had a tear or two in my eye. Maybe Perry's anthem will help Rio de Janeiro rise again and become that powerful nation they really can be!! We'll see, I can't wait and I hope you're watching too!



via Wikipedia Commons

**Despite all the issues that have come up, the Rio de Janeiro Summer Olympics kick off on August 5th and continue to the 21st. Be sure to tune in!**

# Prof Personalities: Rania Al-Hammoud



**ASHLYN LOW**  
2B NANOTECHNOLOGY

PROF PERSONALITIES

If you are in Civil or Environmental Engineering, the chances are pretty high that you have had, or will have, Professor Rania Al-Hammoud. Successfully overcoming many challenges as a woman in engineering in Lebanon during her bachelors studies and in industry, Professor Al-Hammoud immigrated to Canada in 2003 with her family, after which she completed her Masters and PhD at the University of Waterloo. She has been teaching at the university since 2010, spreading her knowledge and showcasing her passion for teaching to countless students.

For this last issue of the Spring 2016 term, the Iron Warrior had the pleasure of sitting down with this incredible professor and asking her a few questions.

## Which courses do you teach?

Oh I've taught a lot of courses... I'm currently teaching CivE 105 (Mechanics 2), and in the past I've taught CivE 204 (Solid Mechanics 2), CivE 265 (Structures and Properties of Materials), CivE 331 (Advanced Mathematics for Civil Engineers), CivE 400 (Civil Engineering Project 1), CivE 403 (Structural Analysis 2), CivE 415 (Structural Systems), CivE 512 (Rehabilitation of Structures), EnvE 221 (Advanced Calculus) and EnvE 292 (Engineering Economics).

## Why did you choose to pursue a career in Engineering?

Actually it was pure luck. I used to love math a lot when I was in school, and all my math teachers were civil engineers, and they were all the math teachers that I admired in high school and middle school. So I really looked up to them. Also my father was in the computer engineering field but I was not interested in that area, so I ended up in the civil engineering field.

## How did you come to be a professor here at the University of Waterloo?

I did my undergrad at the American University of Beirut (AUB) in Lebanon. Then I worked for five years with a company called Hilti as a field engineer, so I used to do some design and construction work. The company also had a research centre in Liechtenstein that I was working closely with. I was able to get a grant from them and I started working with a professor from AUB and that's how I got excited about doing research and excited about pursuing my graduate studies. Fortunately, this coincided with me immigrating to Canada in 2003, where one of the professors here at Waterloo was asking for a graduate student from AUB, and I said I was interested since it was the same research area. So that's when I applied for my masters here, and after I finished that I completed my PhD here as well. It did take me some time because I had a kid before coming to Waterloo, then I had another child while doing my masters, and then another child while doing my PhD. So I was very busy!

## What are your current research interests?

My main research is rehabilitation or repair of reinforced concrete structures. After I finished my PhD I went to the University of Minnesota Duluth where I taught as

a professor, and I have graduate students there who are working on the repair of bridges, so that project is still going. What I work on here in addition to that project is I do lots of research in engineering education. I believe in experiential learning, and I am also conducting research in metacognition, which is how to think about your thinking, and how to think critically about problems. So in my classes I try to avoid giving cook book style questions where you just follow a procedure, because that's not going to help students to become better critical thinkers. Another research I'm interested in is resilience, which is another aspect of engineering education, which is how to behave towards failure.

## What was the biggest thing you learned as an undergraduate student?

I think my experience as an undergraduate student makes me relate very much to what students face in their undergraduate career. Everybody here was at the top of their class in high school, same as I was, but things are not the same when you come here. I think the biggest thing I had to learn what used to work in high school might not work for everyone in university, and that was the case for me. For example in high school they would give you five problems for an assignment from the textbook, and I would do the whole 50 because I had the time. In university, professors give you five questions because you only have time to do the five. So I would spend time trying to do those 50 questions and I would fall behind. So I learned a lot about having to change my thinking skills, my learning skills and habits. I think now that's where I try to help the students the most, because I can see it, I see what they go through, and I went through it too, everybody goes through it.

## Do you have any advice for your students?

I would have lots of advice to give to my students. First of all, I would say not to let any failure point devastate you. Take it as a learning experience and see how you can improve on it. Because we all fail, I failed so many things in my life and if somebody tells you they didn't, they are hiding something. So don't just start thinking I'm going to fail because of this, think about that you are here to learn rather than to get grades and if you do think that way, you are going to do a lot better unintentionally. Because honestly, if you graduate with a 75% or with a 95%, a year afterwards it's really not going to matter. It's what you've learned, and the skills you've gained that really matter the most.

I would also say to talk to your profes-

sors. All of us are human beings here, so make sure you to talk to them, express a concern if you have a concern, don't leave any question unanswered. I don't judge my students, no matter what they ask, and they should not judge themselves and their classmates. No matter what question it is, I try to make my students feel good about asking that question. Because nobody is perfect. I'm not perfect, and none of us here are perfect. If you think otherwise, then that is something that you have a misconception about.

## What is your favourite part about being teaching?

My favourite part is my interaction with the students. When I'm teaching about a topic, I like it when I'm explaining difficult concepts and then suddenly I see that brightness in their eyes that they got it, and it really makes me happy. I also like that the students think I'm approachable, since my office hours are always full. Students always come to meet me with technical questions so that allows me to be able to help them. So I would say the highlight is when I see that I was able to make a difference in those students. I have a son who is high school right now, and I think of every student as I think of him or my other children, in the sense that I try to help my students in a way that I hope next time one professor can help my son.

## What part of teaching do you find the most challenging?

The most challenging thing is getting students to realize that I'm doing all of this for their sakes. When I write a quiz, it takes me about 10 hours to do so because I want to make sure it helps them to develop their critical thinking. So that's what I keep in mind, and its challenging when you see that they feel it was not right for them, or that it was unfair. That perspective, that's when I struggle to figure out how to get them to see that I'm really doing this for their best interests. They are the number one in my mind when I'm developing anything. I'm completely with them, not against them.

## What is your teaching philosophy?

I believe in interactive methods of teaching so I use a lot of different techniques in my classroom. I use online discussion forums, online videos and modules, clickers, even scratch cards. For example, after my students complete a quiz, they do the same quiz again but now I've transferred the questions into multiple choice. So they work in a group and answer using scratch cards. Underneath the right answer there is a star so they know if they did it right or

not. They get five points if they get it right the first time, 3 points if they take two tries, 1 point on the third, and 0 for the fourth and fifth. So this method helps to emphasize concepts and promote deep learning, and students can learn where they went wrong and how to fix it. Whereas usually if you get a quiz back after a week you forget what you did and it's not helpful anymore. Doing the group quizzes after every single quiz is why it takes up to 10 hours for me to prepare them, because you have to make sure you have answers that will make sense and force the students to think. Clicker questions take time too because you need to come up with answers that will trigger those discussions. But the students are worth it.

Another technique I've incorporated, based on a suggestion from another professor, is horizontal integration. So the 2A students take five courses, and out of those five, four of those have one single project that involves topics from all these four courses, and my course is one of them. Students tend to learn math alone, statics alone, but for me it's very important for the students to know how all these elements fit, because we tend not to emphasize this until fourth year projects, which is too late in my opinion.

## What are your hobbies?

I like to do a lot of stuff for fun. I do folk dancing, which is something I don't think my students know. I teach and perform folk dancing, and my group performs in the Kitchener-Waterloo multicultural festival every year. I also love mountain biking and basketball, which is my favourite sport, although there's not much opportunities to play here. I play soccer, although I'm not very good but I love playing it. I love hockey, I love a lot of stuff. I'm very much into sports. I think every one of my days is very full in terms of extracurricular activities. And my family keeps me very busy, so I try to take them to the activities with me. For example we all folk dance together as a family.

# Teaching Award

CONTINUED FROM PAGE 1

ly shows. Rania goes above and beyond when it comes to not only ensuring we understand the material, but will adapt to our level of understanding and adjust her teaching methods appropriately."

"The amount of effort and time she put into making the course really relatable and understandable to real life engineering applications is evident."

"She makes the class interactive. There is discussion during iClicker questions and she's always open for questions during the lecture."

"She never makes you feel unwelcome when it comes to asking questions or asking for help, and it's obvious how much time and effort she puts into being a great teacher."

Congratulations Professor Al-Hammoud, and thank you for your outstanding teaching contributions! Professor Al-Hammoud's name will be added to the Engineering Society's Teaching Excellence Award Plaque located outside of the CnD in CPH. If you have an instructor that you feel has done an exceptional job in making one of your classes engaging, interesting, and all around great, don't forget to nominate them next term for this award! Nominations are accepted every term!



**Professor Al-Hammoud does folk dancing as one of many extracurricular activities she pursues with her family.**

# Point Vs. Counterpoint

## Is Pokemon GO the Definitive Pokemon Experience?

POINT

ALEXA GRITANNI  
3A MECHANICAL

Pokemon Go is the augmented reality version of the game that our generation grew up loving. It doesn't yet have all of the promised features, but now the Pokemon world has been merged with our own, and it feels so real.

Niantic is slowly releasing Pokemon Go, but it's not officially out in Canada yet. That hasn't stopped anyone in the know from downloading the APK or making a new iTunes account in order to access the virtual world. Maybe you've seen the hordes of people standing under the trees on campus because someone set up a lure to attract Pokemon, or maybe you've just seen an increased number of people staring intently at their phones and not paying quite enough attention to where they are going. Either way, this game is difficult to put down until your battery dies.

Pokemon is a franchise that our generation is loyal to. In the US, according to data from SimilarWeb, more android phones have Pokemon Go downloaded than Tinder. Fans are so eager to play this immersive version of Pokemon that even when a server lags and freezes the game, you won't want to give up on finding that nearby rare Pokemon.

Since it is an augmented reality game, it has a personal touch to it. You are able to find the Pokemon you love in a neighborhood that you know well. Whether you're trying to hatch an egg, find a new gym to take over, or just catch them all, Pokemon Go is a way of encouraging users to explore new areas.

Additionally, it's encouraging players to go outside, and as a result Pokemon Go has unintentionally become a great exercise app. This is due to the fact that it is packaged as a Pokemon game and wasn't meant to be an exercise app.

The game only has the original generation of Pokemon, so it's the Pokemon that our generation will remember playing with. You can see a pidgey or a rattata in your room, on the sidewalk, or next to your prof in class (though I don't recommend this for the sake of your grades).

A great thing about Pokemon Go is that it doesn't require anyone to go out and buy the newest Nintendo Gameboy, DS, or 3DS. It will be compatible with any smartphone when it comes out, and it's free to download. This makes it accessible to people who can't reason buying the newest device just for the newest Pokemon game.

The Pokemon Go app is still very glitchy. It will freeze as you're trying to catch a rare Pokemon and you have to wait and make sure everything loads, so that when you close and reopen the app, you'll have caught it. But it's brand new, and I have high hopes that the glitches will be fixed by the time it can properly be downloaded from the app store, and that servers will be upgraded so they won't go down with the increased traffic.

Also, there are features that are still missing from the app, and they will probably add more Pokemon to the game. This excites me more than it frustrates me. It means that I still have more new things to look forward to from an already exciting game.

DONOVAN MAUDSLEY  
3A MECHANICAL

Pokemon GO adds something that the series has never seen before, but it's nowhere close to the definitive Pokemon experience. That honour falls to the Generation III games. These games were the first experiences that I had with Pokemon, so they hold a special place in my heart, but looking back objectively this is where Pokemon really hit its stride. I don't want anyone to think that I'm knocking Pokemon GO, I truly think it's a great idea and can't wait to play it once exams are done. If I start before that I most certainly will fail every single course I'm taking, and no one wants that.

The Generation III games are Sapphire / Ruby, FireRed / LeafGreen, and Emerald. In my opinion the Hoenn region games (Sapphire, Ruby and Emerald) have the best story lines of any core Pokemon game (the GameCube games had some seriously awesome stuff). You start the games off as a young man or woman first being exposed to the world of Pokemon, and your adventure moves on quickly from there. You path quickly crosses with the villainous Teams Magma and Aqua, each with a grand scheme to gain supremacy over the other. You also make some friends: the old sailor Mr. Briney, his wingull Peeko and Wally from Petalburg just to name a few.

As you become a stronger and stronger trainer others begin to call upon your abilities. Near the end of the initial quest you have your first encounter with legendary Pokemon, either Kyogre or Groudon. Kyogre is the mascot of Sapphire, and is a mythical creature which may or may not have created the ocean. Groudon, Kyogre's Ruby counterpart, is believed to have created the land. After diving into an underwater volcano the player finds one of these Pokemon snoozing within. In the Emerald version these titans are encountered battling in the middle of the ocean before the sky dragon Rayquaza arrives. Teams Aqua and Magma try to gain control of these Pokemon to try to expand the oceans and landmass respectively, each believing that their side holds the key to expanding life on Earth. Once the player defeats or captures their legendary Pokemon they can become the champion of the region and complete the game.

Pokemon GO, while an immersive and fun experience, can't compete with the sheer scale of adventure that Sapphire, Ruby and Emerald supply. I don't know when the last time that you dived into an underground volcano to save the world was, but I know that that's something I've never done.

The Generation III were also the first games to have access to the 32-bit processor powered GameBoy Advance. The first two generations both ran on the GameBoy or GameBoy Color which are 8-bit machines. This immense increase in power meant that the graphics and sound were incredibly more advanced, and more game mechanics could be explored. Double battles, where two friendly Pokemon face off against two rival Pokemon at a time, were introduced in this generation. Natures and abilities were also added for every Pokemon, and the stat building systems (Effort and Individual Values) were refined and advanced. None

COUNTERPOINT

of these systems have been significantly changed since this generation, because if something isn't broken you don't need to fix it.

The new games in Generation III were probably the last to introduce a full set of Pokemon that didn't include truly dumb ones. Sure, Cascoon and Silcoon are just weird little cocoons full of hate and bad dreams, and Luvdisc literally looks like a misshapen pancake, but they were accompanied by some true gems. All three starter Pokemon evolve into grade A creatures, although I will admit that Sceptile looks a little stoned. Okay, a lot stoned. I've always loved the style of Ludicolo, the water and grass Pokemon exclusive to Sapphire. They kind of look like a cross between a pineapple and a duck, but they've wear a sombrero and sarape and love to dance. Awesome.

On the less goofy side of the Pokemon spectrum are Camerupt, Mettagross, Gardevoir and Salamance. Camerupt is a hulking creature that looks like a camel with volcanoes as humps. Mettagross is a massive steel spider. Gardevoir is a psychic type dancing Pokemon that can pack a real punch once trained. Salamance takes the cake though. This beast of a dragon Pokemon can become one of the strongest in circulation if given time.

Generation III was also the first series to introduce remakes. Pokemon Red and Green (yes, Green was localized to Blue in North America. They probably figured that North Americans would like Blastoise better than Venusaur) were re-released as FireRed and LeafGreen. LeafGreen was the second Poke-game I ever owned, so the nostalgia goggles are still pretty thick. These games tell essentially the same story as the originals, but include the graphics and mechanics updates introduced earlier on. This re-vamp allowed children, like me, who had missed out on the original 151 eight years prior to try to catch them all. I still remember the hype of catching Zapdos after trying all afternoon. Nine year old me ran around my grandparents' house for a solid 10 minutes on Thanksgiving.

With today's technology the Gen III games are easier than ever to play. Emulators allow pretty much any smart phone to play any GameBoy Advance game. I played through at least one adventure on each of my first three co-ops. They're great games for bus commutes. The cinematic experience that the games give, along with the pure unadulterated joy that they embody, prove that these games are the quintessential Pokemon experience. You can, of course, disagree with me.

I want to thank my friend Alexa for writing the other half of this debate. I can't wait to get Pokemon GO and join Team Mystic with you!



### 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.

## P.Eng. THE LICENCE TO engineer in Ontario



To practise as a professional engineer in Ontario,  
you must be licensed by Professional Engineers Ontario.  
It's the law.

Take your professional career  
into your own hands.

For information on licensing—and how the PEO Student Membership (SMP)  
and Engineering Intern Training (EIT) programs can help you get there—  
visit [www.peo.on.ca](http://www.peo.on.ca) or [www.engineeringstudents.peo.on.ca](http://www.engineeringstudents.peo.on.ca)

 Professional Engineers  
Ontario

...regulating the profession  
...serving the public

## Why You Shouldn't Get News From Facebook

**JOSH LI**  
IT MECHANICAL

Since 2014, we assume that the Trending section on Facebook's homepage is representative of searches and stories that have recently spiked in popularity. Some might consider it an adequate source of news and the American Press Institute has found that 88% of millennials get their news from Facebook regularly. This is a problem for several reasons: in addition to the questionable authenticity of websites Facebook redirects you to, it all begins with Facebook as a service, i.e. delivering news is not a major part of what it's trying to offer.

Facebook is a personalized platform, an environment where "you see what you want to see, and what your friends see" for maximum engagement on your home page. If you haven't realized, the trending section of Facebook is specifically catered towards you (the user) and Facebook even admits this, and just like the posts you see on a feed, Facebook can also keep track of trending stories you engage with to show you more of the same.

Facebook is also constantly changing, through waves of new content that are used to maintain novelty when a user returns. The trending section is no different; within a few minutes new stories will arise to replace some old ones, at least the top three stories you see will frequently refresh to be different.

This is not what "News" is suppose to be. Very important news should be important to everyone, and at least all users should be able to view it regardless of whether it is within their (Facebook determined) domain of interest. Furthermore, although news is ever-changing, the amount of mention and space should be related to how important a particular event is, whereas Facebook bullet points do not allow this. While good journalism will follow-up on important stories for a few days if needed, Facebook's user experience model makes sure that a news story rarely stays on their site for more than a couple hours.

What you're really getting with Facebook is actually nothing like Twitter's trending hashtags. As far as we know, hashtags arise naturally off Twitter mentions. Facebook's Trending used to be based off algorithms, until Ivy-graduated (or at least well paid) "News Curators" took over the job.

What you're not getting with Facebook news is an organic delivery system that is

unbiased. The curators were actually created to "inject" important but less talked about news into the system, to make it seem like there is a natural discussion on the site. This was the case for Malaysian Air MH370 and Charlie Hebdo attacks among other examples. However, with curators acting as human intervention, Facebook becomes prone to the same biases every news outlet has, choosing to favour some particular stances and ignore others.

In a recent confession to gizmodo.com, a Facebook news curator claimed their system suppresses specific conservative news stories from Trending topics. Curators have admitted that the bias runs against conservative news outlets and stories are not deemed trending until a more neutral outlet publishes it (more on biases of news sources later). Facebook, of course, denies the entire thing, describing these curators as "reviewers", which at least admits the human element in the trending section. Where there are humans, there will be biases.

The final problem with Facebook news is media literacy: understanding the news stories around us as they are presented. When it comes to established print sources, we are aware of the authors and editors involved and recognize how some sources are more liberal (the Toronto Star), some more conservative (Global Post) and others not so meaningful (the Sun). By reading the Iron Warrior for example, you understand that Engineering students show greater interest in technology and the environment in addition to expressing their own opinions.

On Facebook, news is not delivered in concrete publish sources, but rather mixed together with obscure websites and personal opinion. The sites Facebook redirects you to do not hold to a specific standard of publication, and the validity some sources should be questioned. But which ones? We don't know. The bigger question lies in these alternative, foreign sites which are not under a published banner or standard, where news can often be manipulated with opinion, and infused with biases from the publisher just like a newspaper. This would be fine if we knew about which sources prefer to take a specific stance, but with Facebook's presentation of the news, we are completely in the dark.

For your own benefit, read more authentic news publishers, and stay away from the news of Facebook.

## Train Explosion in Taiwan

25 Injured, Including Suspect



**TIFFANY CHANG**  
1B CHEMICAL

On the evening of July 7, 25 people were injured in a bombing on a commuter train as it headed into Songshan Railway Station in Taipei, Taiwan.

Witnesses described an explosion before the sixth carriage burst into flames.

Most of the injuries sustained by the victims were minor, but at least three people were in critical condition—including the named suspect, who was finally conscious on Friday, July 15 to speak to police officials.

The suspect, 55 year old Lin Ying-chang told the authorities that he had acted alone, which confirmed Premier Lin Chuan's statement about this being "a malicious incident", unrelated to terrorist activity. However, there remains another piece to this case since Lin had not provided insight to his motive. On the other hand, Taiwanese media had been circulating a number of plausible stressors that led Lin to commit the crime—a diagnosis of cancer and financial insecurities, to name a few.

Though we should condemn this blatant disregard for human life, there is a bit of good news that came out of this terrible incident, which most media outlets have not men-

tioned. Prior to detonating the homemade pipe bomb, a young lady who was sitting nearby to Lin was on her phone when she noticed the unusual device and ran to put distance between herself and Lin.

Thanks to her vigilance, she likely saved herself from sustaining grave injuries—or worse.

No matter where we are or whatever we're doing, we should always be aware of our surroundings—especially in public spaces. Those 24 innocent bystanders had no clue about what would happen on that fateful night, which should serve as a solemn reminder to all of us of the fragility of human life.

Of course, the probability of this happening to you is very, very slim...but these victims would have thought that they were on an ordinary commuter train ride—"what could possibly happen to me?"



Jiahong via Wikipedia Commons

The Taipei Heavy-Capacity train

## Turkish Coup

CONTINUED FROM PAGE 1

successful, the plotters needed the support of the general public or the military, neither of whom came on board. The Turkish foreign ministry's statement said that the coup attempt "was foiled by the Turkish people in unity and solidarity. Our president and government are in charge."

Hulusi Akar, the army's chief of staff, has been released from the base where he had been held hostage. The navy chief and special forces commander also spoke out against the attempt. Apparently, those involved made up a small minority of the army.

Around 6000 people have been arrested to root out the problem: Mr Erdoğan promises to "cleanse the virus from all state institutions, because this virus has spread. Unfortunately, like a cancer, this virus has enveloped the state." He

It is still unclear who is responsible, although Mr Erdoğan has blamed the Gülenists. The Gülen movement is led by Muslim cleric Fethullah Gülen, who is on a self-imposed exile in Pennsylvania, and has been designated as a terrorist organization by the AKP (Justice and Development Party) Government. The Gülenists have denied any affiliation with the attempt, and violence is not their usual path of action.

At the time of writing, there have been conflicting reports about a former air force commander's alleged confession. Anadolu news agency quoted General Akin Ozturk claiming to have "acted with intention to stage a coup", but his statement to prosecutors denied having any part in it.

Either way, the country's instability is already more than accounted for, between Syria, IS, and Kurdish insurgency. A military



## Sandford Fleming Foundation

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### The SFF Memorial Leadership Award Nominations

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

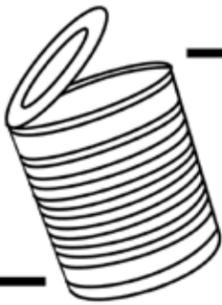
The Leadership Award is granted to an intermediate-level undergraduate student in the Faculty of Engineering who has demonstrated outstanding contributions to the Faculty in the promotion of extra-curricular activities, including, but not limited to: Intramural Athletics, promotion of Engineering Society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

Nominations for the Memorial Leadership Award can originate from student groups, faculty members, or other individuals. A Letter of Nomination and Letters of Support from colleagues, faculty, and others familiar with the nominee's accomplishments are extremely important and form the major basis upon which the Executive Committee of the Sandford Fleming Foundation will form its decision. Nominations must be submitted to the Foundation by August 31, 2016 and/or before the last day of the student's 3A term.

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

**Nominations Must be Submitted to SFF Office Manager by August 31, 2016**

E2-3336, Extension 84008, [sff@engmail.uwaterloo.ca](mailto:sff@engmail.uwaterloo.ca)  
[www.eng.uwaterloo.ca/~sff](http://www.eng.uwaterloo.ca/~sff)



[INTERNAL SCREAMING]

I DEMAND TRIAL BY KOMBAT



An Ode to the Meatball Sub

*Gotta love those meaty balls*

E5-3101 Sucks

*But when it's connected to E5-3102 it's ok*

Name Change Idea: The Thulium Soldier

*It reacts with halogens!*

What the hell is a transfer function?

Probably indicates I should transfer out of engineering

## IKEA Takes Over Kampus



**DONOVAN MAUDSLEY**  
3A MECHANICAL

Greetings students, and welcome to the new IKEA Kampus!

Yes, as a result of the entire board of directors really enjoying the REGIS-SÖR bookcase, the wonderful conversion from campus to Kampus is now underway! This will open countless new opportunities in all areas of student life. Let's dive in, shall we?

### Business model

The IKEA Kampus will be the largest IKEA storefront to ever exist. It will be the first to be spread out over a number of buildings, rather than contained in a single enormous converted warehouse. Half of the currently-existing classrooms will be used to display and sell our products. While we expect to make a profit in the long run, the short term costs will be covered by adding a tiny, almost infinitesimal \$1999 fee to

everyone's tuition. Additionally, some time will be taken off studies so that students can paint the outside of each building blue. This activity will be worth 20% of your grade in all courses.

### Klasses

New and exciting subjects will be available as complementary studies electives for engineering students, such as "IKEA222: Assembly and Analysis of the BILLY bookcase". Unfortunately students named Billy will not be permitted to take that course due to pun-derived brain damage, and a replacement course "IKEA223: Analysis of the KNODD bin with lid" will be available for them.

Additionally 75% of first year physics problems and examples will be replaced. The new exercises will be fundamentally the same as the old, but will include the mention of the FJÄLKINGE shelving unit with an integrated damper.

### Ko-op and Research opportunities

If you do not succeed at finding a job at one of our suppliers, we will be happy to find a placement for you at any of our outlets in North America. Students best be aware that co-op terms at Blackberry will no longer count towards their co-op credit: we will be financing their relocation to Inuvik later this year.

IKEA will be funding many on-Kampus research initiatives, such as the creation of a BILLY-bookcase assembling robot, the design of an algorithm to arrange our products to maximise customer confusion and time spent in our stores, and the possibility of teaching natural language to an artificial intelligence so that it can generate new Swedish brand-names for our products.

### Food and furniture

All Tim Horton's locations will be replaced with cafeterias serving delicious, nutritionally balanced meals with fresh ingredients, including salmon dinners and our traditional Swedish meatballs. All vending machines will serve DRYK APELSIN orange drinks

(we cannot legally call it juice at this time).

New furniture choices will make the Kampus experience elegant and efficient. All laboratories, classrooms and offices will now have SKÅLBERG swivel chairs. Additionally these rooms will have both SPRALLIS and BRAVUR wall clocks, so that you can count down the last harrowing minutes of an exam in style.

### Aktivites

In addition to fun product-assembly-related activities and Humans vs Geese, every term from Fall 2016 onwards will feature an IKEA Kombat session. One student from each faculty, armed with two items from our catalog, will engage in a term-long livestreamed fight to the death on the rooftops of Kampus buildings. After the final FATALITY, the winner will win a lifetime supply of GRÖNSAKSBULLAR frozen veggie balls. Please note that 'FATALITY' is not currently available at our other stores, we are still sorting out the implications with our legal team.



Kat Sketch via Youtube

# IKEA KAMPUS

## Student (S)Exchanges They Totally Increase Hireability



**DONOVAN MAUDSLEY**  
3A MECHANICAL

It's important for students to know what attributes they need to get hired after they graduate. Some common questions you might hear students asking are: "Does my status as a dank meme qualify me for this position?" "Does having no skills count as a skill?" "If I open up an interview with 'Here come dat boi' and the interviewer answers 'O shit waddup!', does that count as a successful interview?" "If Microsoft is SO FUCKIN LIT and I'm just SO LIT, are they likely to hire me?" Turns out, if everything you say becomes a meme, you become a grad student instead of getting hired by a

company. So what are the most effective and/or dank strategies for getting hired?

Everyone knows that going on student exchange is a great way to increase your hireability. Which makes no sense given that all anyone ever does on exchange is drink and party. Oh wait... this is where Microsoft gets all its LIT interns from. In fact, companies are 35% more likely to hire someone who can do a keg-stand, and 40% more likely to hire someone who is just a complete baller. Don't forget to put that on your resumé! Oh and make sure to mention the one time you brought a bottle of schnapps with a penis straw to class – it really shows the interviewers that you can hold true to your values in a difficult situation. Especially when you describe drinking the schnapps in the middle of class, to

everyone else in the room's astonishment. (That's an image no one is ever gonna forget.) You gotta be proud of just how waste you are.

But if you're a 50% kind of guy, and you'll know that you are one if your goal on every exam is to score exactly 50%, which is just enough to pass, then you can increase your chances of getting hired by 50% by using this simple trick. All you gotta do is get a sex change! That's right folks, if "ex"change was good for getting hired, then "sex"change must be extra double good! And there's a very good reason for this: in order to be able to label themselves as "disruptive", start-ups these days have to do things that would put their "innovative" ancestors to shame. And spitting in the face of a bunch of racist, douche, pasty businessmen / presidential candidates with

shitty orange wigs and no chill by hiring people who have had a sex change is definitely disruptive.

You wanna know what else is disruptive? Smoking dope and playing Pokémon Go while at work is sooooo disruptive. Like, if you thought you had to catch them all before weed, you definitely have to catch them all after weed. That's because all the Pokémon are hiding in the tall grass. Catching Pokémon at work is a sure way to disrupt your own work and everyone else's work too. Because once you find that Zaptos in your neighbour's cubicle, everyone is going to stop working to go for it. Just kidding, you don't get a cubicle when you're at a start-up. That's part of the disruption too. If there's one thing they say about Waterloo, it's that Disruption Starts Here.

# Letter from the Editor

## New Direction For The Tin Thulium Soldier



**SIR DONOVAN MAUDSLEY, ESQ.**  
COMMANDER IN CHIEF

In order to keep up with all of the new social media news services, the Tin Soldier has decided to take to Snapchat to fulfill all of your satirical news needs. Snapchat lets us achieve the perfect balance of emojis and serious news. You know, who would be interested in Hillary Clinton's latest poll numbers if we didn't represent them with smiley face poop guys? Another advantage to using Snap-

chat is that the attention span of the average millennial is shorter than that of a squirrel. By compacting everything newsworthy that happened in the last twenty-four hours, and removing everything that millennials find boring, we can make the news take around five seconds. Things that stay in include Kylie Jenner's opinions on superficial junk that no one can actually afford. Things that get cut include important economic and geopolitical news, because who cares about that?

We've been experimenting with names for the account during our trial, including "IRONWARRIORSUX", and just "TinSoldier". "50Soldier" is also popular among the

staff, using the atomic number for tin. We're also considering a change in name to the Thulium Solider, as thulium is a much cooler element than tin. It's the antepenultimate element in the lanthanide series, and it reacts vigorously with the halogens over 200°C. In the office we're big fans of elements that react with the halogens. This change would make our element Snapchat name "69Soldier".

We're also looking for your opinions on our new service. We don't really care about them, but it's nice to know that people have opinions. Unsolicited genitalia pictures will be considered positive reviews of the service.

# Time Tu Say Goodbye

## You'll Miss Me, I Know



**DON MAUDSLEY 2**  
CFO

Hi everyone! Welcome to the last issue of the Iron Warrior! So ends Spring 2016, as well as the reign of the current

group of individuals who are running this team. Can't imagine where or who they got the idea from.

I suppose it's now time for me to look to the future and think about what crazy hijinks I will get up to next. However, only time will tell how that unfolds! Until then, you can always reach me with your questions and comments at [vpfinance.b@engsoc.uwaterloo.ca](mailto:vpfinance.b@engsoc.uwaterloo.ca)

Oh. Wait. I guess you won't be able to anymore... whoops! Send my regards to your new VP Operations & Finance, Katie Arnold!

Executive team! It has been a crazy ride and I want to thank everyone for being a part of it.

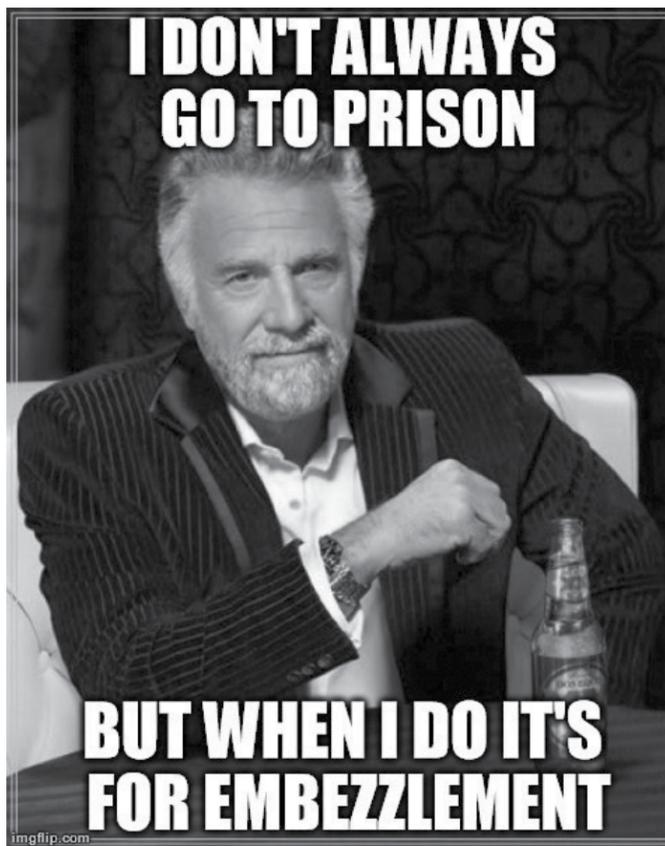
Just kidding. It was all me. I want to thank just myself.

It seems like only yesterday that I was learning where the Orifice was and how to embezzle funds from the termly budget. I remember the days where I would write down budget items like "Don Tu's Slush Fund"... oh, I was so naïve! I now know that if you want to properly misappropriate student fees, you absolutely must use Jedi mind tricks. Don't believe me? Refer to this term's budget, line 56, "These Aren't the Funds You Are Looking For". Have you found it? No, you haven't, because I've learned how to use the Force to hide my nefarious deeds from the perception of the human eye. Sorry about your fifteen dollars.

In my time as VP Finance, I've learned about more than I possibly could have hoped to and done things I didn't think were even possible. Remember that time I turned the E5 Design Bay into a giant ball-pit? That was a good time! Oh, or what about when I created a giant animatronic goose that accidentally destroyed the plaza? Hah! And what about—wait, you don't remember any of these things? Right... that's because the goose ending up blowing up the Dean's office and I had to use all of the ECIF and Sponsorship money to create a time machine in order to go back in time, save everyone, and wipe your memories.

Maybe it's just better if we pretend that I didn't do anything.

The crazy ride's almost over now. I met with the Sponsorship Committee last Saturday, when we listened to a whole bunch of extremely enthusiastic and talented student teams who pitched sponsorship proposals to us. We were amazed with what they had to say, and we're extremely excited to announce that we will be fully sponsoring the "UWaterloo Sends Don Tu and the Sponsorship Committee on an All Expenses Paid Trip to The Bahamas" Team! It's an amazing



# So Long, and Thanks for All the Fish

## This Ain't Rocket Science... oh wait



**SOMEWHAT DONOVAN MAUDSLEY**  
ENGINEER. KERBAL SPACE PROGRAM

Hey everybody!

This term we have decided to make some major changes to Engineering. For starters, all engineering buildings will be licensed. Not all engineering events, all engineering buildings. This includes offices, classrooms, student lounges, hallways, foyers; if it belongs to engineering there will be a bar installed nearby and alcohol may be consumed there. Not only will the alcohol be available, but it will be expected to be DUSTED once every 2 weeks on a day that will be chosen by a Wheel of Fortune style wheel spun by the Dean on the Monday morning of the beginning of the 2-week period. The alcohol to "dust" will also be chosen this way. For those who don't or can't drink beer, there will be a

second wheel for liquor and mixed drinks.

We have also been in talks with the faculty, and although we are still refining some of the details, we are pleased to announce that soon you will have the option to complete finals by either writing them as usual or by trial by combat. We are still in discussion over the rules for the combat trials, but both the prof and the student will appoint a champion to participate wearing an inflatable sumo suit and attempting to chest bump the opposing party out of the circle after completing a Wipe Out type obstacle course. Every completed obstacle is positive marks and a failed obstacle will result in retracted marks. Once that is complete, the champions will move onto the Lip Sync Battle phase. Each party will have 1 hour to choreograph and rehearse a song chosen by alumni of the student's program. The judging panel will be made up of a mix of students and staff from the AHS faculty. The final challenge which be a Pi eating competition, in which the

contestants must eat as many cookies in the shapes of the numbers of pi. Who ever gets the furthest along wins that portion of the trial.

Finally, get excited for a brand new exchange option! The University of Waterloo has obtained a new sister school on Mars: Pigfarts. This school is a fierce rival with Hogwarts School of Witchcraft and Wizardry headed by the infamous Rumberoar. He's a lion. Conditions of this exchange do require you to have a rocket ship to get there. If you do not have a rocket ship, please consult the rocketry team sponsored by the Kerbal Space Program, but do so quickly as this exchange will likely be very popular and there will be a significant lead time on rocket ship construction. The rocketry team wanted us to inform you that there is no guarantee that their rockets will make it to Mars and that if they do, you may not be able to come back. Hope you had an amazing term!



### Editor-in-Chief

The Invisible Man

### Assistant Editors

Literally Did Nothing  
Napping in the office is encouraged  
Captain Falcon  
Sub Zero

### Layout Editors

Its either one of us or the other  
CollaBROation is for suckers

### Copy Editors

You can't drown your lack of articles  
guilt in copy editing forever  
WHO TAUGHT YOU HOW  
TO COPY EDIT???  
I mean ... Thanks!  
WE DON'T HAVE ENOUGH  
CONTENT!... wait a sec... WE  
HAVE TOO MUCH CONTENT!!!!

### Advertising Managers

Hanging out with the fam

### Circulation Manager

You live in V1 right?  
No?  
Well you're walking there anyways!

### Social Media Manager

Yeah, 2B sucks

### Staff Writers

Tim  
Goldilocks  
What's your program again?  
Just here for the cookies  
Wait, we can play Smash here now?  
Mikael Ohlsson  
Grandpa Hat  
ARE YOU ACTUALLY GONNA  
WRITE YOUR ARTICLE?

### Contributors

Oh sure now your articles are long  
EXCLAMATION MARKS!!!!  
PUNS  
Going to Germany :(  
I don't understand your  
jokes sometimes  
Last minute submissions

### ADVISORY BOARD

Number One  
Life Saver  
"I feel your pain, so I wrote  
you an article"

### Where did your usual enthusiasm go?

Oh shit VP Internal isn't  
a thing anymore  
Mr. Brightside

### Technically this is happening on time

We talked like once, you're cool

*The Tin Soldier* is not a forum for thought-provoking and informative articles, and has no association whatsoever with the Society of the Travelling Pants. Views expressed in *The Tin Soldier* are not those of the authors and do not necessarily reflect the opinions of Chuck Norris.

*The Tin Soldier* encourages submissions from students, faculty and members of the Non-Existent Action Committee. Submissions should reflect the concerns and intellectual standards of the Society of the Travelling Pants in general. The author's name and phone number should be included, except if they are non-existent. This information may or may not be posted on our website.

All submissions, unless otherwise stated, become the property of *The Tin Soldier*, which reserves the right to refuse publication of material which it deems too suitable. However we're so desperate for content that we'll likely take it (but we might just send it to *Imprint*). *The Tin Soldier* also reserves the right to edit grammar, spelling and text that do not meet university standards, but engineers suck at english so it's a low standard.

Mail should be addressed to PJ Katie, c/o YTV Canada, P.O.Box 7500, Paris, Ontario, N2L 3W7. We do not currently have a phone, however you may redirect all inquiries to Kickoff's, as we're likely there. We don't have a fax number as no one uses faxes anymore.

# Big Changes Are Coming

## All Hail Supreme Dictator Mary!



**ALSO DONOVAN MAUDSLEY**  
VP EXIT

Hello hello! I have some pretty big plans for my last couple weeks as exec - I hope you're excited. Here are all of my AWESOME ideas.

First and foremost, I plan on convincing PEO to make Iron Rings purple. Sometimes I feel like engineers aren't proud enough and are too modest, so let's bring out that pride.

Improving our external relations with companies in the area. I would like to make these companies sponsors of EngSoc and we will emblazon their logos all over POETS, the CnD and the orifice. The companies I have in mind are Chainsaw, Beta, Pearl, Starlight, and Phil's.

In light of recent British politics, I have been inspired to take action. Since Waterloo pays an unbelievable amount of money (\$0.17 per student. I know, try to contain your indignation.) to the Engineering Student Societies' Council of Ontario (ESSCO), I've decided to call a referendum regarding leaving it. I call it: ESS-CIT. But I plan on campaigning against it

and resigning if it passes.

Making it mandatory that the VP Communications (i.e. new VP Ex) ride into every conference on the Tool, carried by its glorious bearers, all of whom are singing Godiva's Hymn. Since the VP Comm is not allowed to touch it, he or she will sit on a pair of pink coveralls on top of the Tool.

Tripling the conference budget so that all delegates will ride to the conference in a horse-drawn carriage. They will be particularly expensive because the horses will have to be winged in order to get to conferences across water.

A great new outreach initiative to get high school students into engineering. We'll show up at their schools and set up Poke-lures. Once they show up, we post on Facebook that there's a Growlithe on BMH green. The students will be forced pay attention to our presentation. It's flawless, I know.

To promote inclusivity within the society, we will not be partnering with any food company that serves ANY food that is not vegan, gluten free and halal. Difficult to find, you ask? Challenge accepted.

Finally, I will be proposing a motion to make Mary Bland (our business manager) permanent Supreme Dictator of EngSoc.

# Concise Is Key

## Make Things Short



**D. M.**  
VP EDGY

Hei guyz

- Newz from the faculty
- Recently came to light that Engineering is a concise profession
- People fluff up deliverables to meet word counts
- We are super busy, blunt people
- Ain't nobody got time to waste on sentences
- All reports, papers and assignments must now be in point form
- Scrap the "the"s
- Leave out the punctuation
- Skip dat BS
- Anticipated paper savings from work term reports are 97%
- Higher than spring employment rate... ha ha
- The new system goes into effect August 2017
- To be on trial for 3 years
- So start writing yo final exams in point form
- Especially the STV ones

- Trim dem essays down to the keyest of key words
- And the fluid mechanics ones
- But remember not to confuse the -'s with minus signs
- Deliverables will lose marks if points go to the next line on Word
- The use of too many "the"s will lead to a fail
- This article probably fails, good thing it's not marked
- The admissions AIF will also be submitted in point form, aww yiss
- If you have feedback on the system
- A huge post will be made on Facebook and it will explode with traffic
- But you can only join the conversation if you are civil
- Buildings-bridges-rivers-roads civil tho, not polite civil
- Something something last IW update

**This VP is done**

- She might still want to change PD
- Peace out
- Have fun
- May your technical writing be super concise
- It'll get your point(s) across
- Thx 4 reading!

# Structural Changes are the Best Changes

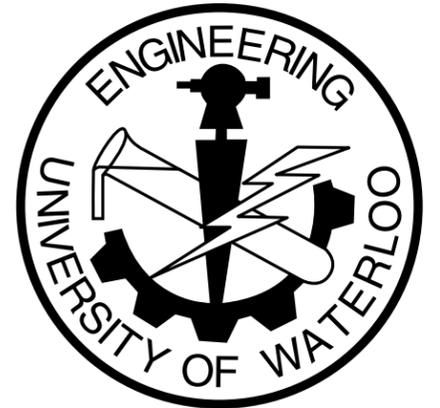


**STILL DONOVAN MAUDSLEY**  
PREZIDENTISSIMO

In the interest of continuous improvement, EngSoc is always looking for new places to restructure parts of the organization. With a new executive structure, and an attempt to restructure council, it was time to look at bigger

changes. The executive have decided that it would be a lot more efficient to split Engsoc into 5 pieces each run by one of the executive. Since the executive obviously know best, they would have complete control over their EngSoc. Council would be disbanded and replaced with a puppy committee. The puppy committee will be responsible for taking care of 25 puppies. These puppies will live in POETS and the puppy committee will walk them and

make sure that they are super loved. The third major change is that Mary Bland will assume the role of Queen of EngSoc. To appreciate Queen Mary, EngSoc will be creating a national holiday on May 17th called Mary Appreciation Day. Mary Appreciation Day will be a day full of celebrating, decorations, and all of engineering will sing happy birthday to Mary. Any questions regarding these changes can be directed to the finding changes committee.



Upcoming Events Calendar							
<b>Wednesday July 20</b>  Council Meeting #5 5:30 PM - 7:30 PM  Coffee House Numero Dos 8:00 PM - 11:00 PM	<b>Thursday July 21</b>  EOT: Pretzels and Beer 6:00 PM - 8:00 PM	<b>Friday July 22</b>  Engineering Day 11:00 AM - 3:00 PM	<b>Saturday July 23</b>	<b>Sunday July 24</b>  Day at The MUSEUM 9:00 AM - 3:00 PM	<b>Monday July 25</b>  WaterlooWorks Demo 12:00 AM - 1:00 PM  Blood Runs Part 2 4:00 PM - 6:30 PM	<b>Tuesday July 26</b>  Last Day of Class :D  Eat Grilled Cheese 11:30 AM - 12:30 PM	Check out up-to-the-day event postings on the EngSoc website at <a href="http://engsoc.uwaterloo.ca/event-calendar/">engsoc.uwaterloo.ca/event-calendar/</a>    
<b>Wednesday July 27</b>	<b>Thursday July 28</b>	<b>Friday July 29</b>	<b>Saturday July 30</b>	<b>Sunday July 31</b>	<b>Monday Aug 1</b>	<b>Tuesday Aug 2</b>  Exams Begin  Eat Grilled Cheese 11:30 AM - 12:30 PM	

# The Meatball Sub



**YOU KNOW WHO I AM  
SUBMARINE ENGINEER**

This is a love letter to the greatest creation of the sandwich world, the MEATBALL SUBMARINE SANDWICH. Juicy ground beef, mixed with just a little bit of pork for flavour, is rolled up into meatballs just the way that Grandma made them. Maybe even better, if saying something like that isn't considered sacrilege. Conversely you could use the meatballs out of a Chef Boyardee can, or just crush up a DVD of Cloudy with a Chance of Meatballs. The bread for this marvelous creation needs to be expertly crafted. A moist, yet firm, Italian style loaf provides the greatest synergy with the other ingredients. Plain white bread is also very tasty. Next is the sauce. A thick and somewhat

spicy marinara is just what the sandwich doctor ordered. This needs to be a sauce that is so delicious you could drink it by itself. Smooth and tasty, you need to be able to take a bottle of this bad boy to the gym with you, to guzzle between hitting the treadmill and the bike.

Think of all of those nutrients being absorbed into your muscles, healing them even as you break them down. Literally any marinara sauce can be used though. I know you've got a jar of plain old Ragu sitting around somewhere. The cheese you use makes a huge

difference in this sandwich. I don't care if you're so lactose intolerant that eating a single chocolate chip will send you to the E.R., you've got to have real, mozzarella cheese on this sandwich. This is what really brings the whole thing together. It's the binding agent. The Chewbacca or Pippin of the sandwich. You could have it without it, but is it really worth it? A good mozzarella lights the way for the rest of the tastes to combine. A simple Kraft slice would work too though. You can probably see where I'm going with this at this point. The last part to the sandwich is the toppings. I deck my meatball sub out with everything that I put in my pasta, spinach, hot peppers, Parmesan cheese. Total bliss comes out of this combination, a taste so heavenly it can hardly be described. You can also have nothing else on it and it still tastes great. What I'm trying to say here is that the meatball sub is the greatest sandwich ever, no matter what it's made up of. It's the sandwich of the gods.



A meatball sub is just as good with everything as it is with nothing.

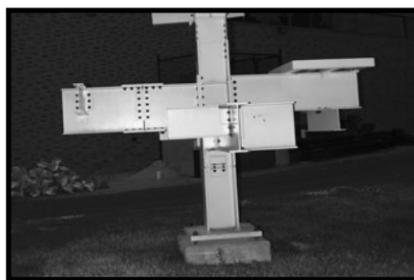


**THE TIN TRIBUNAL**  
Why are there so many damn paparazzi in my class?

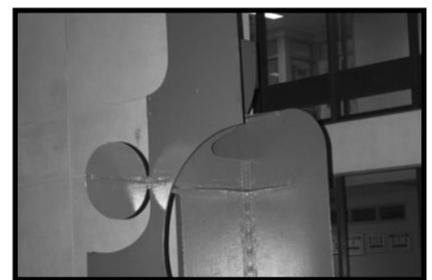
## "Your Favourite Pokemon Found on Campus"



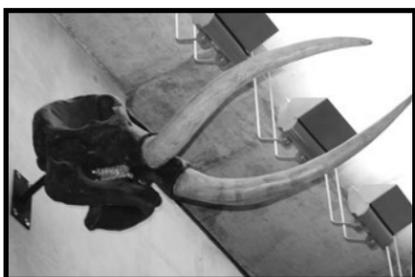
**"Squirelleen"**  
Blash Ketchum, 1A Pokemon Mastery



**"Eutats ♂"**  
Female Civil Students



**"Eutats ♀"**  
Male Civil Students



**"Skellamoth"**  
Geodude, 3B Rock Heading



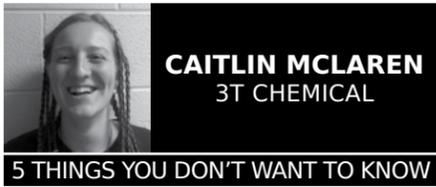
**"Froosh - weak against EDCOMMON and Linear Algebra"**  
Professor Oak, PhD



**"Stugrad, the final evolution of Froosh - alcohol isn't very effective"**  
Bill, 40B Kicking Off

# Five Things You Don't Want to Know

## Doctor! Doctor!



Most of us tend to trust the guy in the white coat. After all, doctors go to school for many years, and they know all the latest science about the body, right? Right?

Historically, as it turns out, many doctors suffered from cranio-rectal syndrome. Let's see some examples of ancient "medicine" that make a modern person shudder.

### Old-Time Doctors Really Didn't Know How Periods Worked

Because most doctors used to be dudes, and dudes can be clueless about periods, it isn't surprising that there were some misconceptions. Still, you would think that there would be a little more investigation about something as normal as menstruation, but instead doctors liked to make up their own crazy theories about how lady parts were responsible for basically everything.

I've mentioned before how Hippocrates, the Father of Medicine himself, thought that most diseases in women were caused by the uterus becoming detached and moving around in the body (seriously, wouldn't you feel that?). Unsurprisingly, he also had weird ideas about periods. For one thing, he thought that the blood could get redirected, and could come out as a nosebleed or vomit. Thus, if you didn't

have a period in a while vomiting blood was actually a good sign - at least you were purging yourself of the excess blood! Even more weirdly, the blood might start running under your skin, resulting in huge bruises; you should put an ice pack on those (which is kind of reasonable as a treatment).

Hippocrates was an ancient Greek, but this belief lasted an unreasonable long time: even in the 1700s, European doctors said that bleeding from the ears, gums, saliva glands, tear ducts, and fingers (fingers? Did they not know what cuts were?) were all redirected periods. Even up to 1953, the journal Nursing Mirror listed some of those, though they said that menstruation through tear ducts and sweat glands was "doubtful". Glad they realized that much.

### Chinese Medicine Has A Lot Of Penises

Ladies first, but let's cover the gentlemen now so they don't feel left out. What should you eat to become more healthy and virile? According to traditional Chinese medicine, a penis is just the thing! (Ladies...) Don't worry, we aren't talking about human penises - deer penises are much better. First, you remove it from the deer while the deer is still alive, and then your roast it, dry it in the sun, and eat it. This would be the women's job, for obvious reasons. You can also soak it in alcohol or add it to the brew, and the resulting deer penis wine makes you stronger and enhances athletic abilities. Don't worry - the government banned athletes from drinking it during the Beijing Olympics (phew!). If you want to go even further, you can drink Three-Penis Wine, which is infused with deer, dog, and seal penis.

### Ancient Indian Doctors Added Rocks, Lead

Ancient Indian medicine was pretty good, as ancient medicine goes. Indian doctors believed in a healthy, balanced lifestyle, which is a good start. They also realized that citrus fruit could prevent scurvy, and discovered crude forms of inoculation. They even did nosejobs. Most medicines were herb-based, which is usually fine.

However, all ancient civilizations made errors, and India's error back in the day was thinking that metals had spiritual or health benefits. Thus, doctors might grind minerals into medicines as well. Iron and copper might not be so bad, but when you start grinding in things like mercury, lead, or arsenic, then you have a problem. However, a lot of doctors wouldn't admit there was a problem and said things like

"No, you were just adding that lead in the wrong way", which is not something you really want to hear from a health expert.

### Ancient Egyptians Couldn't Science

Ancient Egypt was one of the earliest civilizations, and they still hadn't really figured out the difference between magic and science. The first doctor we know about was Imhotep, which is bound to put one on edge. Thus, while you get many prescriptions that are reasonable, you will also get some prescriptions that are quite weird.

For example, if your kid is constipated, you should boil an old book in oil and rub exactly half of it on their stomach. If you have a disease of the eye - literally any disease of the eye - you should get a human brain, split it in half, mix one half with honey, and rub it in your eyes before going to bed. Dry out the other half, mash it up (make sure there are no lumps!) and rub it in your eyes when you wake up.

Also, whatever you do, make sure you always shave your armpits.

### American Patent Medicines

What, you thought America was too recent for all this quackery? Not so long ago, there were so many absurd "patent medicines" that it would be impossible to list them all. One of the main draws was alcohol, especially during Prohibition, but there would be all kinds of ingredients in the tincture. Some of them might be narcotics, such as opium or heroin; cocaine, paralysis-causing neurotoxins, and capsaicin. Sometimes the literal snake oil salesman would add laxatives, just so the patients would feel that the medicine was doing something (What if the patient wanted to cure chronic diarrhea?).

Other "doctors" would sell radioactive water containing uranium or radium; if you were lucky, they were fake. Otherwise your jaw might fall off. Still other doctors sold devices that gave electric shocks, claiming it was good for you. One notorious con artist, John R. Brinkley, showed an understanding of insecure men and complete misunderstanding of science, peddled injections of coloured water as "electrical medicine from Germany" as a way to enhance virility. Later, he came up with a method simultaneously more logical and more horrifying, and transplanted goat's testicles into guys' scrotums to increase their manhood.

Before you go pointing fingers at old-timey or foreign idiots, remember: we've all been there at one point or another in our history, and who knows what practices of modern doctors our great-grandchildren will consider stupid and barbaric?

# Student Debt Load Survey

## 1 Term Total

Total Responses - 398  
Number of surveys sent - 3185  
Response % - 12%

## 2 Does your family support you financially? (365 responses)

Yes - 66%  
No - 34%

## 3 Average Cost of Living for a 4 month School Term (355 responses)

\$12,335

## 4 Average Cost of Living for a 4 month Work Term (320 responses)

\$5,294

## 5 Have you applied for local aid or other bursaries to pay for school? (315 responses)

Yes - 56%  
No - 36%  
Not Yet - 9%

## 6 Have you applied for OSAP? (314 responses)

Yes & Received - 53%  
Yes & Denied - 11%  
No - 36%

## 7 Do you have a loan for academic purposes? (314 responses)

Yes - 45%  
No - 46%  
Not Yet - 9%

## 7a How much is the student loan? (163 responses)

\$1-\$999 - 2%  
\$1000-\$1999 - 4%  
\$2000-\$4999 - 8%  
\$5000-\$9999 - 20%  
\$10000-\$19999 - 36%  
\$20000+ - 31%

## 8 Has the differential tuition increases caused you hardship? (314 responses)

Yes - 64%  
No - 11%  
Not Yet - 25%



OCAL via freestockphotos.biz

You thought needles were bad?



**\$2 BUCK TUESDAYS**  
EVERY TUESDAY

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

**\$10 PITCHERS**  
THURSDAYS BEFORE 11PM

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

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

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# The Allosaurus

## A Different Kind of Dinosaur



**DONOVAN MAUDSLEY**  
3A MECHANICAL

OLD NEWS

The Allosaurus was a truly terrifying creature. Sharing a similar appearance and appetite with its theropod cousin the Tyrannosaurus, the Allosaurus was likely also an apex predator. Two massive legs supported a body which could weigh up to 1,500 kilograms. The Allosaurus, however, did not possess the skeletal leg makeup of the tyrannosaurids, meaning that its running speeds were limited. There is ample evidence to suggest that the Allosaurus hunted large prey, like the Stegosaurus. Skeletons of both species have been found bearing wounds which could only have been inflicted by the other, including an Allosaurus with thagomizer, or tail spike, wounds in its skull and a Stegosaurus with Allosaurus jaw imprints in its neck plate.

The discovery of the Allosaurus dates back to Ferdinand Hayden in 1869. He received a fossil, which the locals believed to be a petrified horse bone, secondhand

from Colorado. Examinations determined that this was no horse bone, but half of a vertebrate from a theropod. At the time the vertebrate was given its own genus, *Antrodemus*. In 1877, this bone, along with others which were believed to come from the same species, were deemed *Allosaurus Fragilis*. *Allosaurus* means different lizard; the vertebrates which had been discovered at the time were very different than all other dinosaur fossils. The second part of its name, *Fragilis*, was given because the bones had lightening features like cavities within them. The most significant *Allosaurus* findings occurred between 1960 and 1965 at the Cleveland-Lloyd Dinosaur Quarry in Utah. Remains from an estimated 46 *Allosaurus* have been recovered there.

There is much debate between experts in the field about whether the *Allosaurus* was a solitary or pack predator. Skeletons of the creature have typically been found in groups, but this could also mean that numerous unfriendly *Allosaurus* would feed on the same carcass. Even the largest *Allosaurus* wouldn't have had the appetite to devour an entire *Stegosaurus* in one "sitting", and leftovers probably weren't worth risking your life over. Day

old *Stegosaurus* probably didn't hold up as well as cold pizza.

The *Allosaurus* didn't just feed on *Stegosaurus* though. *Stegosaurus* was a large, well defended animal that wouldn't have made easy prey. Its large spine plates and spiked tail were daunting defenses. Other, smaller creatures would have been prey to the *Allosaurus* as well. Studies suggest that juvenile prey was more desirable to the *Allosaurus* than adult prey, likely because they lacked the defense of the adults. Biomechanical analysis of the skeletons has revealed that the *Allosaurus* could open its jaws to a whopping 79 degrees.

The *Allosaurus* lived during the late Jurassic Era, and for many years it was believed to be an ancestor of the *Tyrannosaurus*, but this has been rejected. The *Tyrannosaurus* belong to a separate family of *Carnosauria*. Out of the four main families of *Carnosauria*, the *Allosauridae* is the smallest.

Popular culture has loved the *Allosaurus* since its discovery. In Sir Arthur Conan Doyle's novel *The Lost World* and its 1925 feature film adaptation (the first film ever to feature dinosaurs) it serves as the apex predator. Along with the *Ty-*

*rannosaurus*, the *Allosaurus* has come to be recognized as the quintessential large, predatory dinosaur.

The true discovery and classification of the *Allosaurus* was delayed by a series of events which has become known as the Bone Wars. Also known as the "Great Dinosaur Rush", the events centered around the fierce rivalry between Edward Cope and Othniel Marsh. The two met in Berlin in 1864 and were fast friends. Between 1872 and 1874 their relationship slowly broke down, and a period of open hostility began. Marsh had access to more financial means than Cope, and was able to hire local fossil excavators while remaining at home to study the fossils he had already found. Cope had to go along with his expeditions. After a series of bribes, thefts, slander, and even the destruction of bones, both men exhausted all of their money. When the dust finally settled in 1892, the two men had discovered a combined 142 new species of dinosaur, although only 32 of these are valid today.

Could more progress have been made if these two great scientists had set aside their egos and worked together? Yes, but then we wouldn't have something called the Bone Wars.

# Juno Reaches Jupiter

## 5-Year Journey Comes to an End



**CAMERON SOLTYS**  
3N MECHANICAL

SPACE CAM

As the majority of Americans celebrated July 4th—American Independence Day—NASA, the Jet Propulsion Lab, and space geeks all around the world celebrated something entirely different. On that day, 8:53 PM EDT, confirmation was received that the spacecraft *Juno* had successfully entered orbit around Jupiter after a five-year voyage. The spacecraft had fired its rocket for 35 minutes, successfully putting it on a 53-day highly-elliptical orbit. According to principle investigator Scott Bolton, they "just did the hardest thing NASA's ever done."

*Juno*, named after the Roman chief god Jupiter's wife (and sister), is the second spacecraft to orbit Jupiter. The first spacecraft to do so was *Galileo*, named after the Italian astronomer who first spotted the "Galilean moons" of Io, Europa, Ganymede, and Callisto. The *Galileo* spacecraft performed wonderful science and took spectacular photographs of comet Shoemaker-Levy 9 as it crashed into Jupiter on the far side of the planet from Earth. It also suffered from a number of radiation-related problems including chronic faulting into safe mode. These radiation problems have been taken very seriously by the *Juno* team, who have designed the entire mission around it.

The radiation challenge for both *Galileo* and *Juno* are caused by the intense magnetosphere of Jupiter. The magnetic field around Jupiter is much more intense than around Earth, accelerating electrons in the region nearly to the speed of light. However, the radiation this causes is not evenly distributed. Specifically, there is substantially less radiation near Jupiter's poles. To reduce the amount of radiation *Juno* is exposed to, it is on a highly-elliptical polar orbit. This means that over the course of an orbit, *Juno* dives down towards the planet from the poles, avoiding the ra-

diation it would experience from a more equatorial orbit. It speeds quickly over the planet's surface, getting as close as 5000 km above the top of the clouds, then exits out the other polar region. The spacecraft then spends most of its time far from Jupiter, beyond the radiation belts, where it transmits back the data collected from its close approaches.

A second radiation-anticipating measure put in by the *Juno* team is a radiation vault. This is a 180 kg, one cm-thick titanium cage that contains all of the important scientific and controls electronics, substantially reducing the amount of radiation they receive. Rocket science being what it is, weight is almost always the limiting factor and every extra kilogram of payload costs thousands of dollars in fuel; this radiation vault is a huge expenditure.

Another curiosity in *Juno*'s design is its three massive solar panels, which total 66 square metres. All other outer-solar system missions including *New Horizons*, *Voyager 1* and *2*, and *Galileo* use radio-

isotope thermoelectric generators (RTGs) since Jupiter is so far from the sun. Unfortunately, NASA has been increasingly short on the Plutonium-238 required for RTGs, which has become rarer since the introduction of various nuclear arms-limiting treaties. Without Pu-238, and with substantial advancements in solar power technology, it has become more economical to use solar panels in outer-solar system missions.

*Juno* will next fly close to the surface of Jupiter on August 27 (a point known as periapsis, or closest approach). At that time, all of its science instruments will be turned on, and it will start collecting data on Jupiter's magnetic field, gravitational field, and composition of the interior. Among the many questions that *Juno* is anticipated to shed light on is how, where, and when Jupiter formed in the early days of the solar system. This is a very pressing question since humanity's expanding search for extra-solar planets is revealing an ever-growing list of gas giant planets

that are orbiting in unexpected places. These observations suggesting that our ideas of planet formation may be very far from correct, and *Juno* may give us some new insight.

On its third approach to Jupiter—October 19—*Juno* will perform a burn, putting it on a shorter 14-day orbit and bringing its periapsis to 5000 km above the clouds. This is its "science orbit" where it will collect most of its scientific data. After 37 orbits, *Juno* will perform one final burn to put it into a death dive. This death dive prevents the possibility that *Juno* will lose contact with Earth due to the pressures of the constant radiation attack. If that were to occur, *Juno* could eventually crash into Europa, contaminating the pristine and potentially life-harboring sea beneath the surface.

The *Juno* team has said that it hopes to release its first science data on September 3rd. Exciting new pictures and interesting findings should start to appear shortly thereafter.

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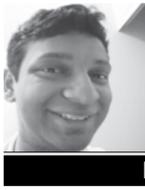
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# Freakonomics Radio

## Stephen Dubner's Thoughts on Everything



**RATAN VARGHESE**  
1B ELECTRICAL

RA(TAN) LINES

Freakonomics Radio is like a box of assorted chocolates. Each episode is pretty different on the surface, but share some neat underlying themes, and ultimately they are all consumed the same way. The Freakonomics book series (including Think Like a Freak) is a similar (but shorter running) kind of assortment. Better get this out of the way right now: if you liked the books you'll like the podcast and vice versa.

The basic format of the show is pretty conventional, probably because it is technically a public radio show adapted to podcast form. They broadcast weekly, sometimes rebroadcasting an old episode

for incompletely-explained reasons. Each episode is 45 minutes, not really long in the world of podcasts. The background music is very well done, even allowing for the fact that this is a sound-based medium. Stephen Dubner's voice is smooth: it's too bad I already filled the chocolate metaphor quota.

There are three basic types of episode. Type the first is an interview with someone about their life and work, sometimes concluding with FREAKuently (\*sigh\*) asked questions. There are many interviews with economists, psychologists and sociologists. Over the past year there has also been an interview with a pilot, one with a cook, and one with a person who decided to eat a burger every day for weeks trying to determine once and for all which was the best burger in her town.

The second type (and my personal favourite) involves interviewing many people about a complex but often ignored topic,

something that never makes the news but instead stays sketched into the background of society. These topics include mattresses, handwriting and pencils, the rise of the belt as the dominant pants-holding tool, sleep, and suicide. The show takes an interdisciplinary approach, reaching deep into both the natural sciences and the humanities in a search for answers. Somewhere in there a coldly considered economics perspective is usually mixed in: that is after all where the -onomics in Freakonomics was originally derived.

The third type involves interviewing several people about a topic in the general zeitgeist, from some odd unconventional angle. Some topics are flash-in-the-pan stories like the Leicester City Football miracle, guaranteed minimum income, and the brief outrage surrounding payday loans. Others are constant international headaches like the gender pay gap and education. Industry titans, sociologists, and

economists dominate these episodes, as one might expect.

The wide variety of topics is a definite plus, but is there a common pattern of any sort? Yes, but it's not in the surface content but in the attitude behind it. Stephen Dubner speaks and acts as a very curious, questioning layman. No question is considered too basic, obvious or unimportant, so long as more than one agreeable answer exists. Speaking of answers, there's no real playing of favorites by the podcast team: the specialists have their say, and it is other specialists who challenge them.

Freakonomics Radio reveals piece by piece the true complexity behind our lives. It is a reminder that the humblest desk widgets and most mundane habits have long and involved stories behind them. It shows that no matter how uncool or irrelevant something seems, there is something to be gained from asking of it the immortal question: why?

# Jays at the Break

## A Contender, But Still Lots To Do



**ELIZABETH SALSBERG**  
3B NANOTECHNOLOGY

THE BENCHWARMER REPORT

Here we are. Three games after the All-Star break the defending A.L. East champs sit three games behind the Baltimore Orioles, and 1.5 games back of their arch-rival Boston Red Sox. The Jays are sitting third in the tight A.L. East with a .553 record—enough to prove to any new baseball fan that playing just above .500 baseball is not enough to snatch a playoff spot in the stingy MLB.

Though the 2016 Jays posted 51 wins through the first half after a slow start to tie the 1992 Blue Jays (eventual World Series Champs) for most wins before the break in franchise history. Indeed, their play heading into the break was excellent—because everyone was contributing.

It all started with the bats finally heating up. In addition to reigning MVP Josh Donaldson and Edwin Encarnación mashing the ball, Michael Saunders and Troy Tulowitzki have stepped up in a big way of late.

Saunders accompanied Donaldson and Encarnación to the All-Star game this year in San Diego on fan vote after putting up a .293 batting average with 43 RBIs and 16 homers for good measure. Saunders has been consistent all year long. Jays GM Ross Atkins owes Saunders big time for bailing him out of the Drew Storen bust—Saunders has seamlessly taken the place of hits machine and base-stealing specialist Ben Revere.

Tulo, the former All-star shortstop acquired last year at the trade deadline, has finally had some long-overdue success at the plate. Following a stint on the disabled list from late-May to mid-June, Tulo has been hitting .313 since his return to action.

Let's also not forget the starting pitching. Numbers one through five have each been doing their bit. Knuckleballer R.A. Dickey has been red-hot after a dreadful start (5.77 ERA in his first 10 starts), he went on to post a 2.70 ERA over his next twelve. Ace Marcus Stroman had been struggling recently, but has been on the mend. Stroman looked more like himself after winning July 6th against Kansas City (the Jays went on to sweep that four-game set). Marco Estrada was named to the All-Star team for his consistent performance in the first half, posting

a cutesy 2.93 ERA (for reference, the A.L. average ERA is 4.06, so that's pretty good!) Unfortunately, Estrada was placed on the 15-day DL the week before the All-Star break for "precautionary reasons"... hopefully he recovers quickly from this back injury—the Jays are missing his consistent play.

Finally, the duo of Happ and Sanchez have been sensational. Sanchez in particular has panned out nicely for the Jays, making it increasingly difficult for Jays' brass to move him to the bullpen as originally intended. As a starter, the 23-year-old has posted a 9-1 record and 2.97 ERA. If I'm Gibbons, not a chance I'm moving this guy to the bullpen.

Clearly, there is a lot to celebrate so far. But the reality is, those pesky Orioles have won a lot of games. The Jays simply cannot afford to go on any kind of losing streak—since they obviously can't rely on the O's or the Bosox losing enough games to make up for it. This probably means they'll need to call up spot-starter Drew Hutchison from Triple A to take over some starts, even when Estrada comes off the DL. Dickey in particular is a concern—though he has fared well in June and July, the knuckle-

baller is notorious for giving up multi-run homers. He is more of an innings-eater than anything. Needless to say, I'd rather see Hutchison starting.

The second key issue will be the bullpen. They struggled mightily through much of the first half and gave up a lot games the Jays seemed to have in the bag. The Jays bullpen ranks 17th in the MLB, with a cumulative ERA of 4.00. They will have to be better at sealing the deal, especially in one-run nail biters going forward.

Finally, the Jays hitters cannot get into a funk. Donaldson et. al. will need to continue swinging hot bats. It will be crucial not to leave runners on base or squander great chances like... having the bases loaded and nobody out (yes, they've squandered those before). Again, the Jays will need to score a lot of runs to stay on top, giving their starter and more importantly, their weaker bullpen, more of a cushion.

It's going to be an interesting end to this season. The Jays are by no means out of it, but it's going to be a tight 3-way race in the always-competitive A.L. East. A critical three game set is coming up against the O's at the end of July. Winning at least two out of three there would be huge. Anyway,

hang in there Jays fans—and see you next term—with any luck, there will some October baseball to talk about!



Keith Allison via Wikipedia Commons

**Blue Jays superstar slugger Jose Bautista winding up for a hit in June 2011**

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# Game of Thrones Recap



**DONOVAN MAUDSLEY**  
3A MECHANICAL

I'm about to spoil literally everything, so if you don't want that, turn the page. This season of Game of Thrones got real again. Last season was kind of slow, and pretty much a bummer all around. Stuff in the east with Daenerys was boring, Stannis burned his daughter at the stake and then lost his battle, the Night King is just getting stronger north of the Wall, and Jon Snow got Caesared.

Please imagine me trying to tell you this whole article in a single breath, because that's how I felt writing it. I missed my deadline by a mile and more than doubled my word count.

## The North

This season began to break out of the heightened medieval mould, and get closer to fantasy. One big moment was the resurrection of Jon Snow. We all knew that Jon Snow would be back this season, no matter how hard HBO tried to get us to think otherwise. Major characters have been killed off before, but only when their storylines had endings around the corner (the Lannisters orchestrate the Red Wedding and end the Stark rebellion), or there were other characters which could continue the story in that region. At the end of season five, the state of affairs at the Wall is still up in the air, and no one else of consequence is still alive up there who could take command of the Watch. Jon's resurrection means not only do we have one of the better characters back in the game, but he can now actively fight for his family. The Night's Watch serves to death, and he died. Loopholes rule.

## The Battle of the Bastards

Elsewhere in the North, the Boltons still hold Winterfell. The Boltons are pretty much unanimously despised by the viewership and this season takes it up a notch. Ramsay stabs his dad through the heart, and feeds his step mother and brother to his hounds. Through his keen intellect he deduces that his wife, Sansa Stark, who recently escaped him, probably went to find her brother Jon at Castle Black, so he sends him a menacing message. Ramsay also takes possession of Rickon Stark, the youngest Stark sibling, and threatens his life. This leads to Sansa and Jon rallying as many fighting men as they can find and marching to Winterfell.

Thus begins one of the greatest battle scenes ever, The Battle of the Bastards. Ramsay's army massively outnumbers Jon's, but when Ramsay executes Rickon, Jon's force charges. The ensuing battle was a massive affair, which took 25 days and 10 million dollars to create. It is mostly practical effects rather than CGI, and it looks stunning. After Jon's force gets pinned down by the Bolton men, they are rescued by Petyr Baelish and the knights of the Vale. Petyr is in love with Sansa Stark, so he couldn't very well let her lose. After the battle is won and the direwolf once again flies over Winterfell, Sansa feeds Ramsay to his own hounds. The only thing that could've made this scene better would have been the Baha Men joining in as Sansa's backup dancers and singing "Who Let The Dogs Out."

Another ally of the Starks is Lyanna Mormont, the 10 year old Lady of Bear Island. A competent, effective and intelligent leader, Lady Mormont pledges

her sixty two men to the Stark cause. Her real power, though, is her scowl, which she uses extensively on Ramsay Bolton when he promises to pardon her if she deserts Jon. After the battle is done and the Lords and their remaining forces are gathered in Winterfell, she calls out every house that didn't fight against the Boltons and then proclaims Jon Snow the King in the North, a call that is unanimously taken up. She may only be 5 feet tall, but she has miles of backbone.

## The Battle of the Bastards

Even farther north, we come to another departure from the typical medieval mould. Bran Stark, who was absent from season five, has been learning how to use his telepathic abilities to see events far away and in the past. There are two big ones that we care about: the Tower of Joy and the birth of the Night King. The Tower of Joy flashback occurs during Robert's Rebellion, and shows Ned Stark rescuing his sister Lyanna from captivity at the hands of Rhaegar Targaryen. He arrives just in time to meet a new baby, and to hear his sisters dying words, summed up as "protect him." This confirms a long standing rumour that Jon Snow is actually the son of Rhaegar and Lyanna. There are also even fan theories which connect the imagery in this scene to the prophecy of Azor Ahai, the legendary hero of the Lord of Light, meaning that Jon will eventually save the whole damn world. The other flashback concerns the creation of the white walkers, Game of Thrones' ultimate evil. During this flashback Bran encounters the Night King, who can see him and sends white walkers to find him in the real world. During Bran's escape it's revealed that Bran is the reason Hodor, his half-witted friend, is disabled. After making his escape, Bran is helped back to the Wall by his uncle Benjen, whom everyone thought was dead. Turns out he was, but was resurrected by the Old Gods.

## King's Landing

Down south, in King's Landing, nothing really happened for about nine episodes. There was the typical political manoeuvring and "I'm gonna kill you as soon as I can" subtext, but no one really gained or lost anything for a long time. Margery Tyrell allied herself and Tommen with the Faith against the Lannisters, but was really just trying to free her brother Loras. Most of the plot centered on Cersei Lannister's upcoming trial. During said trial was when stuff got real in the capital. A long time ago, it was revealed that the Mad King Aerys had built up huge stocks of an explosive called wildfire throughout the Capital, and Cersei decided to make use of one of these. The one right under the church where her trial is being held. While every one of her enemies and rivals in the city are in the church. Well played, except that her son, King Tommen, truly loved his wife Margery, who you just blew up. In his grief Tommen took his own life, leaving Cersei childless but the Queen of the Seven Kingdoms.

Her brother/lover Jaime was out of the city doing General things while this was happening, returning during Cersei's coronation. Jaime has a storied history with people who plan on blowing up cities; he broke his oath and killed the Mad King when he ordered the city destroyed. Now Cersei has done exactly what Aerys had planned on doing. Jaime has been gaining more and more of a conscience as the series has gone on, and is become one of the characters you can root for. Everyone loves a redemption story. The bombing and the death of his son as a result may be enough to align him against his sister.

## Sam The Slayer

Elsewhere in the Seven Kingdoms, everyone's second favourite member of the Night's Watch finally grows a backbone. Samwell Tarly takes his partner Gilly and his adopted son Little Sam to his family home, Horn Hill. When his father Randall, a cruel man, learns that Gilly is a wildling, he agrees to take her and Little Sam in at the price of Sam being even more disowned. Sam stands up to his father for the first time ever and steals his family's Valyrian steel sword Heartsbane before leaving for Old Town with his family to become a maester. Once in Old Town, Sam comes to the Citadel library, where the audience views something very interesting. The library contains the orrery, a model of the solar system, from the series' opening credits, and another contraption that uses lenses to direct light. This could give a cool interpretation to the series, that we're actually viewing a historical account right out of the Citadel's library.

## The Return of the Hound

The last major Westeros storyline was the return of the Hound. Having changed his ways after his near death experience, Sandor Clegane just wants a quiet life away from the fight. This changes when the group of villagers who have taken him in are slaughtered by bandits. Sandor hunts them down and finds them in the hands of the Brotherhood without Banners. Although they had their differences in the past, the Brotherhood convinces Sandor to join up with them for a time while they travel north. The Hound is also becoming a favourite character of mine, showing his own bleak sense of morality and justice.

The Starks were generally viewed as the heroes of Game of Thrones from the start, but over the years they've been up to some questionable things. Arya, the youngest daughter of House Stark, sought out the Many Faced God in Braavos last season and gave up her name to become a master assassin. Throughout this season though she realizes that being an assassin means that you have to kill whoever you get hired to kill, even if they're good people. The good old Stark morality kicks in and she gets the heck out of Braavos and heads back to the Seven Kingdoms to start knocking people off of her own hit list. She starts with old Walder Frey, avenging her brother Robb and their mother Catelyn.

## Paying the Iron Price

Another redemption story this season started on the Iron Islands with Theon Greyjoy. A few seasons ago Theon betrayed his friends the Starks, and karma hit him like a truck. After spending seasons suffering at the hands of Ramsay Bolton (may he rot in pieces), Theon finally makes it home. After his father is murdered, he resolves to help make his sister Yara the Queen of the Iron Islands. Their uncle, the same dude who murdered their dad, shows up though after being away for years, and ruins their plan. They take the day by stealing the Iron Fleet and sailing to pledge allegiance to Daenerys. Over these events Theon can be seen getting his confidence and will to fight back.

## The Mother of Dragons

That brings us to Daenerys, who had a real slow burn of an arc this season. Long story short, she was captured by a Khalasar of Dothraki and brought to Vaes Dothrak to live with the other Khal widows. Instead of doing this, though, she burned down the central building, along with all the

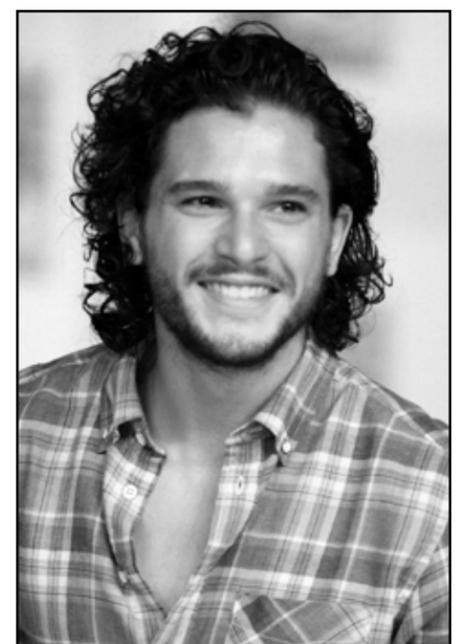
Khals inside it, and walked out unburnt for the whole world to see. In awe of this, the Dothraki all swear themselves to her. Daenerys should seriously consider a career in firefighting, but that's beside the point. Her exiled counsellor Jorah Mormont and her lover/General Dario had come to her rescue and helped orchestrate this. She reconciled with Jorah, but sent him away again to find a cure for his leprosy-like skin condition. When she returned to her city, Meereen, she found it besieged by her old enemies, the Slave Masters. Tyrion Lannister, who had been ruling in her stead, assured her that the city had been on the rise before this. Daenerys unleashed her three dragons on the Masters' fleet and they surrendered quicker than they could wet themselves.

## Who Needs Friends When Your Enemies Have Enemies?

Daenerys' alliances grew this season to include houses from Westros. The Greyjoys sailed to find her, but other great houses also rallied to her cause. Varys, the former Master of Whisperers in King's Landing, arranged an alliance against the Lannisters with the Martells of Dorne and Olenna Tyrell, who had left King's Landing before Cersei's trial. These are significant allies. Lady Olenna's only remaining purpose in life is vengeance on Cersei for the murder of her son, grandson and granddaughter. She also heads up one of the richest houses and regions in Westeros, meaning she can field a massive army. Lastly, she has Randall Tarly, a fierce and experienced General, as her sworn bannerman. The armies of Dorne are also not to be trifled with, and the Martells hate the Lannisters more than the Lannisters hate the thought of being poor. All in all, Daenerys seems pretty set to mow over anyone in her path. The Iron Fleet, along with the seized Masters' ships, are fit to carry her armies to her destiny.

So yeah, stuff happened this season, but Jon Snow still knows nothing.

Season Seven is going to bring many things to a head. The Lannisters aren't going to like that the Starks have the North back, but they're also probably going to be occupied with the Targaryen forces. Jon Snow, the new King in the North, needs to do something to get ready for the Long Night and the Great War with the white walkers. Sam is finally going to read a bunch of books. I can hardly wait.



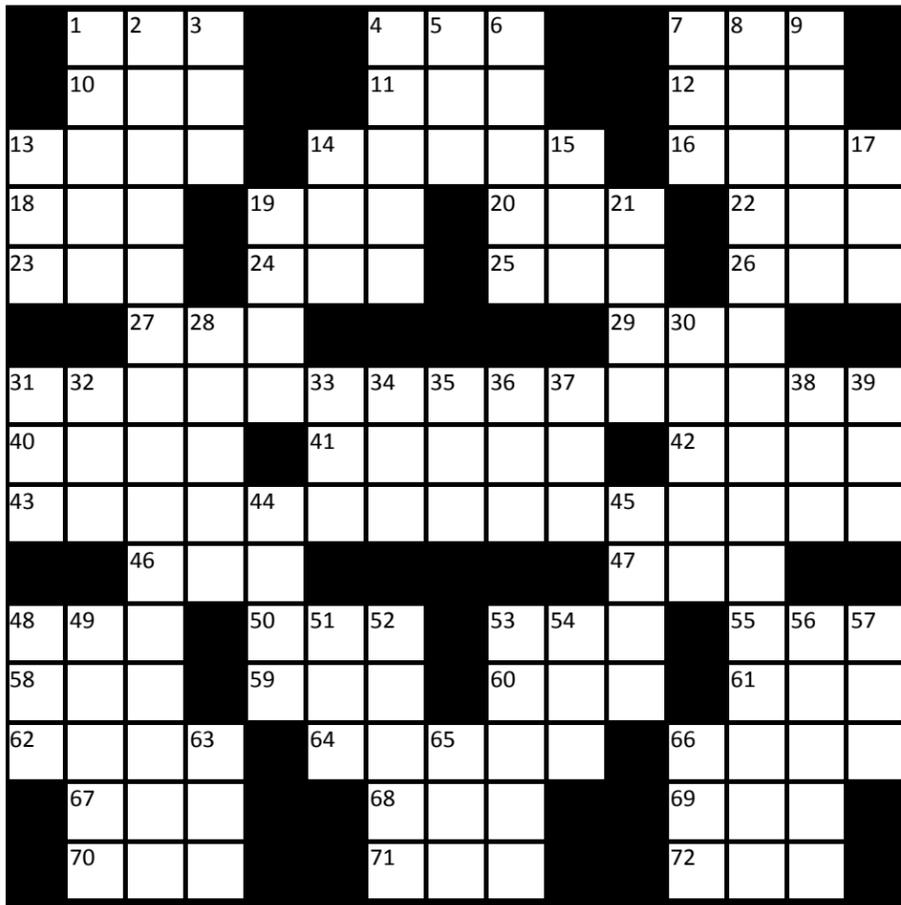
Gage Skidmore via Wikipedia Commons

**Kit Harington plays everyone's favourite brooding, undead King in the North, Jon Snow on HBO's smash hit Game of Thrones**

# The Iron Crossword

If I Had a Million Dollars

**CAMERON SOLTYS**  
3N MECHANICAL



**ACROSS**

- 1: Fast food chicken chain
- 4: Metric equivalent to miles per hour (abbr)
- 7: Life imitates this
- 10: Round object
- 11: Measured in years
- 12: Communist leader of China
- 13: Reared in a specific environment or way
- 14: "Cross Action" toothbrush company
- 16: Index that measures companies contribution to nutrition (abbr)
- 18: Video game system of Super Mario Bros
- 19: University where Pierre Trudeau got his law degree (abbr)
- 20: For the iPhone and iPad
- 22: Guerilla weapon like a landmine (abbr)
- 23: Puffin \_\_\_\_, marijuana
- 24: Pre-smartphone electronic planner
- 25: Land of Finn and Jake
- 26: Tolkien sun-fearing monster
- 27: Rap softly
- 29: Holds pop or beans

- 31: Carbon jewelry-adorned neckpiece
- 40: Largest continent
- 41: Japanese animated film style
- 42: Summer \_\_\_\_, famous Sci-Fi actress
- 43: Gym routine inspiration
- 46: International treaty governing the rules of space (abbr)
- 47: French for "water"
- 48: Uncultured on clumsy
- 50: Drink made by placing leaves in water
- 53: Abbreviation of "strength"
- 55: Microsoft's 1995 web portal
- 58: Type of beer brewed without hops
- 59: Bird of prey active at night
- 60: Two, to...
- 61: Band of "Where Is the Love?" (abbr)
- 62: People who collect secrets
- 64: Mathematician who created graph theory
- 66: Most popular alcoholic drink
- 67: Business school related to 19 Across
- 68: A companies earning divided by its total assets (abbr)

- 69: Celebration of Engineering students after receiving rings
- 70: Venomous snake of the Nile
- 71: Deer smaller than a moose
- 72: US agency that controls airport security

**DOWN**

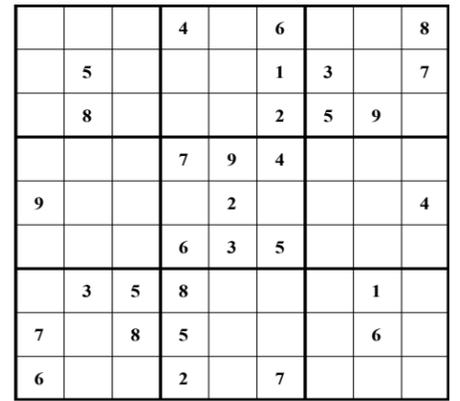
- 1: Peninsula of mainland Asia near Japan
- 2: Another person, for instance to go over a manuscript
- 3: Cannabidiol (abbr)
- 4: A universal ethical scoring system
- 5: Main golf tournament in North America
- 6: Prefix indicating relation to the Sun
- 7: Internet speak for a Reddit interview
- 8: Can be written as fractions
- 9: Cheaper alternative to printer ink
- 13: Band of "If I had a Million Dollars"
- 14: 1, 3, or 5, perhaps
- 15: Ghost exclamation
- 17: Internet abbreviation for something you aren't sure of
- 19: "\_\_\_ 50% off", meaning less (2 wd)
- 21: Primary footwear
- 28: Collect or gather
- 30: Suffix denoting pain in a body part
- 31: Complicated handshake routine
- 32: Verb-forming suffix (British spelling)
- 33: 1/0 or "does not exist" in a computer, for instance
- 34: Molecule that encodes information in living beings
- 35: Zip, zero
- 36: Person working in an ambulance (abbr)
- 37: Certified Emission Reduction (abbr)
- 38: Other name for an AMBER alert (abbr)
- 39: Money used in Germany (abbr)
- 44: \_\_\_ von Bismarck, unifying figure of Germany
- 45: Chocolate bar that is filled with air
- 48: Canada's largest pension portion
- 49: First letter in the Greek letter system
- 51: Young lamb
- 52: Passageway often found behind battlements
- 53: High-price beef cut
- 54: Internet browser used for anonymous browsing
- 56: "\_\_\_ girl that catches his eye" Tyler Farr lyric
- 57: US radio company behind "Freakonomics Radio"
- 63: Collaborative writing project about nu-

# Sudoku

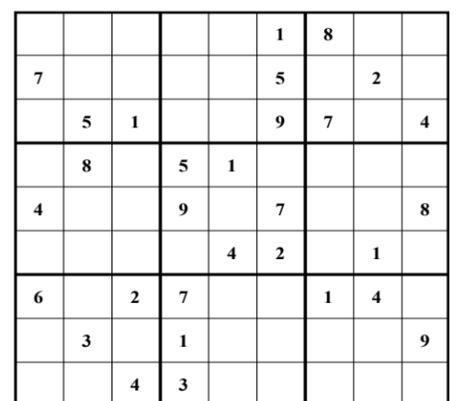
#2016-10

**BRYAN MAILLOUX**  
2B MECHATRONICS

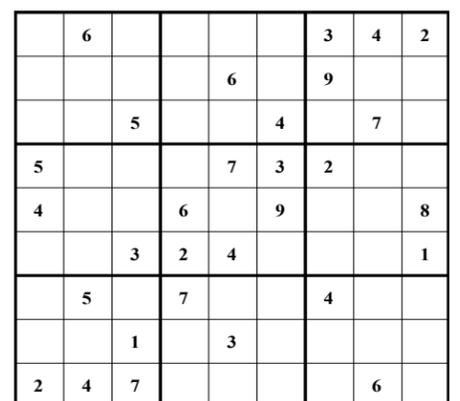
Easy



Medium



Hard



merating dangerous items  
65: Internet abbreviation indicating humour  
66: A one or a zero

Solutions for previous crosswords can be found at [iwarrior.uwaterloo.ca/distractions](http://iwarrior.uwaterloo.ca/distractions).

**THE IRON INQUISITION**  
Thomas Willert, 3A Mechanical

## "What's the best bathroom on campus?"



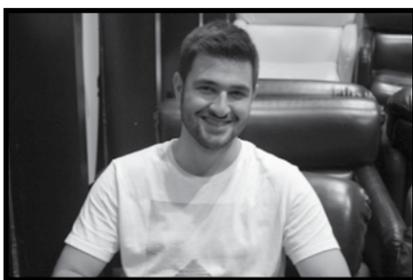
"The 4th floor E2 accessibility bathroom."  
Kevin Nause, Why are you still here



"QNC is pretty neat."  
Katie Arnold, 1B Mech



"STC, brand new and nice."  
Teresa Lumini, 4A Mech



"M3 is pretty okay."  
Josh Dicerbo, 2B Civil



"The east-facing 2nd floor 3rd stall of EC2."  
Michael Magliocchi, 4A ECE



"The female washroom in E2 with the separate room and flowers."  
May Beauregard, 3A Tron

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