



Five Things: Off with His Head

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The Passing of Gordie Howe

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Euro Cup Preview and Predictions

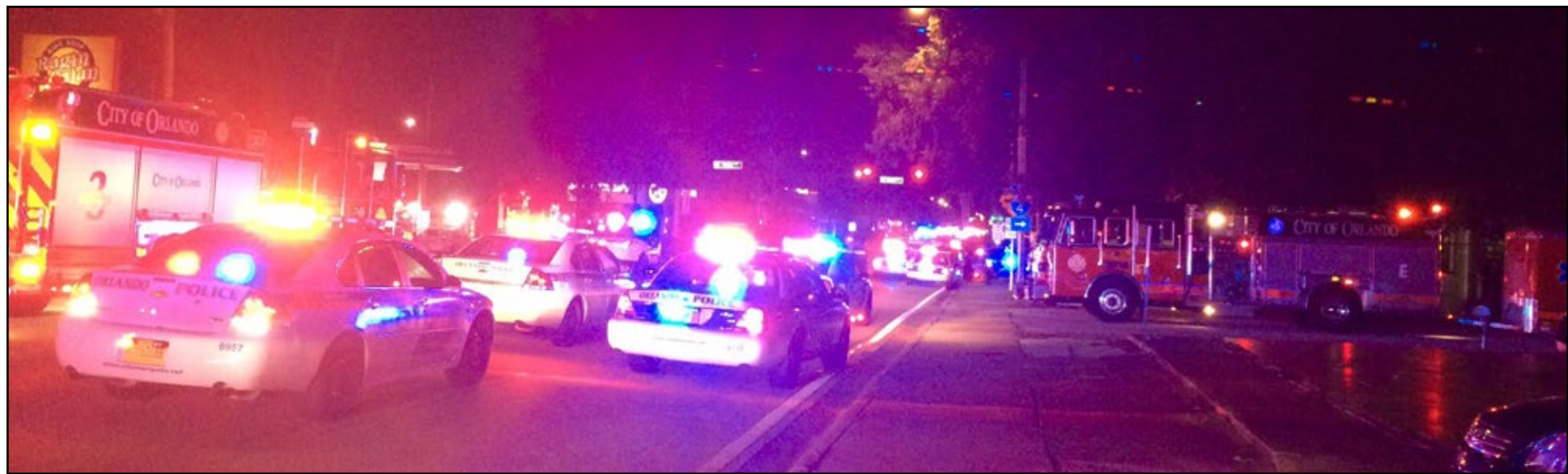
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We Shall Not Live in Fear



City of Orlando Police Department via Wikipedia Commons



BRIGITA GUBINS
YEAR 2
ENVIRONMENTAL

What happened?

A man, who claimed ties with the terrorist group known as ISIS, the Islamic State, Daesh and other names, entered a nightclub shortly after 2a.m. Sunday, June 12 with a loaded assault rifle, handgun, and many rounds of ammunition. The gunman then opened fire on the dancing patrons. Over the course of the next hour, the shooter corralled individuals who were hiding in bathrooms as hostages, and proceeded to barricade himself inside with them. This led to a three hour standoff between police and the gunman. After communication between them broke down, law enforcement breached the wall of the building, allowing the remaining hostages to escape at approximately 5 a.m.

(NY Times)

As has already been publicized, the gunman was 29 year old Omar Mateen, a resident of nearby Port St. Lucie, and a United States citizen. As has already been discussed at length by the media, Mateen was a member of the Islamic faith. Having said that, the massacre in Orland was a hate crime, not an act prompted by any religion. 49 families mourn because a man was taught to hate those people who were different from himself, and at some point in his life, was taught that violence would solve his problems. A deeply disturbed, violent man who was investigated by the FBI for claims of membership in various terrorist groups, with a troubling past of death threats, domestic violence, and outspoken hate was

enabled by laws that allow an individual with a violent past to legally purchase a semi-automatic rifle. (Time Magazine)

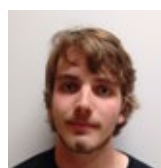
The Response to the Tragedy

Less than 12 hours after the event, far too many major news sources distorted this story into another sad attempt at scapegoating Islam.

In the aftermath of the tragedy, there has been an outpouring of support and sympathy from the Muslim community in the United States, the LGBTQIA+ community, as well as from political leaders and unaffiliated communities from around the world.

Continued on Page 4 as Orlando

E3: The Electronic Entertainment Expo



DONOVAN MAUDSLEY
3A MECHANICAL

Gears of War 4, Halo Wars 2, and Dead Rising 4 being the standouts. There were no big reveals during their conference, and it's fairly obvious that their focus is selling consoles rather than making new games. New IPs can be risky projects, but in the long term are needed.

Nintendo has essentially entered a holding pattern until the NX is ready for release. With the Wii U selling horribly and nothing else really going on with them, Nintendo is likely going to wait for their next fiscal before moving forward. With the NX on the backburner, Nintendo showed off their biggest and most expensive game ever: The Legend of Zelda: Breath of the Wild. Taking the classic Legend of Zelda recipe and adding survival mechanics such as hunting and equipment durability, Nintendo hopes to completely redefine one of the best game series ever and force people to buy the NX.

Sony took the opposite approach to Microsoft this year, focusing on games rather than hardware. The lineup of PS4 exclusives announced is enough to make every competitor worry. Acclaimed designer Hideo Kojima, of Metal Gear Solid fame, revealed his new game Death Stranding starring Norman Reedus. Kra-

tos will be returning, taking his God of War duties to a Norse setting. The new IP Days Gone seems like a larger, faster paced version of the Last of Us. Another new IP, Detroit: Become Human, looks to be a cross between L.A. Noire and Deus Ex. The highly anticipated Last Guardian finally got a release date. Resident Evil 7 looks to change the series direction in a good way. Last was Spiderman, a new project being developed by Insomniac Game. Sony's Virtual Reality system was also on show during their conference, with tons of titles announced for it.

Ubisoft had far too long of a press conference this year, for the amount of content they showed off. The highlights of their show were the game play trailer for For Honor, and Star Trek: Bridge Crew a VR game. For Honor is a melee hack and slash style that has an innovative combat mechanic, and Bridge Crew is a 4 player co-op game centered on a new Starfleet exploration mission. The demos of Ghost Recon: Wildlands and Watch Dogs 2 also showed cool game play, but were way too long. The scripted player interaction in the Wildlands demo was also horrible. Their other major game reveal was Steep, a sports adventure game.

Bethesda's conference had its ups and

downs. The highs were the announcements of a Prey reboot, and the trailer for Dishonoured 2. The Prey reboot looks nothing like the original game, and Bethesda has said it's more of a re-imagining of the original. The lows were the lack of other original content. While additional content for Fallout 4 and DOOM was announced, it was nothing major. A cinematic trailer for a new Quake game was shown, but no game play. For Bethesda's largest IP, the Elder Scrolls series, not a whole lot was talked about. Skyrim is coming to the PS4 and Xbox One through a re master, and the next game in the series is in early development but it's still a long way off.

EA had a surprisingly packed conference. Their monopoly on Star Wars games is expanding, with a new action adventure series in development, and updates planned for Battlefield, Galaxy of Heroes, and the Old Republic. Among those is a VR X-Wing mission for Battlefield exclusively to the PS4. A new trailer was also shown for Titanfall 2, which will include a single player campaign. The game play for Titanfall 2 looks chaotic and very fun. It will also be available

Continued on Page 11 as E3

Just some background on me, so that you know where my perspectives come from: I enjoy videogames, and am by no means a hardcore gamer. I can, however, tell the difference between garbage and an instant classic. My twin pillars of a great game are terrific game play and an engaging story, but if you're a multi-player first kind of gamer we can still get along. I just find the whole repetitiveness of online shooting somewhat monotonous.

E3 (the Electronic Entertainment Expo) took place this week and was, as usual, massive and exciting. I'm going to give a brief overview of all the major reveals, as well as my top choices from this expo.

Microsoft started and ended their conference by revealing new consoles, the Xbox One Slim and the Project Scorpio. The Slim is a more compact and less expensive Xbox One, and the Scorpio is an upgraded version featuring 4K graphics resolution and a better CPU. Microsoft's game line up was rather sparse, with

Letter from the Editor

Mad Skillz



BRYAN MAILLOUX
EDITOR-IN-CHIEF

Hi everyone, and welcome to Issue 3! The tragedy of midterms has finally passed, and hopefully by now many of you are starting to recover from your post-weekend hangovers.

I'd like to start first with an apology to Professor Bajcsy, who was featured in last issue's *Prof Personalities* – we mentioned in the photo caption that he was currently completing his research in the United States. In fact, he was simply visiting the States last week. Sorry about that!

Besides midterms, though, these past couple of weeks have truly been tragic. It seems like people are getting shot left and right now – first the Youtuber and the Voice winner Christina Grimmie, then the 50 people in Orlando, then the British MP Jo Cox... And as we'd expect, the topic of gun control in America is being hotly debated like never before. When things like this happen, the National Rifle Association (NRA) and allies usually spend a lot of money making sure these debates about gun control just fizzle out of existence.

But I think this time there's a hope something can be done. Stricter regulations on gun sales and more thorough background checks seem like they're very close to being enacted (it's a wonder that they haven't been enacted already), and in the best case a full ban on civilian-owned automatic weapons would come into effect. And seriously, who *really* needs a fully or even semi-automatic weapon? If you believe in owning a gun because you want to defend yourself and your family, what kind of assailant merits owning an automatic weapon? The mafia? The KGB? And while it's true that determined mass murderers will find ways to kill people without using automatic weapons, if we can reduce the number of mass shootings by even a little bit, then it's a measure that we should take.

Anyway, I'll leave the gun control debate for others to fight. This time, I think I'll step away from social media as a topic and talk a little bit about music. I'm sure many of you have at least dabbled with playing a musical instrument before. Maybe you picked up an old guitar at a garage sale and figured you wanted to emulate your musical heroes. (Kudos to you if you bought a guitar because you got sick of playing the air guitar every time your favourite riff came on.) Or maybe you made a band with your friends in high school. Or perhaps your parents made you learn an instrument as

a kid. Whatever the reason, learning an instrument is a great hobby to have.

This has me thinking, though – is it possible for anyone to become an excellent musician? Or for that matter, is it possible for anyone to pick up any skill they want? I personally believe that in theory, people should be able to learn any new skill and, given enough time and practice, they will become very good at it. But of course, being human, we don't have an unlimited amount of time to learn skills, so if we want to learn as much as possible, we need to find ways to increase our learning efficiency.

As one could imagine, there are techniques we can use to learn new things faster. For instance, I've played classical piano for a while and one technique I use to great effect is splitting each piece into small chunks. Where the chunks are divided depends on whether those divisions make sense within the context of the piece (for example, ending a chunk in the middle of a bar doesn't make a lot of sense). This division makes each chunk easy to memorize, and if a piece is especially difficult from a technical standpoint, separating each difficult part into a chunk allows me to focus on one challenging passage at a time. It's also possible to practice each chunk using a different rhythm, which helps me learn faster because it forces me to think actively about the passage while I'm practicing. Then, when each chunk is memorized, I can work backwards and reconstruct the entire piece. One sure sign you're doing a good job is if you can start from any chunk you want within the piece – this means that as you're playing, you should be able to remember which section comes next and think about how you're going to play it before you actually play it.

In a somewhat limited sense, this method can be applied to learning other skills as well. We already organize textbooks into sections so that the content and knowledge contained within them is more modular and easier to learn. What we can then do with each module is, for example, if there are certain applications listed in a textbook, we could imagine other applications where the knowledge could be used, or we could think of analogies for that knowledge. I find these techniques while studying are very helpful when it comes to staying focused.

How about for other hobbies, rather than school-related skills? Sometimes I find the hardest part of trying to learn something new is if I'm unable to draw those analogies to something I already know, or if I'm unable to "get a feel" for the new hobby, especially if the hobby is something I learn in my spare time. (Funny story – not getting a feel for the mechanics of the game "League of Legends" probably saved my grades in

high school.) And this is where discipline and enjoying the new hobby come into play. Once we can get past that initial barrier to entry – usually by forcing ourselves to sit through the basics of learning the new hobby – we can begin to appreciate it and it becomes much more interesting. This means that applying more efficient learning techniques is most important during that phase where we're just trying out the new skill, because it'll make sure we're able to overcome the barrier to entry more easily.

One more common perception about skills that I find a bit silly is the idea that just because people do a certain profession or are studying a certain thing in school, they can only learn skills that are somewhat related to that domain of knowledge. For instance, we'd probably expect engineering students to have hobbies such as programming or building circuits, but it's ridiculous to expect every engineering student to have only hobbies related to engineering. Case in point: all the writers here at the *Iron Warrior*. There are plenty of engineering students who also love arts, and history, and philosophy – things you wouldn't typically associate with engineering.

One of the most hopeful things to think about, when it comes to learning skills that are thought of as opposites (such as science and arts), is that we can become extremely good in skills from entirely "opposite" regions of knowledge. Blaise Pascal was a 16th century mathematician and philosopher. Arnold Schwarzenegger was a weightlifter, a movie star, and a Governor. The famed comedian Rowan Atkinson has his Masters' in Electrical Engineering. So whatever your hobby, just go out and do it, and do it well – but be sure to never stop learning!



An Old Book via Wikipedia Commons

Blaise Pascal was good at many things, and you can be too!

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British MP Jo Cox Assassinated



CAITLIN MCLAREN
3T CHEMICAL

Britain was stunned on Thursday when Member of Parliament Helen “Jo” Cox was shot and stabbed in broad daylight while meeting with constituents. She left behind her husband Brendan and two small children, Cuillin and Lejla. Cox was a member of the Labour party, and an outspoken advocate for refugees, migrants, and minorities. She also supported Britain’s remaining in the European Union in the referendum to take place on the 23rd.

The murderer was 52-year old Thomas Mair, who allegedly shouted “Britain first!” during the attack. Reportedly, his gun was either homemade or an antique, as there are many legal restrictions on obtaining a gun in the UK. Mair also stabbed a 77-year old bystander who attempted to intervene before leaving the scene, but was soon captured by police. Cox died from her injuries within an hour. The older man was hospitalized with serious injuries, but is expected to survive.

While the matter is still under investigation, it is very likely that Mair was a right-wing radical. Mrs. Cox’s political views made her unpopular with conservatives, who disagreed with her particularly on immigration policies. Furthermore, “Britain First” is the name of a right-wing, anti-Islamic group, although they declare themselves “shocked” and profess that the killer has no connection to them. There are many rumours about Mair’s possible connections to that and other radical right-wing groups, although it

is unclear which of them if any have a basis in fact. Mair did have a history of mental health issues, and his family argues that this was the reason for his actions. Mair, for his part, when appearing in court on Saturday morning, would say nothing except “Death to traitors freedom for Britain”, which suggests that he is indeed a political radical.

This is the first murder of a British Member of Parliament since 1990, and comes just days before the “Brexit” referendum, which will take place on June 23rd. On that day, Britons will vote on whether to remain a member of the European Union or to leave: if a straight majority votes to leave, leave they will; and if the majority votes to stay, Britain will remain a member of the European Union, but with special status. At the beginning of the year, British Prime Minister David Cameron negotiated a deal with EU leaders that would exempt Britain from certain EU requirements and keep Britain more independent, as opposed to the “ever closer union” outlined by the treaties forming the European Union. Cox was in favour of the “Remain” side.

Britain is very split on the issue, which is complex and has economical and ideological components. However, the issues that are the most controversial are immigration regulations and trade, and the split has become largely between the right and left. Conservative-leaning Britons are worried about excessive immigration leading to a loss of British identity and economic trouble, while liberals are concerned for the plight of asylum-seekers and are not convinced by the nationalist arguments. While the trade situation is more tangled, Cameron’s deal does limit the amount of money foreign workers with EU citizenship could send to their families

in Europe, thus tying the issues together. The issue of immigration has been getting a great deal of attention due to the highly visible refugee crisis and the backlash from far-right groups, who fear that Islamic radicalism might be introduced or spread by the largely Muslim refugees that, according to European Union policies, Britain should harbour. Ironic, then, that the first act of politically-motivated violence related to the issue was performed by a radical supporter of British nationalism.

Jo Cox was known as a strong voice for refugees and minorities, and ever since her death there has been a strong outpouring of grief not only in Britain but from around the world. Syrian groups and advocates for

refugees sent their condolences, as well as foreign political leaders. Members of all the British political parties alike paid their respects, and Queen Elizabeth herself will send private condolences to her family.

Cox was well-liked by both her constituents and her colleagues, and will be remembered as a force promoting love, tolerance, and respect. As her widower puts it: “She would have wanted two things above all else to happen now, one that our precious children are bathed in love and two, that we all unite to fight against the hatred that killed her. Hate doesn’t have a creed, race or religion, it is poisonous.” In these troubled political times, let us all hope that the world will respect Jo Cox’s wishes.



Garry Knight via Flickr

A memorial site for Cox was set up at Parliament Square in London, England.

GM Plans to Hire 1,000 Engineers in Canada To Drive a Driverless Future



TIFFANY CHANG
1B CHEMICAL

On June 10, 2016, General Motors announced that approximately 1,000 software positions would be open to the Canadian engineering industry over the next couple of years.

The revamped GM Canada work will focus on developing new automotive systems and technologies pertaining to autonomous vehicles—self-driving vehicles. This means that areas of “Autonomous Vehicle Software & Controls Development, Active Safety and Vehicle Dynamics Technology, Infotainment and Connected Vehicle Technology” will be in heavy demand for qualified engineers.

To announce this milestone of engineering and software work in Canada, Prime Minister Justin Trudeau and Premier Kathleen Wynne joined GM in Oshawa. Trudeau had met with GM’s CEO Mary Barra at the World Economic Forum in Davos, Switzerland back in late January to persuade her to invest in Canada, framing Canada as a secure country to invest in during global economic uncertainty.

Barra was clearly convinced by Mr. Trudeau’s reassurances, and he should be proud that he has managed to convince her to choose Canada as GM’s home base for its advanced vehicle software development.

Ms. Wynne was eager to express the provincial government’s gratitude to GM’s long-term commitment to investing in Ontario and promises that the province’s highly-skilled workforce, world-class university research, and innovation will make this a worthy investment.

Both politicians were optimistic that GM’s investment would create good-paying jobs and a positive feedback loop to catalyze economic growth.

This announcement has some other significant implications, too.

For one, GM will open a new Automotive Software Development Centre in Markham, Ontario. Being a local, I know that an IT cluster surrounds IBM Canada, which is based in my hometown. Having another giant in the city could be another cue for other companies to invest in the Greater Toronto Area and the rest of the province.

Since Toyota decided to put a plant in Woodstock, this is the decade’s biggest auto sector announcement. For an industry that has seen more layoffs than hires in the province, this gives current workers in the industry some hope that there is still a chance for Ontario’s auto industry and engineers thinking of pursuing the industry the confidence they need to wait out the rough patch.

Canada cannot compete with Mexico’s low costs; however, it will be competing with Google, Tesla, Apple, and the other bigs of Silicon Valley. GM’s decision clearly indicates that the company is confident in the province’s ability to produce the engineering talent needed to stay and get ahead at the forefront of self-driving technology.

However, as of yet, it is hard to tell whether this decision will provide Canada with some leverage in the Trans-Pacific Partnership (TPP) pertaining to the auto industry. In the press release, both parties stayed mum and did not bring up TPP, but it will be interesting to see if Canada can ratify an agreement that takes off some of the international competitive pressure for our country’s auto parts industry.

Personally, I hope that this announcement

jolts the rest of the engineering community and gives all current and aspiring engineers faith that there will be work for us once we are ready. I know what it’s like to question

the limited number of industry jobs, so I hope that GM’s opportunity is merely one of a cascade and that there will be more to come in which everyone can partake.



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Orlando Shootings Unify LGBTQ and Muslim Groups

CONTINUED FROM PAGE 1

President Obama ordered the flags at the White House to be lowered to half mast, and some Orlando Muslims broke their fast during the holy month of Ramadan to give blood to the 53 individuals injured in the mass shooting.

Vigils were held throughout the world, including here in Waterloo, for the victims of the massacre in Orlando all last week. Many Pride events have dedicated their proceedings and celebrations to the dead, and groups in the Orlando area are working together to raise money for medical costs, funerals, and to prevent hate groups from picketing the memorials of those killed in the attack.

In the days following the tragedy, numerous media outlets worked to counter the homophobic, Islamophobic, and other hateful speech ad acts directed towards the victims. An individual associated with the hacktivist group Anonymous was able to hack the social media feeds used by ISIS extremists, and posted many links to homosexual pornography, redesigned homepages covered in rainbows, and promoted the love and acceptance the

extremist groups so despise.

While Pride celebrations have become more vigilant after various cities receiving threats, the organizers have refused to cancel the events, stating that “We celebrate Pride in defiance of all the hate. We celebrate and refuse to live in fear because we know that tomorrow, someone may take that away from us.”

Guns and America

As it has escaped nobody’s notice, the United States of America has become the gun violence capitol of the world. Since the Sandy Hook Elementary School shooting in 2012, (which is outrageous enough on its own,) there have been 980 mass shootings in the country. (Gun Violence Archive) Many, if not most, of these were carried out using legally purchased weapons. A journalist in Philadelphia, Helen Ubains with the Philadelphia Daily, was able to walk into a gun shop and purchase a semi-automatic assault rifle within 7 minutes. The shop spent 7 minutes verifying her identity and running a background check. It takes 7 minutes to boil water for pasta, it should not take 7 minutes for someone

to 100% legally purchase a military-grade weapon. Ubains was equally horrified and furious at how “appallingly easy [it is] to get a gun in this country.”

Omar Mateen was able to walk into a gun shop in Florida and purchase an assault rifle and a hand gun, 100% legally. The law in the state of Florida had no problem selling him a weapon despite his 10-month investigation by the FBI, multiple run-ins with police, and a record of domestic violence with his previous wife. But in America, if you aren’t formally convicted, you can buy all the guns your heart desires. It is common place in some states to see individuals with hand guns or rifles strapped to their backs at the local grocery store. This may only be my opinion, but on no planet is it normal for someone to carry an assault rifle on daily errands.

If open-carry laws don’t unsettle you, and the 980 mass shootings in the last 4 years don’t either, then the 15 accidental gun deaths since the beginning of this month should do it. In a dark twist of irony, some months ago an outspoken gun advocate, a young mother, was fatally shot by her toddler from the back seat

of her car. She had a loaded hand gun in her purse. The kid thought it was a toy. On Saturday, June 17th, a 4 year old shot himself in the head and died because he thought the gun in the house was a toy. Lather, rinse, repeat. By the time this is published, it is more probable than not that another child will die as a result of playing with a gun.

Full disclosure: The following are opinions. Some people may disagree with them.

How can a country allow this to happen? Well, the short answer is that gun lobbyists have an iron grip on politics, and far too many American politicians have their fair share of conflicts of interest, as one way to phrase it. That’s not to say any other country’s politicians can’t be influenced by lobbyists, but the failure of counties, states, and the federal government to police gun laws is the biggest indication of the failure to put the good of the people before private interests and finances.

The violence cannot continue. The laws must change. Guns are not the answer to fear and hatred is not the answer to heartbreak-those conclusions are what led a man to kill 49 innocent people.

The Legacy of Number 9

Gordie Howe, aka Mr. Hockey, Dies at Age 88



DONOVAN MAUDSLEY
3A MECHANICAL

The hockey community lost one of its greats recently, Gordie Howe passed away at the age of 88 at his son’s home in Ohio. Gordie made a lasting impression on the sports world with his fierce competitiveness and refined how a hockey forward should play. He earned the nickname “Mr Hockey” over five decades in the NHL and no one will ever contest this. Many, including the Great One himself Wayne Gretzky, consider number 9 to be the best player in the history of the sport. Howe started his professional career in 1946 at age 19 playing for the Detroit Red Wings, and would play with them for 25 seasons. That’s probably longer than you’ve been alive for. Along the way he lead the Wings to winning 4 Stanley Cups, finished in the top 5 scorers in the league in 20 straight seasons, and was the first player ever to record 90 plus points in a season. The Red Wings top line of Gordie Howe-Sid Abel-Ted Lindsay was known as the “production line” because they made points like nobody’s business. In the 49-50 season they finished 1-2-3 in the league in scoring. Another legend, Maurice “The Rocket” Richard was also fast, skilled, and tough. He was also so good that the league named the scoring title after him. Howe beat him in scoring head to head multiple times. He also knocked him out cold the first time they ever played each other.

Howe played the majority of his career in a low scoring era of the NHL, making his totals even more ridiculous. During the days of the original six all of the available talent went in to the 6 teams. There were really no weak players in the league. Imagine if all the players in today’s NHL made up six teams. The defensive units would be insanely good. The season was also shorter, with teams only playing 60 games. Analytics pros have adjusted and extrapolated Howe’s points totals with the Red Wings to compare with the higher scoring 80s, and his totals pass even Gretzky.

After 25 years in Detroit Howe began developing a chronic wrist issue, and in 1971 he was forced to retire. Immediately out of the game Howe was offered the job coaching the brand new New York Islanders, but turned it down for a job in the Red Wings front office. His job began to feel less and less meaningful after about a year, and he made the decision to return to hockey, albeit at a lower level. He had surgery on his wrist to correct his issue and began playing for the World Hockey Association’s Houston Aeros with his sons Mark and Marty Howe. One of my favourite clips of Howe from this time is him driving an opponent into the boards after that player hit one of his sons.

While still a big time goal scorer, Howe became known more for his aggressive style of play, and specifically his tendency to throw elbows. Despite only completing the feat twice, the act of scoring a goal, marking an assist and getting into a fight became known as the “Gordie Howe Hat Trick”. For comparison, another Red Wings legend, Brendan Shannahan, recorded 17 in his career. Fun fact, Shannahan previously served as the league’s director of player safety.

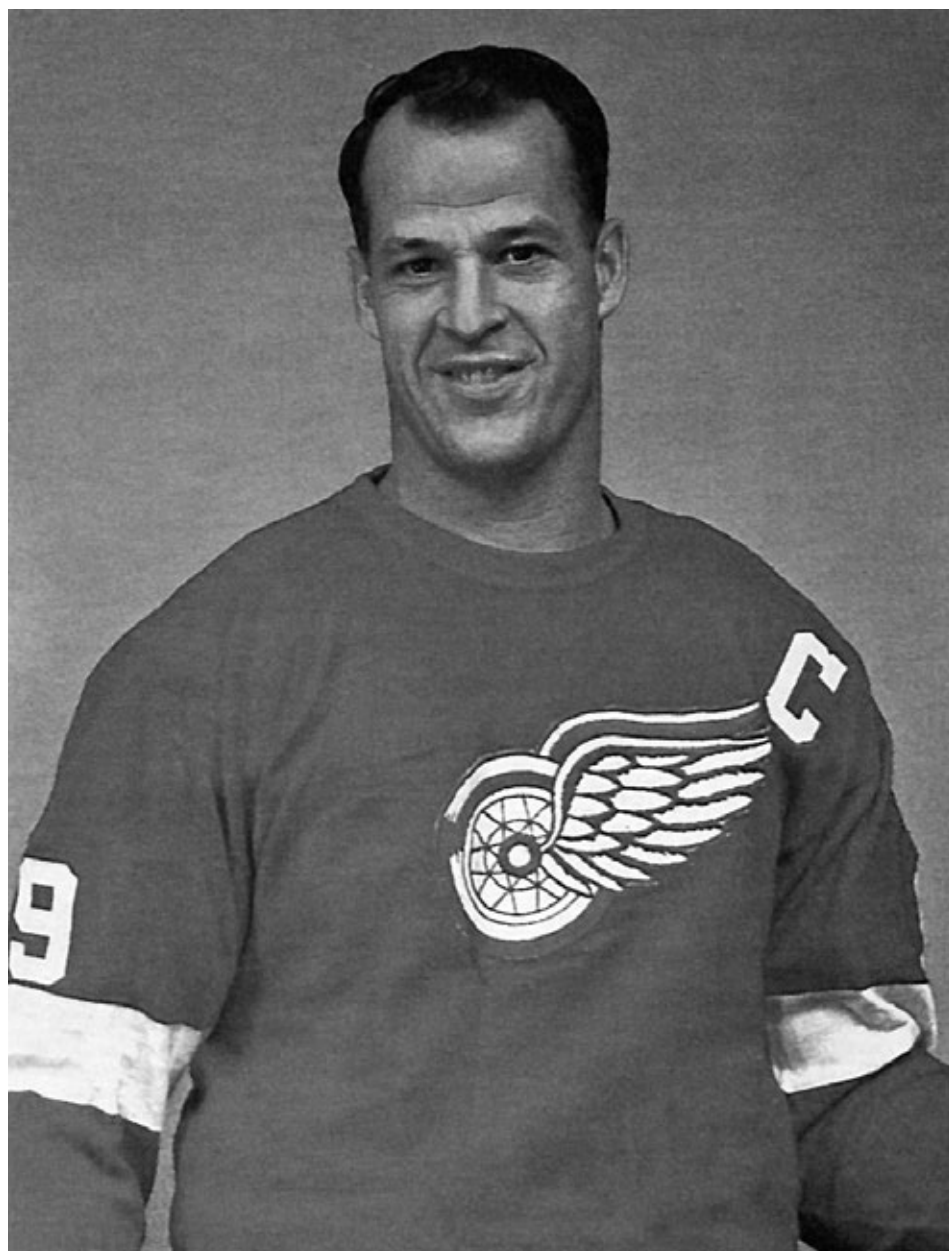
Howe went on to lead the Aeros to two WHA championships before the Howe family moved to the New England Whalers. In 1979 the WHA folded and was absorbed into the NHL. While the Red Wings still technically held Howe’s contract rights, he was permitted to play for the Hartford Whalers in the 1979-80 season. Gordie was selected that season to play in his 23rd NHL All-Star game, which was coincidentally Gretzky’s first. Gordie had an assist in the third period. Gordie retired again in 1980, and was the oldest and most experienced player in the league. Mr Hockey’s longevity makes his career even more astonishing. In 1997, at 69 years old, Gordie signed a one day contract with the minor league Detroit Vipers, and played a single shift. This makes him the only player to ever to play professional hockey in six decades.

Howe’s legacy includes more than just stats though. He is remembered as a kind and humble man. Steve Yzerman, Detroit’s 2nd best player ever, said that if you didn’t know who he was you

could’ve mistaken him for a staff member at Joe Louis Arena. He and Mrs. Hockey, Coleen Howe, always took the time to talk with everybody and treated everyone very kindly. Howe also helped found what would go on to become the NHL’s Player’s Association during his fight for better pay during the 60s. He is also the only team to have his number individually retired by two different teams, Hartford and Detroit. Although no number 9 banner flies in Carolina, the new location of the Whalers franchise, his number is still technically

retired.

Many recognize Gretzky as being the best player ever, but even he acknowledged that Howe was his better. The two were actually very good friends, and Gretzky idolized Gordie from a young age. When he was 11 Gretzky would ask hairdressers to give him the “Gordie Howe cut”. They actually met that year. Gretzky recently recalled one Christmas when he was given a Howe Red Wings jersey that immediately became his most prized possession.



Chex Cereal via Wikimedia Commons

Gordie Howe on a Chex Cereal Hockey Card in 1963

Point Vs. Counterpoint

Should Prison Funding Be Redirected Towards Social Rehabilitation Programs?

POINT

COUNTERPOINT



**RAEESA
ASHIQUE**
2N ELECTRICAL

This is Canada, which means that we do not believe in capital punishment. But does that mean our system is any better? Is incarceration really the best way to deal with criminals?

The purpose of prison should be two-fold: punishment, and rehabilitation. Lawbreakers need to realize the consequences of their actions, and pay the price. The state needs to reinforce the law, making prisoners an example and prison a deterrent for others who may follow in their footsteps. But lawbreakers also need to be rehabilitated. It is all very well to spend some number of months or years locked away, but to re-enter a criminal lifestyle upon release back into society is pointless.

The real question is, what is the end goal? Yes, prison should both punish and rehabilitate, but what is the desired result? The focus should be on creating a system where former inmates can become contributing members of society and will not be re-incarcerated, which is why some portion of funding for prisoners should go towards social rehabilitation programs. There are many downsides to the current prison system, which alternative programs address.

Prisons create dependency and a lack of responsibility. Taxpayer dollars are going towards ensuring that inmates eat on time every day, and that they will have a roof over their head for the remainder of their sentence. When everything is taken care of for you, what are the chances of being able to take care of basic needs yourself after being released?

There tends to be more prisoners from minority groups or lower classes – although the justice system is another discussion for another time – who did not have access to education and may have found it difficult to secure a job in the past. Being in prison only exacerbates these obstacles, leading to further issues later.

Prison cultivates a mindset of bitterness and resentment which may become detrimental. There is an attitude of “me versus the world” after being left to rot in prison for years. For petty offenders especially, the violence and corruption of the prison world may cause irreversible damage to those who were not bad people to begin with. A person released back into society with this extremely bitter mindset may be dangerous, but rehabilitation can give people the means and motivation to

change, and to be able to live a normal life after serving their sentence.

We have to look at how such programs would be facilitated, and who they are viable for. First of all, rehabilitation should take place in prison. It is only fair that they serve their time for breaking the law; and in addition, these people should stay out of society for a while. However, the focus should be on shorter sentences, which would save a great deal of money, with more effective programs in place.

Rehabilitation is not for everyone: violent offenders, rapists, and child molesters are dangerous and should be locked up for the sake of public safety. Arguably, it is not even possible to rehabilitate such criminals, and there is no saying that they will not repeat their crimes. However, rehabilitation should be an option for nonviolent offenders, to make a real difference and ensure that they can later make something of their lives.

Of course, the only way for rehabilitation to be useful is if the motivation to change comes from within. Although people who are already motivated can change without help, most others would need help and structured programs. The types of rehabilitation that should be looked at are education, vocational training, and drug addiction.

Ignorance leads to crime, and a lack of access to education may be why some people got involved in crime in the first place. Some education and basic training will go a long way to helping people get their lives together, and be able to work a real job after being released.

Prisons also need to take steps to make sure that drugs addicts get the help they need. Their cases should be treated differently than violent offenders, because drug addiction is something for which people can be rehabilitated.

Overall, the cost of rehabilitation programs is much less than the current cost of maintaining prisons. It is a better system because it helps the inmates become contributing members of society upon release, and attempts to break the cycle of crime. Of course, punishment is important and the offender must live with the consequences of breaking the law, but there is also the need to inspire change, which is definitely a better use of taxpayer dollars. Therefore, we need to redirect the money to social rehabilitation which allows for shorter sentences but a more favourable result.



CAITLIN MCLAREN
3T CHEMICAL

Everybody knows that prisoners who are treated harshly are likely to re-offend. As such, many suggest that funding for prisons should be cut in favour of rehabilitation programs. While rehabilitation programs are good and necessary, cutting funding for prisons is not the right way to fund rehabilitation. Prisons are, after all, meant to keep society safe; they are not a program which should be de-funded lightly. There are many serious problems with the prison system today that require more funding to correct, and failing to solve these issues will make prisoners more difficult to rehabilitate.

Prisons are often tightly stretched for funds, and many of the resulting issues have an effect on prisoners' ability to successfully reintegrate into society after release. It would be useless to spend money on rehabilitation programs while prisoners still do not have basic safety or comforts, and without a good prison system those programs would fail to produce results. Many of the negative aspects of prison that rehabilitation programs seek to mitigate are in fact aggravated by a lack of prison funding, and thus the redirected money would be largely wasted.

For one thing, many prisons are overcrowded. This has a negative effect on prisoners' mental health and physical safety, leading to inter-prisoner violence and the spread of disease. It is an urgent and expensive issue that needs to be fixed, and this can only be accomplished by building more prisons and expanding current ones. Reducing the incarcerated population is desirable, but the reality is that currently the incarceration rate is growing, and that is a trend that will take a long time to reverse. Meanwhile, it is important that current prisoners be kept in humane conditions. Construction projects are costly and cutting funding for prisons will prevent new ones from being built, and the problem of overcrowding will not be solved. When prisons are even being closed due to budget cuts, leading to further overcrowding, cutting more funds could be disastrous.

Another issue is the one of staffing. Many prisons are understaffed, making it very difficult for corrections officers to keep

order. Furthermore, staffing difficulties often lead to the hiring of people without proper background checks, and the officers often to not have proper oversight. This can lead to abuse of the prisoners, which is not only a serious human rights issue but is a major factor in recidivism. There have been many cases in recent years of prisoners who were injured, abused, or neglected, and this is a positive disgrace. In many cases, it appears that there are serious problems with the hiring system, not to mention poor supervision. These people have an important job – keeping both the prisoners and the outside world safe – and it is vital to make sure that they are doing it correctly, even if that does cost taxpayers more money. That is what taxpayer money is for.

Moreover, prisoners' access to health care is often poor, especially mental health care. A large number of prisoners suffer from mental health issues, and these issues are often worsened by a prison environment. Mental health problems are a huge barrier to successful reintegration into society, and often lead to former prisoners committing more crimes and being re-arrested in the future. The point of prisons is to make society safer; how does removing an unstable or disturbed person from society only to release them in much worse condition in a few years make society safer? That is aside from even basic medical care; prisoners often do not even receive basic treatment in a timely manner. Our basic humanity demands that prisoners be treated reasonably well. These people are human beings, who have families who care about them. Most are not even violent offenders. How can Canadians boast about our universal health care, if it is denied in its fullness to one of the most vulnerable populations?

While rehabilitation programs are admirable and should certainly be funded, cutting prison budgets is not the way to fund them. Rehabilitation is much more difficult when conditions in a prison are terrible. When prisons have serious issues with their basic functioning, and those issues have a highly negative impact on the prisoners' quality of life, prison funding is a priority. Funding prisons and rehabilitation programs are not mutually exclusive, and failing to fund prisons sufficiently works against rehabilitation efforts. There is no point in renovating a house when the foundation is crumbling beneath 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.

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81-Year-Old Pilot Makes Emergency Landing on Glacier



GABRIELLE KLEMT
1B GEOLOGICAL

When you learn to fly, the first thing they teach you after “don’t stand beside the propeller”, is your emergency procedures. With planes, there’s are an awful lot of things that can go wrong and it’s important that you be prepared to deal with any one of them before you even do a take-off. This is just something

all pilots learn and while it’s common to know other people who have had in-flight emergencies, you never think it will happen to you.

Luckily for 81-year old pilot Vern Hannah and his two passengers, he was paying attention when he was taught his emergency procedures. On a flight in his single-engine Beechcraft from Kelowna to Whistler two weeks ago, a spur-of-the-moment detour down a valley turned into an early landing on a glacier.

The plane started losing power and came closer and closer to stalling as they

reached the end of the valley. They only managed to clear some rocks and maintain altitude when they spotted the glacier. The pilot, managed to bring the plane down on the ice field in the soft snow, executing a perfect soft-field landing, with “not even a bump” to any the passengers.

When the plane was safely on the ground, and completely unharmed, they tried crawling across the glacier, avoiding crevices and looking for a way to get to safety. The trek up the glacier was too hard for the pilot so they instead followed a river and spent the night in the forest.

The next day, they heard the rescue helicopter, and two hours later were safe and warm and headed back to town.

The feat of bringing off a perfect landing in emergency situations on a glacier is impressive enough as it is, add to that the fact that Hannah is 81 and you have my hero of the month. All I can hope is that I have a plane by the time I’m 81, let alone still being able to fly it. Though he says he’s taking a hiatus from flying for now I hope he keeps it up, as you can see from this story, passion will keep you young!

World Wide Development Conference Apple’s Big Show



RATAN VARGHESE
1B ELECTRICAL

Do you have an iPhone-controlled ceiling fan? Do you stand up whenever your Apple watch tells you to? Do you use Apple Maps or, heavens forbid, iCloud?

No? Then this article is going to be something of a disappointment.

About WWDC

Apple’s World Wide Developer Conference was held last week. As you may know if you’re a coder, it is where developers from around the world can talk to Apple engineers about their latest technologies in face-to-face sessions. Also there’s that big keynote for press, marketing, fan, normies, and anyone else wanting a summary at the next year of iThings.

Often this presentation (called “The WWDC Keynote”, or “The State of the Union” by the true believers) has some clear theme or focus, perhaps a massive hardware announcement. Not this year. Now that Apple is concurrently developing 4 software platforms, they can

actually fill a two hour presentation with nothing but miscellaneous, unconnected software updates.

So let’s dive in, shall we?

watchOS 3: time to roll

You use an Apple watch? Really? My condolences. Waiting multiple seconds for your favorite workout app to load must be frustrating. The good news here is that watchOS 3 will load apps much quicker. They’ll be easier to find by pressing the side button and scrolling through a list of apps. Also, you will be able to track your “rings” (that’s what Apple calls them now, not even “activity rings”) right on your watch face. The watchOS messaging app can parse handwriting in English and Chinese, and you can make region-specific emergency calls from your wrist. A nice little convenience, for the least convenient moments of your life. There are also major enhancements for wheelchair users and mindful breathing enthusiasts.

tvOS: something or something about something

Apple has released an Apple Remote app for controlling an Apple TV from an iPhone. It has all the capabilities of the

ordinary Apple Remote, plus a keyboard. It’s like 2008 all over again!

Users will only need to sign on once to access their various cable network subscription thingies and I’m sorry I haven’t watched multiple minutes of television for months now I don’t know what to think of any of this.

Also there’s a dark mode.

macOS Sierra: as below, so above

The current trend of imitating features from iOS and interfacing with it continues. Starting with the name. There’ll be no more Roman numeral “X”: so eat a knife, Caesar. Apple pronounces it “maaac ohhhhh es” but in my own mind it will be “macossssss” forevermore.

The new macOS Sierra will be able to unlock automatically when an Apple Watch is near it. Macs and iOS devices will now have a shared clipboard: you can copy on one device and paste on the other. There’s an Optimized Storage feature which can move rarely used files to -chokes up- iCloud automatically. Yes, as in those rarely seen files will only be on -gasp-iCloud. Before you switch to Gentoo Linux, remember that this feature is totally opt-in.

Every app that supports multiple windows will now support detachable tabs, like Chrome does. No developer modification will be required. If you are especially anal you might think this is the first case of a company actually imitating features from ChromeOS. Your anus would be wrong though: centOS and Windows 10 are both known to update automatically and uninvited.

Apple Pay and Siri are both going to be supported on the Mac. It will be possible to verify a web purchase using a nearby Apple Watch or the fingerprint sensor of an iPhone. As for Siri, there are some important differences from the Windows desktop voice assistant Cortana. Instead of making video game references, Siri will tell you that your “filin’ be stylin’”.

No but really Siri said that.

There’s a new picture-in-picture mode for videos that works in fullscreen. Don’t ask why that’s impressive. Just don’t.

iOS 10: Yes it’s been 10 years, feel old yet?

Apple calls this the “biggest release” ever. Not revolutionary or a major change, just big. It is big in the same way

Continued on Page 12 as World Wide Development Conference

Playboy Mansion Sold To Twinkies Owner



THOMAS WILLERT
3A MECHANICAL

In January 2016 something radical happened. The historic Playboy mansion went up for sale - the estate that has been the definition of the cutting edge of “modeling”, as well as home of the grottoes and some of the greatest parties known in recent history, will no longer be owned by Hugh Hefner. But there’s a catch: though he may not own the property, the contract that the new homeowner must sign states that you must allow him to live there until the end of his days. Well, for \$200 million you don’t even get to own your own home, as the man who has lived there since 1971 will be there for who knows how long (Rock and Roll genes state that he will live forever). While this \$200 million may seem ridiculous, a property in the same neighborhood sold for \$59 million last year, and furthermore, this was the most expensive property sold in Los Angeles when it was originally purchased for \$1.05 million in 1971. So who would buy such a property? Well if you search in your heart of hearts you know the answer.

Who could possibly own a more ridiculous product than Hugh himself? Richard Branson? Elon Musk? The inventor of the whoopee cushion? All wrong, and that other person you have in mind, wrong as well. The man, the legend and the new owner of the playboy mansion is...

The former owner of both Hostess (THE MAN OWNED TWINKIES) and... Pabst Brewing company. So with the power of Twinkies and PBR, Mr. Daren Metropoulos has amassed enough money to not only buy the Playboy mansion but the property beside it as well, in an attempt

to honour its creators by reconnecting the two properties into one massive 7.3 acre plot with 29 rooms just from the mansion itself. And what of the activities that took place in during Hef’s stay at the mansion? Whether Mr. Metropoulos chooses to perpetuate them remains to be seen.



Toglenn via Wikimedia Commons

The Playboy Mansion, a Gothic/Tudor Revival Mansion built in the 1920s

The Middle East Gets (Less) Salty



GABRIELLE KLEMT
1B GEOLOGICAL

It's commonly known that while the Middle East in abundant in fossil fuel deposits, it's very deficient in supplies of fresh water. The search for ways to make do with the water they have, water from the Persian Gulf, has lead to concentrated waste brine from the desalination process being pumped back into the Gulf.

This waste brine is typically twice as salty as normal sea water and is leading to the Gulf and surrounding areas turning saltier as a consequence of it's disposal back into the source. This threat is not only short-term either, it also threatens future drinking water supplies and ground-water sources.

Recently, a chemical engineer at Qatar University by the name of Farid Benyahia has had a breakthrough of sorts and has come up with a new solution to

deal with both excess CO₂ emissions, and waste brine at once. Benyahia has taken the 150-year-old Solvay seven-step process of producing sodium carbonate for industrial purposes, and reduced it to a two-step process to produce sodium bicarbonate, what we commonly refer to as baking soda.

The process involves those lovely chain reactions we all learned about in CHE102, whereby he reacts the pure CO₂ with waste brine in the presence of ammonia gas, producing ammonium chloride and baking soda. Then he reacts the ammonium chloride solution with calcium oxide to recover the ammonia gas to reuse.

What makes Benyahia's method better than those people are currently using is that most systems currently in place don't use pure CO₂, but flue gas from power plants which contains only small amounts of actual CO₂ and requires the separation of the gases to extract it. Qatar has multiple plants producing pure CO₂ gas, making this country ideal to try the

new process out.

It's estimated that Benyahia's method can reduce brine waste by almost 100%, which makes it pretty ridiculous that they haven't tried this already. He believes he can offset the hefty cost of implementing this process by selling the by-products, baking soda and calcium chloride, pointing out that this process will actually produce these products cheaper

than current industrial processes.

Until a way of desalinating water without creating concentrated brine is thought up (maybe by someone from Waterloo, who knows!), I'll be following these developments. This is an exciting proposal and it can be hoped that Qatar will pursue this option more thoroughly and start reducing their waste emissions significantly!



Garry Knight via Flickr

A Water De-Salination Plant in Ras Al Khaimah, United Arab Emirates in 2007

Scottish Scientists Slow Down Light in Vacuum



ELIZABETH SALSBERG
3B NANOTECHNOLOGY

Researchers at the University of Glasgow and Heriot-Watt University have shown that photons can be made to travel slower than the speed of light in vacuum. What is so remarkable about this observation is that they were able to alter the speed of light in free space and *maintain* the new (slower speed).

It is well known that when light traveling in air hits a medium, its speed is slowed down. When the propagating light exits the medium back into free space, it returns to the speed of light.

In this experiment, two photons "race" against one another to the finish line. One photon travels through free space (i.e.: the control). The second photon passes through a circular mask with several rings and then continues propagating through free space. The scientists measured the travel time of each photon down the 1 m racetrack and compared the times to determine the

speeds of each photon. The control photon had the expected speed (299,792,458 m/s). The second photon (shaped by the mask) finished a mere few millionths of a meter behind.

While this experiment was done for single photons, they also experimented with Gaussian and Bessel beams and observed the same results. This shows that by patterning a light beam with a mask actually slows the photons slightly—the patterned photons do not return to the speed of light after passing through the mask despite being in vacuum.

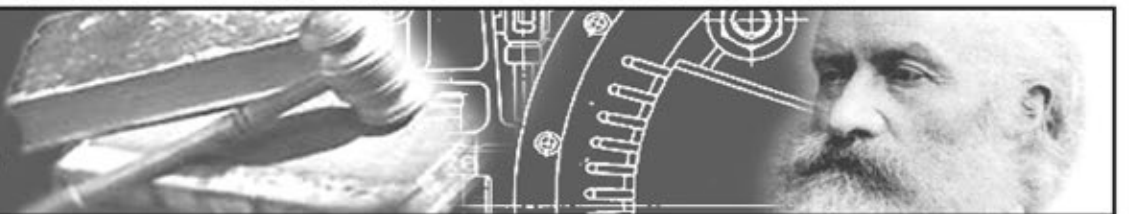
Though the findings are primarily of fundamental physics research (as opposed to applied physics) the researchers do see some application of these findings in the future. This is particularly important for making very precise measurements (often done using light). One such example would be determining the distance of the Moon to the Earth. The finding is also relevant to scientists using huge aperture lenses to measure very short distances, in the micro- or nano-scale, accurately. Not something you'll see everyday, but overall quite an interesting experimental finding!



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Co-operative Proficiency

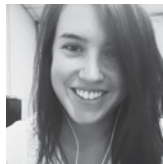
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President

Update Number 3

VP Education Update

Overview of VP Academic Position



HANNAH GAUTREAU
PRESIDENT



ANSON CHEN
VP EDUCATION

Hello Everyone! I hope midterms went well! This is going to be a short update since school has been pretty crazy for the past two weeks.

Joint Annual General Meeting (JAGM)

Our Annual JAGM is coming up THIS SUNDAY JUNE 26TH AT 11am! Every EngSoc member has a vote, so make sure to come out and voice your opinions. We will be voting on a number of exciting constitutional changes, including a new Council structure. All of the motions and the CRC report can be found on the EngSoc website at engsoc.uwaterloo.ca!

Mental Health

I have been working with Fiona Dhanapala to investigate implementing weekly group sessions, each with a different topic surrounding mental health and wellness. This would start in the fall and would be running alongside the weekly stress management workshops that will be starting up in the next week.

The Committee of Society Presidents met two weeks ago, and I brought forward the idea of collaborating with the other societies across campus to write an open letter from the undergraduate student body with our stance on the counselling resources on campus. I will be working on writing this, and sending it around to all of the other societies' councils for their approval.

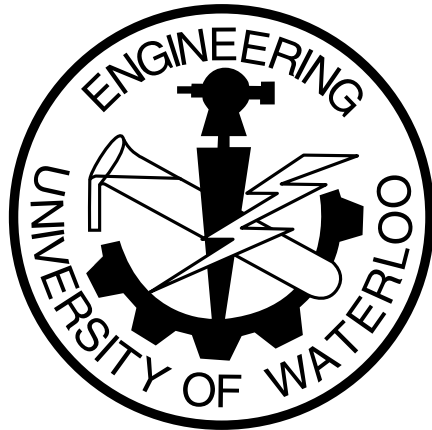
As always, if you have any questions, feel free to email me at president.b@engsoc.uwaterloo.ca!

Hello everyone! Your friendly VP Education here. You know what's funny? My calendar. I'm booked out for 6 meetings in the week following the writing of this article, but no meetings have been scheduled in the last 2 weeks. In lieu of actual updates this week, I thought I could tell you about the VP Academic role.

As you may or may not have heard, there will be a by-election for one last open executive position. Nominations for VP Academic are open from June 27 to July 3; campaigning will take place between July 4 and 8. If you are interested in bettering the quality of learning at Waterloo, and would like to take on a role at the Executive level that impacts all undergraduate students, this might be a good fit for you.

What is the VP Academic?

I'm not here to give you the official spiel; you can find that at the Executive Review Report, here (<https://www.engsoc.uwaterloo.ca/wp-content/uploads/2015/06/ERC-Report-Final-Report.pdf>).



Instead I want to tell you what it is from the perspective of someone who's done it for 14 months.

The VP Academic is the VP Education, re-branded. Essentially all the other VP positions got re-named, so this one got a titular overhaul too. Same as the VP Education now, everything the VP Academic does will go toward two very broad goals: to make it easier for engineering students to learn things, and to make it easier for engineering students to get jobs.

What committees do they sit on?

The VP Academic achieves those two goals in two ways: representing Engineering students on 8 committees, and managing EngSoc's academic- and co-op related services. Below is a list of the committees:

- Co-op Working Group (Faculty)
- Faculty Undergraduate Studies Council (Faculty, obviously)
- WatPD Engineering Curriculum Committee (Faculty)
- Co-operative Student Council (Feds)
- Education Advisory Committee (Feds)
- Senate Undergraduate Council (University)
- Co-operative Education Council (University)
- Teaching Award Committee (EngSoc)

The VP Academic will spend 1-6 hours a week advocating on behalf of students at meetings involving these groups. This usually evens out at about 3 hours per week. The VP should be consulting students prior to the meeting if important agenda items are identified, but a lot of the time, this involves the VP speaking on the spot to things that arise and concern students. For example, the suggestion of including work term report marks in official averages came up last term. I had a pretty good idea how people felt about this already, and spoke for students against the suggestion. Mostly, you are the student voice of

reason among groups that largely consist of faculty members and CECA staff. And these groups welcome your input; most of the time, they genuinely don't know what students are thinking and might propose things in ignorance of that perspective. That's what you're there to offer insight on. E.g. adding more support for WEEF TA's for critiquing first year resumes? Good! Adding clauses on course outlines preventing students from sharing course material with other students? Bad! Both are real examples.

What directorships do they manage?

VP Academic is "officially" in charge of Career Fair and Course Critiques. What they "really" take on can be divided differently amongst execs. This term I took on the Exam Bank as well as a work term rating initiative. The A-Society VP Education took on the Student Services Commissioner directorships. Your directorships are not set in stone, as long as they're somewhat related to those 2 goals I talked about.

What makes someone a good candidate?

Being passionate about changing the quality of education at Waterloo for the better. Not being afraid to speak up when you see opportunities for that change, because opportunities will be thrown at you. Having some experience with EngSoc, and being willing to commit time each week to meetings, both with committees and Executive/Council.

Being currently in 2nd-year or higher, being on-campus for both Winter and Fall 2017.

Don't worry about public speaking or finding the words, that'll all come. It did for me. :)

If you have any further questions, shoot me an email at vpeducation.b@engsoc.uwaterloo.ca. Hope to see you run! Thanks for Reading!

Upcoming Events Calendar

Wednesday June 22	Thursday June 23	Friday June 24	Saturday June 25	Sunday June 26	Monday June 27	Tuesday June 28	Check out up-to-the-day event postings on the EngSoc website at engsoc.uwaterloo.ca/event-calendar/  
Exchange Info Session 5:00 PM - 6:00 PM Euchre Tournament 5:30 PM - 8:30 PM	WiE Self Defence 8:00 PM - 9:00 PM	Finger Painting 12:00 PM - 2:00 PM Patch Sewing Party 3:00 PM - 6:00 PM SCUNT 8:30 PM - 11:30 PM	EngHack Starts 10:30 AM Orientation Week - Summer Leader Retreat	EngHack Ends 1:30 PM Joint Annual General Meeting 11:00 AM - 4:00 PM	Introduction to AutoCad 6:30 PM - 7:30 PM	Eat Grilled Cheese 11:30 AM - 12:30 PM	
Wednesday June 29	Thursday June 30	Friday July 1	Saturday July 2	Sunday July 3	Monday July 4	Tuesday July 5	
Magic the Gathering: BYOD and Card Swap 5:00 PM - 7:30 PM	Let's Talk Mental Health 5:30 PM - 7:30 PM	Canada Day	Dungeons and Dragons 12:00 PM - 3:00 PM	Pride Parade! Sign up at bit.ly/engpride	WebDev Workshop 5:00 PM - 7:00 PM	Eat Grilled Cheese 11:30 AM - 12:30 PM Jam Session 7:30 PM - 9:30 PM	

VP External Update

Sometimes We Try To Be Helpful



KIERAN BROEKHOVEN
VP EXTERNAL

Update number 3 of the term!

I'll be giving a quick overview of what's been happening/what's coming up in our outreach portfolio. We've continued with the usual initiatives; just this past weekend we had our trip to THEMUSEUM in Kitchener that we do twice a term. Kids learned things about engineering, and everybody had a good time. If you're interested in doing science with kids, keep an eye out for that event in future terms.

In a couple weeks we have a rather important weekend coming up in that portfolio - Pride and Canada Day! Every year

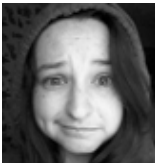
EngSoc puts together a float and marches in the Toronto Pride Parade. Tickets are on sale now! If you'd like to participate, drop by bit.ly/engpride. We also participate in UWaterloo's Canada Day event; we set up a booth all day and play some fun mini games with the children that show up. We need volunteers! So if you're interested, check out bit.ly/canadeng (yes, we like bitlinks). Both events will be a ton of fun and I highly recommend.

We will also soon be choosing a charity for the coming year! All of our proceeds throughout the year go to a charity that is voted on by the student body. Soon we'll have nominations, and then a vote. So if there's a charity that you feel is particularly deserving, keep an eye out for nominations.

As always, send me a message if you have any questions!

VP Internal Update

A Hitchhiker's Guide to Post-Hell Week



TERESA LUMINI
VP INTERNAL

Hey hey hey!

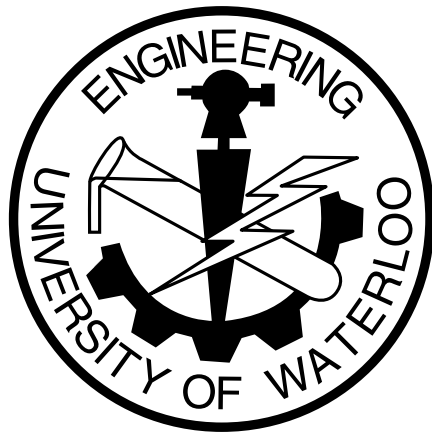
Hope everyone completed midterms fairly unscathed. Now it is time to recover from all the mental exhaustion with Mental Health Awareness Week. During this week, we will be running events to help blow off that post-exam steam such as Finger Painting, a Euchre Tournament, and for the first time in a long time, reviving on-term SCUNT!

We all know that engineering is a lot of work, with a lot of tight deadlines, challenging content to learn, and labs and projects to get done. But let's not forget that there is more to your time here than just studying. Yes, it is very important if you want to succeed, but if that is all you do, and not taking time for yourself now and then you are doing yourself a disservice. Everyone will tell you to find a good work-play balance, but no one actually tells you how to do that. So I'm going to take this article to talk about some of the ways other people have found this balance to try and help you out if you are struggling to find that balance like I have.

Let's start with the work-half of this balance, because, honestly, it will be a lot of your time. In the beginning, it's fairly easy to plan out your time when you don't have any labs, projects or assignments, since focusing on one course a day is typically enough for review or studying. Once those projects, midterms, and labs reports start tumbling in a landslide-esque fashion this is can be trickier to get a hold on. For me personally, when they start piling up, I pull out my calendar and take a look at when everything is due, then, if possible, focus on one thing a night with the goal of getting it done and just steadily start knocking things off the list until I've completed everything. Remember, university is a marathon, not a sprint. Now sometimes projects are too big to accomplish in one night so break it down into smaller, more manageable components and make goals for completing those components. Again, sometimes this isn't the easiest thing in the world as our projects here are pretty challenging and that's when you start reaching out to friends and classmates for help. There is no shame in getting help when you need it.

Now for the play portion of this programming. Basically, make sure you have

something that you like doing to take your mind away from work every once in a while, and by once in a while, I mean at least once a week. This can be absolutely anything you want like video games, Netflix, maybe you play a sport or a musical instrument. Just make sure it's something that you like and take a day off from studying and do that thing. Make sure you also take at least an hour a day where you just relax and not look at any work. In the wise words of Tom Hatherford: Treat yo' self.



Election Results!

Warning: New Exec Incoming

SARAH MARTIN
1B MECHATRONICS

The votes have been counted and the results are in. Let's give a huge congratulations to the newly elected Engineering Society executive team of Rachel Malevich as President, Melissa Buckley and Dan Robertson as VP Communications, Katie Arnold as VP Operations and Finance, as well as Sabrina Huston and Chelsea VanderMeer as VP Student Life. Also, congratulations to Jordan Nickel for his election as WEEF Director.

Thank you to everyone who voted this election. These were exciting races, and

your votes were critical to selecting the new executive team who will be representing you for the next 16 months.

Hopefully you're not tired of elections yet as there remains a vacancy in the VP Academic position. This position is very similar to the VP Education position, with its main goal being to improve the quality of engineering education at Waterloo. Candidates are eligible for this position if they are currently in their 2A term or higher. The nomination period is from June 27th to July 3rd. Interested candidates and nomination forms and more information can be found in the Orifice.

VP Finance Update

If You're Reading This It's TU Late



DON TU
VP FINANCE

Hello readers! Now you're probably asking yourself: Why is Don making a pun based on his name and a Drake album? The answer is that I wanted your attention. It worked, didn't it?

It's also a reference to the fact that the Engineering Society elections just finished. If you're reading this and wanted to enjoy another sixteen months of my vice-presidency, then I have some bad news for you! You'll just have to be happy with the time we have left together. However, in that, there is also some awesome news: the wonderful Katie Arnold will be the new - and first ever! - VP Operations & Finance. Having worked with Katie on Novelties, I can vouch for her and tell you that she's got some great ideas to bring to EngSoc.

With that said, I still have some fight in me! There is still much to do while I am still VP Finance. First and foremost, I would like to remind everyone that ECIF and Sponsorship proposals are due soon! Sponsorship proposals are

due on July 2nd. I've sent out info via the EngSoc mailing list, including the fact that you are allowed to make video submissions this term. However, they need to be in by the 25th! If you wish to pursue that route, please send me an email. Furthermore, ECIF proposals are due on July 1st.

Aside from those programs, I will largely be focusing on carrying through the Novelties and RidgidWare plans that I've discussed in past updates. We've purchased approximately \$500 worth of components for RidgidWare, so that'll be on the shelves soon! For Novelties, we are just about ready to put in glassware, baseball tees, and some patches. And we've also got some awesome Student Deals changes in the works, but I can't share any details just yet. More to come!

Of course, I'll be topping this off with transitioning the VPOF-elect and trying to survive in the storm of 3A Chemical Engineering. Speaking of which, I have some post-Hell Week assignments that I need to tend to! So, as always, please reach out to me at vpfinance.b@engsoc.uwaterloo.ca. I'd love to hear what you've thought of my term so far and what I can do to improve in the time I have left!

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Leafy Thoughts: Responsibility



BRIGITA GUBINS
YEAR 2
ENVIRONMENTAL

LEAFY THOUGHTS

As you may have noticed while walking around campus, there are empty chip bags and coffee cups blowing around with the breeze. While littering is reprehensible in itself, it would be a fair argument to say that over-packaging of everything is just as frustrating of an issue.

Plan on buying lunch in the plaza? The absolute minimum you'll get in terms of packaging waste is napkins and cutlery if you sit down to eat somewhere. Even then, you are often given a plastic drinking straw, wrapped in paper, for your glass of water, or even worse, offering you a bottle of water. (Cue last straw pun.) It's become a completely accepted part of life to just throw away almost half of the things that touch our hands. Just considering plastic drinking straws and bottled water, it's insane how much waste is produced on

the consumer's end just by drinking water. If you're in need of some sad humour, more than one company legitimately sells boxed water now as the 'environmental alternative to bottles'.

It's one thing to have packaged water if you live in an area without reliably safe tap water, but in the city of Waterloo, it's quite frankly absurd that someone has the thought process of "Hmm, I'm thirsty, let me go spend 1700x the amount of money I spend on tap water to have a drink." The lowest price of bottled water I've found through vigorous internet searching is \$2.00 CDN / L of water. In the region of Waterloo, tap water costs \$0.017 / L (City of Waterloo, 2016). Furthermore, most major cities test their water quality every 4-6 hours. Water bottling companies? No regulations exist for the frequency or quality of product testing, and the industry is entirely self-monitored (CBC, 2014). None of the data from these tests is required to be made public, and in addition to this, there have been dozens of quiet recalls of bottled water in the past decade, citing everything from arsenic contamination, bacterial

growth, mould, and even glass found in the water (The Polaris Institute, 2014).

A second major issue with purified water is the lowered, or lack of fluoridation and other minerals. In a University of Calgary study comparing dental decay before and after the city removed fluoridation from its water treatment process, very strong evidence was found that suggested the rapid decline in the dental health of children was caused by the lack of fluoride in the city's water (UCalgary, 2016).

Aside from emergencies, there is absolutely no reason for daily [disposable] water bottle use if you live in KW region. Or quite frankly, any other major Canadian city.

Knowing this makes it so frustrating to see the dozens of broken, crumpled plastic water bottles littering most areas of Waterloo that I frequent, including Waterloo Park. The closest legitimate counter-argument for not banning the use of bottled water altogether is that it is frequently the only healthy beverage option if you are purchasing something to drink.

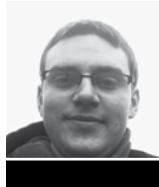
Let's take UW campus as a test case for

this idea—between the C&Ds, SLC, South Campus Hall, and other food retailers, water typically is the only healthy beverage option. The major caveat to this argument, however, is that it relies on the assumption that an individual must purchase a beverage. By my own searching, there is a water fountain within 10m of any beverage retailer on campus in CPH, DC, SLC, Biology, and EIT. In Dana Porter library, there is a water fountain within 15m of the first floor coffee shop. While I haven't checked to see if there are water fountains in other buildings with beverage retail, I would be willing to bet that there are, water is a fairly common thing.

The facts: City of Waterloo tap water is just as safe, if not safer than bottled water.

My opinion: It is irresponsible (and negligent) to knowingly continue a wasteful practice when you have the resources and capacity to change over to a sustainable process, like a reusable water bottle in lieu of disposable bottles. A reusable water bottle costs as little \$9, and if that is still too expensive, use a mason jar or carry around a cup.

Axes Are Awesome



CAMERON SOLTYS
3N MECHANICAL

SPACE CAM

As most people probably know, the seasons on Earth are caused by the way it orbits the Sun. This has little to do with the distance between the two bodies—in fact Earth is closest to the Sun in January, height of the Canadian winter—and a lot to do with the tilt of Earth's axis of rotation. Since the axis of Earth's rotation is about 23° out of alignment with its orbit around the sun, the amount of sunlight reaching the southern and northern hemispheres changes throughout the year. During each hemisphere's winter, that hemisphere is tilted away from the sun, receiving less energy. This is a fairly-well-known phenomenon so it will not take up any more of this article.

Instead, it is time to take a closer look at some much more interesting axes. Before that, there are two words that need to be defined: prograde and retrograde. "Prograde motion" is motion that is in the same direction as something else. In the case of the solar system, all of the planets—along with almost everything else—orbit the Sun counter-clockwise when looking down at the Sun's north pole. Since the Sun also ro-

tates counter clockwise from this perspective, the planets are said to orbit prograde. "Retrograde motion" is the opposite, where a rotation or orbit is opposite to another rotation.

As mentioned, all of the planets orbit the Sun prograde. Most of them also rotate prograde; when looking down from the Sun's north pole, the planets rotate counter-clockwise, the same as the Sun. The Moon orbits Earth prograde as it rotates prograde. In other words, prograde is typical. There are plenty of exceptions, particularly among small moons and comets, but larger objects tend to be prograde. There are a few very interesting exceptions. The first one is Venus.

Venus has an axial tilt of 177°, meaning that it is only three degrees out from rotating exactly in-line with its orbit, the sun eternally almost directly over the equator. Only thing is, the orbit is upside-down because Venus rotates retrograde. Just as curious, this backwards rotation is incredibly slow; it takes Venus 243 Earth days to rotate once but only 225 to orbit the sun. There have been a number of theories over the years as to how this happened. The most pedestrian is that Venus was hit by a series of impacts that slowed down its prograde rotation, then started it slowly backwards.

A second theory is that Venus was created from the merger of two similar-sized,

prograde orbiting bodies. If you imagine sitting on the proto-planet orbiting closer to the sun, you would be orbiting faster than the outer planet; this is an extremely important consequence of Kepler's Laws that govern orbital motion. If you imagine yourself as stationary relative to the Sun, then the outer planet looks like it's orbiting retrograde. When these two proto-planets merged, they maintained their rotational momentum. They continue to orbit prograde, but since the system was rotating retrograde before, it continues to rotate retrograde as a single mass.

The two above theories have largely fallen out of favour. Instead, it is now thought that Venus' rotation is slowed down by tidal effects from the Sun. A slight retrograde torque caused by thermal effects in its thick atmosphere causes its slow, but existent, rotation.

Moving on to a completely different system, we come to Uranus. Once again, Uranus rotates retrograde, but with an axial tilt of 98°, the retrograde tag is the least interesting part. Uranus is less like a spinning top as it orbits the sun and more like a ball rolling in a circular path (although, admittedly, there is quite a bit of slip). Just as interestingly, Uranus' ring system stays with the planet's equator. This means that the rings of Uranus are broad-side for us to see from Earth, unlike the rings of Saturn

that are much closer to edge-on.

Theories are abound as to why Uranus is so off-kilter, just as they do for Venus. One theory is the impact theory, similar to Venus. Computer simulations have shown that if a single impact turned Uranus sideways, then its ring would be orbiting retrograde to the rotation of the planet. The same simulations showed that a series of at least two or more impacts would cause the rings to orbit prograde, as is seen. Therefore, if Uranus' odd rotation was caused by impact, there must have been at least two of them.

A second theory is that early in the solar systems formation, Jupiter and Saturn entered a 1:2 resonance where Jupiter orbited the sun twice for each orbit of Saturn. Resonances like these do really interesting things to orbits. In this case, it is theorized that the two larger planets could have transferred rotational momentum to Uranus, putting it on its strange path.

Whatever the reasons for our two retrograde-rotating planetary neighbours, the two are fascinating irregularities. Our solar system has only eight planets (nine if the Planet X hunt is successful). Yet in those eight planets, there is a tremendous diversity in all sorts of weird ways. Not only is this interesting in its own right, but it also raises the anticipation for all the discoveries to be made as exoplanets become ever-clearer in our telescopes.

Broskies on Brewskies

Pickup Truck Pilsner, Kissmeyer Nordic Pale Ale and Plowman's Ale



DONOVAN MAUDSLEY
TRISTAN KUEHN
3A MECHANICAL
3A SYSTEMS

BROSKIES ON BREWSKIES

Tristan and Donovan are off-again-on-again roommates and good friends from London, Ontario. Good, local food and beer are just some of the common interests these two share. While they realize that they don't know everything there is to know about craft beer (and cider) (and mead), they're always willing to try something new for the greater good. Neither is a beer snob, and both have been known to drink beer store favourites such as Molson Canadian, Budweiser, and their old friend James

Ready. They also encourage any readers to recommend their favourite craft beers for review, just email the Iron Warrior!

This issue of Broskies on Brewskies was a pretty low key event. We're back to drinking three beers again. Something exciting did happen on our way to the liquor store though. We stopped by the record store so Donovan could do some father's day shopping and Donovan picked up an album by '60s Scottish folk singer Donovan. That was pretty cool.

We started off with the Pickup Truck Pilsner from The Thornbury Beverage Company. We picked this one up because we really enjoyed their Jubilee Amber Lager (it made our top five in our last issue), and because we don't drink enough pilsners. A pilsner is a type of lager that tends to be crisp in taste. The Pickup Truck didn't

disappoint. We rather enjoyed it. A very accessible beer, the Pickup Truck knows what it is and doesn't try to be anything else. This is a great summer beer, and should be consumed in full sunlight. It's one of the better beers that we've tried, and we settled on a score of four out of five. The Thornbury Beverage Company is making a solid reputation for themselves.

Next up was the Kissmeyer Nordic Pale Ale from Beau's All Natural Brewing Company. We didn't realize at the time, but apparently Beau's makes all natural and organic beers, and we think that's pretty cool. It was definitely a Pale Ale, and was similar to many of the ales we've tried before but we liked this one a lot more. Tristan put it pretty perfectly when he said "it presents its flavour nicely rather than assaulting the senses." Tristan really enjoyed it. It was bit-

ter, like pretty much every other pale ale, but the underlying flavours came through very nicely. Overall we gave it three and a half out of five.

Last up this week was the Plowman's Ale from Grand River Brewing. We think that we've tried one of their beers before, but couldn't recall which one it was or what we thought of it. This beer is very easy to drink, and goes down quite well. It has a very full flavour and it is pretty malty, which Donovan particularly liked. Unfortunately it didn't really do anything to try to break the mould, so it loses points there. We settled on three out five for this one.

Overall we had a pretty underwhelming issue this time. As always if you've got opinions on craft beers please give us an email. Remember to taste responsibly Broskies!

E3: Exciting, Engaging, Expensive

CONTINUED FROM PAGE 1

for the PS4, unlike the original. Other AAA games shown included Battlefield 1 and Mass Effect Andromeda, which will both hopefully live up to their predecessors. EA has also decided to include a story mode in the next FIFA game, which seems like an interesting move, albeit one that could pay off immensely. Another cool move by EA was the announcement of EA Originals, a plan to publish and distribute more and more indie developed games every year.

Other, smaller conferences and reveals happened this week, including a new Dragon Ball Z fighting game to be released this fall, an Attack on Titan game centered around the first season of the anime, a new indie Friday the 13th multiplayer game, and Inside, a new title from Playdead games, the studio behind Limbo. I'm particularly excited for the Dragon Ball Z game. It looks like it employs a similar system to Pokken Tournament, having a ranged phase and an up close and personal phase. Netherrealm Games also officially announced Injustice 2, which is going to feature an even bigger roster of DC heroes and villains

than the first game.

Best Shooter: Battlefield 1

While it was revealed before E3, DICE's next entry into the Battlefield series looks terrific. DICE has chosen to do the opposite of their biggest competition, Call of Duty, which is going farther and farther into the future. Crafting a fictionalized version of World War One, Battlefield 1 is only in its Alpha stage but showcases amazing graphics and terrific physics. EA actually let gamers who attended the expo play a few rounds of the game and the reviews were very positive. They've been able to make The Great War look exciting and fast paced.

Best Action and adventure: Prey

I'd never heard of the original before seeing the trailer for this game, but now I want to play it. The trailer for Prey starts off weird, with the protagonist Morgan repeating the same morning routine, on the same day. Every time, little things are different and Morgan's eyes get more and more bloodshot. The fourth time, he awakens in a lab... and everything gets

weird. The game play shown closely resembles Dead Space, and looks terrific and terrifying. I'm going to have to play this with the lights on in the middle of the day.

Best new IP: tie between Friday the 13th and Detroit: Become Human

Friday the 13th: Yes, it's based on a movie series, and yes Jason has shown up in videogames before, but this is a whole animal. The game as it stands right now is entirely multiplayer based, with one player controlling the monstrous Jason and the rest playing as unaware summer camp councillors. Jason's many abilities and sheer brutality are translated well from the movies, and the councillors need to use their wits to evade and survive.

Detroit: Become Human: A futuristic single player game centered around an android police officer. The neo-noir style game offers the player choices throughout each case that affect the outcome in serious ways. In the trailer we watch a hostage standoff that goes south pretty quickly. The scene then backs up and shows what could have happened if

different choices were made. The developers have said that the game is going to be on the short side, around 8-10 hours, but with a lot of replay value, and I can see why.

Worst Idea: Skyrim remaster

Everyone played Skyrim. Everyone played the HELL out of Skyrim. Doing a massive overhaul of Skyrim's graphics engine makes the game look great, but is it really worth it considering the game is only coming up to its 5th birthday? I'd have preferred a remaster of Oblivion, with the mechanics of the game moving into Skyrim's models.

Best Surprise: Spiderman

One of my favourite games as a kid was Spiderman 2 for the Gamecube. The web slinging mechanic was terrific and Spiderman's other powers were also well thought out and implemented. This game looks to revitalize that series. A PS4 exclusive, Sony has handed the reins to their long time partner Insomniac Games, the creators of the Ratchet and Clank and Resistance series. Fun games with great game play seem to be Insomniac's prerogative so Spiderman is set up to be a great entry to the PS4's library.

I was much more impressed with game reveals that featured actual game play footage rather than just cinematic trailers. Shiny reveal trailers like those for the new Quake and Halo Wars games look amazing, but don't really tell the audience anything about the game. Actually showing off your game play should be the highlight of your conference, but not enough publishers did.

So Who Won E3? Sony

Gamers want games and Sony delivered. While they do have plans for a new half cycle console, the PS4 Neo, they showed their commitment to PS4 owners with their exclusives lineup. I'm going to be broke a lot in the coming years.



Viper via youtube.com

Battlefield 1 by EA DICE arrives on consoles and PC this fall

Engineering Exchanges?? But I'm Only in 1B!!

PROF. RICK CULHAM
ASSOCIATE DEAN, INTERNATIONAL

Yes it IS too early in your academic career to go on an international exchange but it's NOT too early to start planning for it!

It's a great opportunity and privilege but you must prepare, organize and plan. You could be among the 15% of your class who go on this once-in-a-lifetime experience. Most students go on exchange in 3A or 3B or both. You might even consider combining it with a work term. But you have to start planning early!

What is an academic exchange? You'll get to spend one or two academic terms at a partner university where you'll take courses equivalent to those your classmates will be taking at UW. It is common practice for engineering exchange students to remain on the same academic schedule as the rest of their cohort and graduate with their class.

We have exchange partnerships with over 80 top-tier universities in about 30 countries around the world. So you need to investigate which partner best suits your needs; many of our exchanges are restricted in numbers, some are open only to certain disciplines of engineering, for others you may need to brush up on your language skills or possibly learn a new

language. In some cases, it's best to go for a one-term exchange; in others, two terms work out best.

All this is a part of planning for your future career which could take you anywhere in the world.

To get started, visit our website (search for "Engineering Exchanges" from the UW home page) for all the details and then meet with Cindy Howe, Administrative Coordinator of engineering exchanges to discuss all of your exchange options. She can be reached at eng.ug.exchange.askus@uwaterloo.ca and her office is Carl Pollock Hall, Room 3658.

On Facebook, look for the "UW Engineering Exchanges" group, which is specifically for outbound students and those who have been on exchange. It's moderated by the Engineering Society (EngSoc) and Cindy Howe.

Don't let the opportunity pass you by! The application process takes more than a year of lead time. Applications must be submitted by November 1 for the following academic year. For example, if you want to go on exchange for your 3B term (Fall 2018 or Winter 2019), your application must be submitted on Waterloo Passport by November 1, 2017.

Finally, exchange is great for fun, travel and adventure. You'll visit parts of the

world that stay-at-home students may never experience. Don't take my word for it; read what previous exchangers have to say:

"Going on exchange is the BEST decision I've made in my undergrad life! It has helped me grow as a person from learning in a new environment, making friends around the world, and seeing things in different perspectives. Not to mention all the amazing travels you can do on an ex-

change." (Lin Lin Chen, Management Engineering)

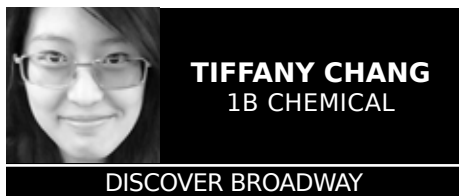
"Going on exchange was the single best choice I made during my undergraduate studies. The experience was eye opening to parts of the world I've only read about. Experiencing Asia rather than simply seeing it as a tourist gave traveling a whole new definition and I will cherish the memories forever." (Gary Guo, Computer Engineering)



On exchange, you can go to school virtually anywhere in the world!

Discover Broadway: Chess

A Cold War Story of Games and Intrigue



I'm so excited to be kicking off this new column!

As you probably deduced from the name, I will be reviewing what I would call some lesser-known, underrated musicals. If you've already heard of them, then sweet—we have similar tastes!—but if you don't, worry not!

I hope that you will enjoy this musical journey as much as I do.

To kick things off, I would like to introduce you to Chess. Its music is by Benny Andersson and Bjorn Ulvaeus—formerly of ABBA—and lyrics by Tim Rice—you might recognize his name from his collaborations with Andrew Lloyd Webber on *Joseph and the Amazing Technicolour Dreamcoat*, *Jesus Christ Superstar*, and *Evita*.

In order to raise money for its first theatrical production, a highly successful concept album was released in 1984. Two years later, the show premiered in London's West End and played there for three years. In 1988, after much alteration to the plot, the American version only played on Broadway for two months.

Since then, multiple revisions have been made for new productions; however, no major revival of the musical has been attempted in the West End or on Broadway.

My personal favourite recording of it is *Chess In Concert* from 2009. Along with the London Philharmonic Orchestra, Warner Bros. Records produced a two-performance concert version of the show at London's Royal Albert Hall. The performance includes next to no dialogue or set, but it emphasizes the musical's strength: Its music.

The storyline follows a politically-driven chess tournament during the Cold War era between American grandmaster Frederick "Freddie" Trumper and Soviet grandmaster Anatoly Sergievsky—played by Adam Pascal and Josh Groban, respectively.

As the tournament progresses, Freddie's second and alluded paramour, Florence Vassy, falls in love with Anatoly, becoming his mistress.

The three all have to face their inner demons. For Anatoly, it is having to deal with being used as a pawn in political games between East and West during the chess tournament and choosing between his love for the game of chess; staying with his home country, his wife, and family; or his newfound love for Florence. All of this is reflected in one of the most

sensational numbers of the production, "Endgame #3/Chess Game #3."

Freddie has to deal with Florence deserting him and, in one number in the second act, reflects on how his broken childhood made him who he is today ("Pity the Child #2"). At least in this production, after losing his title of international chess champion to Anatoly, Freddie sets aside his personal grievances with Anatoly to aid him a year after his own defeat.

I won't give away any more spoilers about the plot, but here some more noteworthy musical numbers. "Where I Want to Be" is Anatoly's confession about being a pawn used by people he wouldn't consider to be his friends. "Quartet (A Model of Decorum and Tranquility)" is an interesting piece that happens as a result of Freddie storming out of the arena while facing Anatoly. After Anatoly defeats Freddie and decides to abandon his Soviet team, the press is tipped off about this scandal. They ambush Anatoly, and he replies that he will never leave his country as his land's "only borders lie around his heart" in "Anthem."

The cast did terrific work with their respective characters and captured each character's disposition spot-on.

Josh Groban delivered an exceptional performance with his crooning baritone voice and by capturing Anatoly's inner turmoil exactly the way that Tim Rice had

intended to portray the character. At the time, he had pleasantly surprised most of the audience, who were unconvinced that he would be able to live up to Tommy Körberg's Anatoly.

Idina Menzel, though she faltered a couple of times on the high notes, made for a convincing Florence performance-wise.

Adam Pascal was perfect for the role of Freddie with his excellent acting and high vocal range. He nailed both Freddie's inner monologue in "Pity the Child" and his change of heart in "Talking Chess."

Kerry Ellis, I thought, was severely underused as her character of Svetlana, Anatoly's estranged wife, only appeared halfway through the second act. However, she perfectly captured Svetlana's essence in "Someone Else's Story", her understanding of how Florence could give her husband something she herself could never give to him in "I Know Him So Well", and her angst in "Endgame #3/Chess Game #3."

Chess is definitely a masterpiece in and of itself. I will admit that it will take a couple of listens to understand all that happens and its implications toward the Cold War. However, once you wrap your head around the politics, conflict, love, and hate, you will appreciate the plot's complexity and the depth of the characters.

World Wide Development Conference

CONTINUED FROM PAGE 6

a vending machine's selection might be big: there's lots of little treats but no number of Cheetos can be called a meal.

First of all, there are a lot of new ways to use notification widgets, and they can be accessed from the lock screen. This actually is revolutionary: for friends who prank you when they take your phone. 3D touch can do more: which is fine if you use it, I suppose.

Siri has an intents API that will allow 3rd party developers to write apps interfacing with Siri, much as they would with Google Now on Android. Some "Siri intelligence" will also be used to enhance word suggestions when typing messages. If this sounds like it might involve a lot of data mining on Apple's part: yeah it does, skip to the next section for more detail.

Photos will be able to display pictures on a map, with the positions corresponding to the location the picture was taken. At long last, I will finally be able to see how many of my screenshots were taken in the RCH dungeon. Actually I hope it does separate screenshots from genuine photos because the new Photos is supposed to be smart: smart enough to support facial, scene and object recognition. Much like Google Photos, but probably worse given Apple's restricted data (skip ahead!). Photos also now automatically organize into groups called "memories" which will automatically assemble into slideshows of all the fun, fun times you've spent vacationing. Or RCH-dungeoning.

The Apple Maps app, which the world loves to hate, has been updated. It knows about all the nearby traffic and snazzy restaurants. If your car has iOS support, you can get turn by turn instructions right in the instrument panel. This part of the keynote reminded me strongly of my dismal financial situation.

The Apple Music streaming service has a new, peppy interface. At around 1:11:40 in the keynote, Apple Music executive Bozoma Saint John presented a demo and

those were easily the best minutes of that silicon church sermon. Everyone got up and danced! For only a few short moments, unfortunately.

The Phone and News apps were redesigned too, but didn't really feel notable. Communicating entirely through chat is pretty hip right now, and I mean, who reads newspapers anyway?

There's a new default app appearing on the iOS home screen: it's called Home and it will be used to control HomeKit supported home automation devices. I'm sure that will confuse nobody, ever. Home supports video doorbells and can unlock your house door right from the lock screen: yet another revolution for pranksters who grab your phone. This felt like another reminder of my social-financial situation, and that was before Craig Federighi mentioned a HomeKit compliant hot tub.

The biggest change for the perpetual angsty teenager that wears my skin is iMessage. In addition to introducing a bunch of real flashy animated features and a sticker store (much in the style of Snapchat, WeChat and the like), this was also a part of the keynote which was mildly self-deprecating and came close to acknowledging that sexting is a thing. It was right around 1:25:43, for all of you interested in watching executives try to be hip. In further weird developments, the keyboard in iMessage can detect words in your message that can be replaced by emoji, which is excellent for finding obscure emoji and converting all your text to emoji.

This would all be great, if not for the fact that they're dropping support for my cracked, struggling 3rd generation iPad.

Intelligence, Data Mining, and Privacy

Google is really, really good at analyzing large amounts of data and teaching computers to find meaningful links between them. Amazon is also somewhat capable here. These skills, and the user data supporting them, are important for object recognition

in photos and parsing human language.

Apple is relatively bad at this. This is reflected in the relative quality of Siri versus Google Now, and of *cough* iCloud and Google Drive. No amount of stylin' or filin' can hide the truth: that Apple needs to catch up. But how can they feed user data to their machine learning algorithms without compromising the privacy of their users?

In last week's keynote Apple announced their approach. They try to do as much processing as they can on the user's machine rather than on Apple-controlled servers. They are also looking into a technique called differential privacy, wherein so much noise is injected into user data that it is impossible to connect a particular user to a particular data set. Said data is still useful for algorithms to learn from, however.

If you want to know more you should probably consult a distinguished mathematics journal, or failing that, mathNews.

Swift Playground

Apparently there were a record number of child attendees to WWDC this year: there was even a nine-year old. To ensure that even more cool kids show up next year, Apple spent the last few minutes of the keynote on Swift Playground: a cute iPad app for teaching children to code.

Surely there's nothing of interest there for people who already know programming right? Right? That nifty coding-focused iPad keyboard, we'll never see that again. The fact that a hundred-ish lines of Swift code with full access to the iOS SDK could be compiled fairly quickly on an iPad, that's just for little toy demos. Yep. Nothing to see for this audience of accomplished developers, this is all purely for teaching the next generation how to program.

Beyond the keynote: RIP Find My Friends and HFS+

Some items outside the keynote that Apple announced this week may be of interest to anyone who managed to read this far.

The first is a simple, long-awaited feature for iOS: the freedom to delete some of the default apps. Not all of them: Messages will not be going anywhere, for instance. You also need the App Store to redownload the apps if you want them back, so allowing the deletion of the App Store would be an easy "screw my friend over for hundreds of dollars" option for those irresponsible pranksters I keep mentioning.

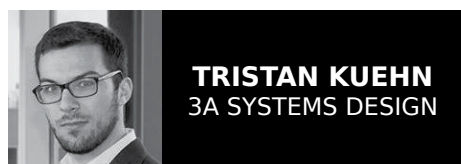
The next is an even longer awaited change: Apple's dinosaur of a file system, HFS+, is finally going extinct. The replacement is called the Apple File System: APFS. APFS is optimized for solid state storage (TRIM is in), has the ability to quickly find directory sizes, can encrypt individual files or entire storage drives independently of the rest of the OS and can make fast snapshots and clones of a whole system-worth of data. These features have existed for a fairly long time in enterprise filesystems: it's good to see the consumer world catching up. APFS is still a developer preview: macOS Sierra cannot boot from it, and it is recommended that APFS users back up their data on a proven, reliable filesystem. APFS is only going to be deployed en masse next year, for every Apple device supported at that point.

If your eyes glazed over in that last paragraph, don't worry. I'm sure Apple will make it all crystal clear during WWDC 2017.



Euro Cup 2016

Preview and Predictions



TRISTAN KUEHN
3A SYSTEMS DESIGN

It's June, and the Euro Cup is finally back and in full swing. This tournament, the opportunity for European soccer players to compete for the continent's most prestigious trophy, is held every four years, two years after the world cup. This year, for the first time, 24 national teams are competing in the tournament. The teams have been divided into six groups of four teams for the first phase of the tournament, the group stage. Each team will play every other team in its group, and the winners and runners up of each group will move on to the knockout rounds, as well as the four third-place teams with the best record.

Group A contains host country France, Switzerland, Romania, and Albania. France, the only perennial contender of the bunch, has to be the favourite to win this group. Switzerland and Romania have both seen modest success in recent Euro Cups and the qualifiers for this current one, but I have to give the edge to Switzerland. Albania has never been to a major tournament before, and will face an uphill battle in France.

Group B contains England, Wales, Slovakia, and Russia. England, despite their recent frustrating exits from inter-

national tournaments, can be expected to win this group handily. Wales is competing in their first international tournament in decades and could be dangerous enough to take second place. Slovakia, in their first Euro Cup as an independent state, have a lot to prove. Russia has struggled in the opening week, and will fight hard for even a third place spot.

Group C contains world champs Germany, Poland, Northern Ireland, and Ukraine. Germany will win this group handily and be looking deep into the playoffs. Poland has a dangerous team including star striker Robert Lewandowski, so second place will be theirs to close. Northern Ireland, a first timer at the tournament, took their qualifying group by storm and could be a real contender to make it to the knockout rounds as a third-place group finisher. Ukraine's team has a shot, but will struggle against the heavy hitters in this

group.

Group D contains current European champs Spain, Croatia, Czech Republic, and Turkey. Spain disappointed in the World Cup two years ago but remain a soccer power who will be expected to win this group. Croatia has played very well since they began competing independently, and will give Spain a run for their money. However, the Czech Republic should be expected to hang right there with them and could take the second spot. Turkey has been good in the past, but they are not expected to emerge from this hotly contested group.

Group E contains Italy, Ireland, Sweden, and Belgium. Italy is a great team that will very likely win this group, after going undefeated in the qualifiers. Also undefeated, however, is Belgium, who did a lot of damage in the last World Cup and should be expected to emerge from this group. Sweden's star Zlatan

Ibrahimović is a legitimate difference maker, but he might not be enough for them to do better than third place in the group. Ireland has never made it past the group stage in the Euro Cup, so it is doubtful that this will be their year.

Group F contains Portugal, Hungary, Iceland, and Austria. Cristiano Ronaldo, among the best in the world, should lead Portugal to the top of this group without much trouble. Austria performed very well in qualifiers and could very well continue that success through the group stage. Iceland has a young squad with a lot of momentum that could carry them through to the playoffs. This is the first time Hungary has qualified for the Euro Cup in decades, and will have to show that they can hang with the leaders of today.

Beyond the ultimate results of the tournament, another sought-after prize is the Golden Boot, given to the player with the most goals over the tournament. Portugal's Ronaldo, Poland's Lewandowski, and Sweden's Ibrahimović are among the big names being talked about as the tournament begins. My money's on Lewandowski. He tore up the German domestic league last season, led scoring in qualifiers for this Euro Cup, and Poland has the potential to go deep into the tournament.

No matter what happens, there is sure to be a lot of great action and drama to fill your off-time this spring term!



UEFA via Wikimedia Commons

The Euro Cup tournament is on now in France

The Benchwarmer Report

An NBA Final Rematch for the Ages



ELIZABETH SALSBERG
3B NANOTECHNOLOGY

THE BENCHWARMER REPORT

NBA fans, welcome to the Final! And what a Final it has been. The top regular season team, the Golden State Warriors (Steph Curry, et. al.) are duking it out in a rematch with the LeBron et. al. (the Cleveland Cavaliers). The Warriors are the defending NBA champions; the Cavs are looking for Cleveland's first

major sports title in an eon.

Many basketball fans anticipated the rematch. However it was not anticipated that, a) the series would even go to six games let alone seven, and b) that each game would be won by a comfy 10-point cushion.

After steamrolling the rest of the NBA (73-9), it seemed quite likely that Golden State would be able to put away most opponents in the playoffs. I daresay they played far superior basketball to Cleveland and against stronger opponents, like OKC and the San Antonio Spurs to name a few. While Cleveland did finish

first in the East (hardly a surprise), what was surprising is that the second-seeded Raptors finished only one game back. When Steph Curry was forced to play injured during the playoffs, it certainly hurt the Warriors a bit... they needed game 7 to knock off OKC in the conference finals. LeBron's Cavs? They swept both of their first two opponents, and needed six to put away the Raptors. Indeed, it can be argued that LeBron should have had a far easier time with the Raptors than the Warriors did with OKC.

Let's recap the series so far. The War-

riors raced out to a 3-1 lead after four games. With game 5 set to go at home, it looked like they were in the driver's seat. But back came LeBron and the Cavs—to show us this series is far from over. Following back-to-back 41-point performances, LeBron (along with another 41-point game 6 performance from point guard Kyrie Irving), the series is knotted at 3 games apiece.

The decisive game 7 is to be played this Sunday night in Oakland and has already happened by now. What's intriguing about this game is whether or not it will be like the others, with one team leading the other by a significant margin to take the game (and the championship). Could one be a nail biter?

Another interesting question is whether Curry, Klay Thompson, Draymond Green and the rest of the Warriors can recover psychologically after losing their cool in game 6. Curry fouled out and threw his mouth guard into the first row of fans. Staying out of foul trouble will be critical if they're going to regroup and win game 7. Remember, this is the NBA: Anyone who breathes near LeBron automatically gets a foul.

That's not to shine bad light on LeBron. He may be a bit of a baby, but there is absolutely no question that he is by far the most well-rounded and overall best player in the NBA since Michael Jordan. For the Cavs fan (or objective basketball fan), he is truly compelling to watch. If the Cavs win, most of the credit goes to this man for coming up big when it counted.

Because I like making predictions, I want to say the Cavs win. But by the time you read this, you'll know if I'm right or wrong. Happy Finals, and looking forward to the 2016-2017 NBA campaign! It's been a great one.

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Five Things You Don't Want to Know

Off With His Head!



CAITLIN MCLAREN
3T CHEMICAL

5 THINGS YOU DON'T WANT TO KNOW

The whole world seems to be losing its head these days. Still, we should count our blessings; we have made some headway from the past, in which people frequently lost their heads in a much more literal way. We've all heard of the guillotine, and other political beheadings, but severed heads in history get even weirder.

Just a heads-up: the following stories are rather grisly and contain head-based puns.

Celts Collected Severed Heads, Used them for Interior Decorating

The ancient Celts were a tough bunch. A loose collection of tribes living in modern-day Britain and Northern Europe, they were nearly always at war and were proud of their battle prowess. To show off how good they were at being warriors, they liked to collect the severed heads of their enemies and keep them in temples, or just at home. Particularly impressive heads, such as those of famous enemies, might be preserved in cedar oil and taken out to show off to guests. The Roman writer Diodorus Siculus recorded that Celtic warriors would boast about turning down offers of the head's weight in gold. It is not clear why there was a market in heads, or how it would be affected by inflation. Would it result in the warrior getting a swollen head?

Shrunken Heads, and they may be Counterfeit

Shrunken heads are not just a myth – they are made by Jivaroan tribes in Peru

and Ecuador. These people traditionally believed that souls have an expiry date, and if you haven't killed someone in a few years, your soul will start to wander around at night and might get stolen. You have to keep killing people to get new souls, and of course any self-respecting warrior will keep his enemies' heads.

Since heads tend to be big and cumbersome, you can shrink them this way: Remove the skin from the skull, get rid of all the fat, sew the eyelids shut and pin the mouth shut. Put a wooden ball inside to keep it round, boil the flesh in water containing a solution of herbs, and dry it with hot rocks. Coat it in ash to prevent the vengeful soul from escaping.

When Western countries found out about this, they said "Cool!" and tried to buy as many shrunken heads as they could. Unlike the Celts, the tribespeople had a good head for business and began killing as many people as they could to sell their heads. By the 1930s, the Peruvian and Ecuadorian governments made it illegal because, come on. The killing raids didn't entirely stop, but many people started making them out of things like monkey heads or goatskin instead, and nowadays most shrunken heads you see will be fake. What a shame.

Suspicious Package

Before you start saying "Ha! Our civilization is so far ahead of theirs!", keep in mind that there is still a thriving trade in severed heads. These, of course, are medical specimens, and it happens frequently that a box of severed heads is found in some airport or shipping depot, scaring the employees and causing the media to go off its head. Whichever medical institution is responsible promptly pulls out their paperwork and goes "Nothing to see here!" The shipping companies then give them the

go-ahead, and the story trends for a while. This happened in 2010, and again in 2013.

While this all sounds entirely legit, there is in fact a black market in these medical specimens. It is not clear where these are coming from (besides, you know, necks). Personally, I suspect the Jivaroan tribespeople.

Henry IV of France (Or Is He?)

During the French Revolution, many members of the royal family and the nobility were executed by guillotine. While it is said that many of the heads lived for a few moments after being cut off, some definitely did not: those of the deceased heads of state who were disinterred and decapitated, just to make sure. The bodies of state were then dumped into a mass grave. How rude.

However, one head may have escaped: that of Henry IV, known as "Good King Henry." In 1919, a head said to be his turned up, and a random guy bought it for just three francs (presumably, the salesman was not a Celt). It was sold a few more times, and turned up again in 2008 in the attic of a retired tax collector. I suppose all government workers have a few skeletons in their closets, but most are not quite so literal.

Facial reconstruction and distinctive features suggest it was Henry IV, but experts disagree. For one thing, the brain was not removed, which the royal embalmers should have done, and furthermore the DNA did not match Henry's living descendants. Still, there are a lot of royal bastards, so the mystery is not solved by any means. Since the French are still arguing about this one,

the head isn't going to be buried any time soon and it was last seen in a Parisian bank vault.

Oliver Cromwell's Head was Basically a Hot Potato

Oliver Cromwell was a military dictator who ruled England in the 1650s. He was a fundamentalist Puritan who famously would not allow people to celebrate Christmas. After the monarchy was restored, Charles II became king. He didn't like Cromwell much, partly because he loved partying, but mainly because of the whole "military dictatorship forcing him into exile" thing. Fortunately for Cromwell, he was dead by that point, but Charles wasn't about to let that stop him. The king had Cromwell's body hung in public and afterwards put his head on a pole.

Years later, the pole broke in a storm and was dashed onto the ground. A guard found it and took it home, hiding it in his chimney for some reason. The head got passed around for a bit; at first it was in a museum, which makes some sense, but it ended up in the hands of a sketchy actor who liked to pass it around at drunken parties, and it got damaged. He didn't want to sell it, though, as he thought Cromwell was his ancestor (or maybe the man was going back to his Celtic roots?) but eventually it was seized by a creditor and sold again (seriously, who are all these people buying heads?). In 1960 everybody finally said "What the hell are we doing?" and buried it. The head was laid to rest in a secret place to prevent anybody else from messing with it. Now that's what I call thinking ahead.

"O Canada" Lyrics to be Changed



CAMERON SOLTYS
3N MECHANICAL

I first heard about the bill to remove gender bias from our national anthem, C-210, less than a week ago on a political podcast that I had just started listening to. I listened with passing interest as the journalist in my ear explained that there was a bill to change "True patriot love in all thy sons command" to "True patriot love in all of us command" making the rounds. The change, it was explained, was to remove a perceived slight; the current lyrics seem to suggest that Canada only commands love from its menfolk, or perhaps that it only needs to command love from the men.

The more I think about this change, the more I like it. This change may seem minor and inconsequential, and that's because it is. This is not some radical law to remove gender inequality, championing in an era of true equality. It is part of an ever-necessary effort to update government policies and official documents to reflect modern trends. It is a way to acknowledge that the 20th century and before were full of discrimination against women, and that there are still many holdouts in the way we speak, act and sing that really ought to be rectified.

One criticism of this bill that I have

seen online is that this is an attack on Canadian values. Some suggest that this is the government going into uber-politically-correct mode, bowing down to special interest groups to change something that everyone else is happy with. My response to this is to question if you'll be any less happy with the new lyrics. The current lyrics are pretty arbitrary. There isn't some group of people known as "the Sons" who fought in 1812, and singlehandedly turned back an American advance that would have otherwise have wiped British North America off the map forever. There is the fact that most soldiers in Canadian history have been men, but surely in our nation of innovation and technology it is not only our military feats O Canada should celebrate. There is also the fact that the original original O Canada used the gender-neutral line "True patriot love, thou dost in us command". It was changed in 1914, which may or may not have been an encouragement to the hundreds of thousands of Canadian men who were going off to what would become one of the bloodiest conflicts ever.

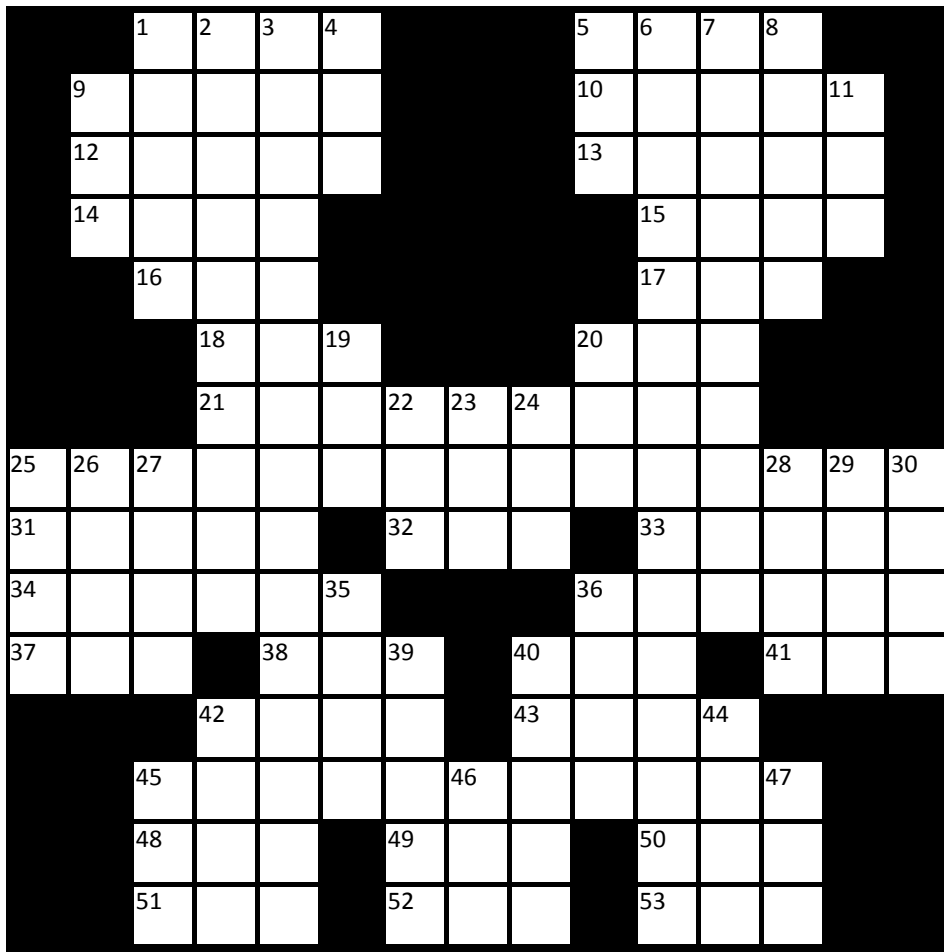
As of Thursday, June 17, Bill C-210 has been passed by the lower house. Given that the summer break is coming up quickly, it is not certain that the bill will pass the Senate before Canada Day. Support for this bill is high in the Senate, and so it is expected to pass eventually. I will be cheerfully singing the new lyrics when it does.



The Iron Crossword

A Post-Modern Interpretation of the Canadian Flag

CAMERON SOLTYS
3N MECHANICAL



ACROSS

- 1: In a church, the pulpit or lectern
- 5: Nicaraguan dish with beef wrapped in banana leaves
- 9: One who plays professional basketball
- 10: He is not ___ mortal (abbr)
- 12: Give back a loan
- 13: ___ Dahl, author of James and the Giant Peach
- 14: Wheel or helm, on a ship
- 15: Main character of the film "10,000 BC"
- 16: Phase of sleep that is associated with dreaming
- 17: Montreal engineering school that produces most Quebec engineering graduates
- 18: Land use for grazing
- 20: Remains of a fire
- 21: People who deliver funeral speeches

DOWN

- 25: Very hot peppers
- 31: French for "eggs"
- 32: Activities astronauts do outside a spacecraft
- 33: Competitions between horses or vehicles, perhaps
- 34: Vegetable-based shortening
- 36: "This just feels ___" Marianas Trench Lyric
- 37: Gamer speak for an enemy that should be eliminated immediately
- 38: Month after Sept.
- 40: ___ talk, for a sports team
- 41: Gaming system of Super Mario Bros.
- 42: ___ von Bismarck, German Statesman
- 43: Dip ___ in the water (abbr)
- 45: Opposing protagonists
- 48: Indicates an informational message
- 49: "___ of the Covenant" Indiana Jones film

- 50: American Concrete Institute (abbr)
- 51: Query
- 52: It's large and blue
- 53: Famous CERN experiment

DOWN

- 1: Single drink made from hops
- 2: Beloved but unsuccessful hockey team
- 3: "Raise me heavenward, Angus" — Captain C.
- 4: Suffix indicating a place of or for
- 5: Where one might obtain 1 Down
- 6: Famous essay suggesting cannibalism
- 7: Resorts where people exercise
- 8: Narrow boarder on a shield
- 9: Organization that provides inexpensive housing throughout the Niagara region
- 11: Magic: The Gathering variant with 100 cards
- 19: Beer brewed without hops
- 20: Hand signal language for deaf people (abbr)
- 22: Anagram of Neo
- 23: The recognized leading body of a state
- 24: Hoppy ale popular in craft beer culture
- 25: Sport-centered student
- 26: Bubble-filled chocolate bar
- 27: Spanish name meaning "Famous Warrior"
- 28: Study of the factors of production
- 29: Radiation Effects On Electronics (abbr)
- 30: Numbers that are issued to American citizens
- 35: ___gon, like a stop sign
- 36: Organization that looks for alien radio signals
- 39: Roman clothes used during Orientation Week
- 40: Hanky ___
- 42: Duty or responsibility
- 44: Engrave or carve
- 45: Online grassroots interview
- 46: Evil humanoid from the *Lord of the Rings*
- 47: Placed after a spelling error in a quote

Sudoku

#2016-08

BRYAN MAILLOUX
2B MECHATRONICS

Easy

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

Medium

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

Hard

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

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

THE IRON INQUISITION
Thomas Willert, 3A Mechanical

"What course do you wish you could take?"



"Brew Mastery 403."
Braeden Raftis, 3A Mech



"Blacksmithing."
Jordan Nickel, 3A Mech



"CNC Design."
Damian Kidon, 3A Mech



"METAL 666."
Joel Mizzoni, 4A Software



"BLAZ 420: 'Glass blowing' for vases."
Tom Willert, 3A Mech



"Rec and Leisure 101."
Johnathan Van Gorp, 2B Tron

\$2million

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for student entrepreneurial ventures

Waterloo Engineering has partnered with Spectrum 28, a Silicon Valley venture capital firm to establish a student venture program for **engineering** undergraduate and graduates students who are seeking ideas or have an idea for an entrepreneurial venture and need cash, mentoring and resources to make it happen.

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 June 10 & 11, 2016 July 13, 2016 April 2017

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