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THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY

VOLUME 34 ISSUE 3 | WEDNESDAY, FEBRUARY 27, 2013

Google Announces Updates for Google Glass Project

Page 6

How to Properly Watch the Star Wars Saga

Page 24

What Iron Rings are Really Meant For

Page 27

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Conversation in Space With Astronaut Chris Hadfield

KEVIN VELOSO
4C SOFTWARE

netnewsledger.com

Chris Hadfield poses in the International Space Station while showing his Waterloo pride

On Friday, February 15, 2013 at 11:30 AM, the University of Waterloo hosted "Conversation in Space" in Hagey Hall featuring astronaut Chris Hadfield, known as the first Canadian astronaut to walk in space. Hadfield was onboard the International Space Station (ISS) during the live video downlink. The broadcast of the video downlink was held in the Humanities Theatre, where they projected the live video stream from space for the students, faculty, and space-fanatics in the audience. The video projection was accompanied by a live Twitter feed of people tweeting about the event using the #AskHadfield hashtag. The video downlink was also streamed online via live webcast. The University of Waterloo is the first university to participate in the video downlink connection from the ISS, as well as the first university to collaborate on research with Hadfield while aboard the ISS.

Prior to the downlink, the event featured Jeremy Hansen, an astronaut from the Canadian Space Agency. Hansen was present at the event in-person, and talked about his experiences as an astronaut. He also provided an overview of Expedition 34, the current expedition aboard the ISS, as well as a preview of Expedition 35 where Chris Hadfield will be in command, the first Canadian astronaut to take command of the ISS. Also prior to the downlink, Dr. Richard Hughson from the faculty of Applied Health Sciences gave a presentation on his research and collaboration work with Hadfield on the ISS. Hughson's research looks into the zero-gravity effects on the human circulatory system. Hughson is also examining Hadfield's blood pressure to look into effects that zero-gravity has on his body, hopefully to find out why astronauts are prone to fainting within several hours of returning from space after an extended stay in space.

During the live video downlink, sixteen students from all six faculties on campus, ranging from undergraduates to Ph.Ds, lined up on stage with prepared questions for the astronauts. Adam Klett, a 4B Mechanical student, represented the Faculty of Engineering at the event. Unfortunately, the video downlink was cut off just before Klett had an opportunity to ask his question to Hadfield. The remaining students had their questions facilitated by Jeremy Hansen after the end of the video downlink. Hansen proceeded to take questions from the audience after the remaining students' questions were answered. It was interesting to note Hadfield's presentation during the downlink, taking advantage of the zero-gravity environment on the ISS to keep the microphone afloat, freeing his hands and demonstrating some of the tools and equipment he uses onboard the ISS for research and maintenance.

Some questions asked by Hadfield were regarding his experience in space, such as the Internet aboard the ISS, as well as the sights and photos he has taken from space. Hadfield has been using Twitter while in space, although he describes the Internet as operating "really slowly, if at all". The Internet connection onboard sends radio signals to a computer in Houston, effectively mirroring the space signals to a ground connection. Hadfield has been known to tweet with fellow Canadian William Shatner who played Captain James T. Kirk in the original *Star Trek* TV series.

This event brought all six faculties from the University of Waterloo together to celebrate the accomplishments of Canadian astronauts and to highlight Waterloo professors on their research being collaborated on and performed aboard the ISS. You can follow Chris Hadfield on Twitter as @Cmdr_Hadfield, where he tweets regularly and posts photos he takes from space. You can also find the video of the downlink at new.livestream.com/itmsstudio

Team Yellow and Their Promises to Us

ANDREW FISHER
4B CIVIL

Friday, February 15, was an important time for the Federation of Students (Feds). The newly elected executives were to be announced, dictating the direction and ambitions of Feds for the next year. There was much speculation, but in the end, Team Yellow was victorious in all four executive positions.

Each of the elected executive ran with a platform during the campaign period. These platforms outlined their goals, ambitions, and plans for Feds should they be elected. Now that Team Yellow has taken the helm, it is time to reflect on the promises that were made during the campaign period to ensure that we as students hold the executive accountable to them. To help in this endeavour, the key promises from each executive's campaign platform have been simplified. For full platform outlines, visit voteteamyellow.com

President: David Collins

Promote and improve Feds' commitment to open consultation. This includes a plan to use the Feds research department to increase efficiency and transparency of the organization.

Advocate for a campus that respects and values differences amongst others. David plans to continue developing the campus student-safety plan started by the VP Internal this year as well as encourage the University to increase priority of the creation of the Equity Office.

Ensure that the current student and commercial service offerings by Feds are considered relevant to students. New metrics are to be developed to measure the success of the current services.

Ensure that Feds makes decisions that reflect a high degree of consciousness toward environmental sustainability and the social well-being of students.

Continued at WHAT TEAM on page 3

feds.ca

Team Yellow from left: VPI Devin Drury, VPAF Natasha Pozega, VPED Adam Garçia, President David Collins

Letter From the Editor

To the Spirit of Why Not

ANDREW FISHER
EDITOR-IN-CHIEF

Welcome back to campus! Here to greet you is Issue 3 of *The Iron Warrior*. I hope everyone had a relaxing reading week and you have regained the energy to take on the rest of the term. To help ease the pain, we here at *The Iron Warrior* have put together a 28 page monstrosity of a paper for you to peruse at your free will. From our records, 28 pages is a first for *The Iron Warrior* since the 90s, so yay for that! This issue has a lot of Science and Technology content for your inner engineer as well as a full page spread on how to make your own Storm Trooper helmet; compliments of Jon Martin. My favourite article of the issue goes to 'How to Properly Watch Star Wars' by Meagan Cardno for her fascinating take on the unorthodox sequence to watch the Star Wars saga. Runners up go to 'Student Unions Around the World' by Caitlin McLaren and 'Things to Do With Your Iron Ring' by the Graduation Committee co-chairs. I'd like to thank my copy editors for their hard work over reading week as well as everyone who submitted an article. This paper is nothing without them!

A couple weeks ago, graduating engineering students, including I, participated in what is known as Disorientation Week. This week of events allows us fourth year engineers to celebrate our upcoming achievement: receiving our Iron Rings. As part of the Disorientation festivities, in the early morning hours of Friday before the Iron Ring Ceremony, pranks are traditionally pulled on campus. These pranks are completed early Friday morning to allow students on campus to see our masterful works of art later that day. From what I was able to see, this was a very successful pranking year. Each class was fully represented in their respective corners of engineering, from System's Funhouse to the ECE sign on the E5 overpass. Unfortunately, to our distain, the University closed its doors Friday due to snow for the first time in five years. Was this a coincidence? Most likely. But you still wonder if a rowdy group of fourth year engineers running around campus was the final push to keep the doors closed. Either way, pranks were done, and very few got to see them.

To our luck however, such things exist as digital photography and the in-ter-net. If you are interested to see what your fellow fourth years were able to accomplish, take a visit to The Spirit of WTF (spiritofwtf.com). This unofficial Waterloo website created by Michael Overmeyer is a blog which chronicles the pranks which occur here on campus. If you haven't checked it out yet, I encourage you to do so. There are documented pranks going all the way back to the 1960's! When asked about why he started The Spirit of WTF, Michael responded:

"When I first came to Waterloo, I was told that 'Waterloo is the MIT of the North'. I became very excited as I was enamoured by MIT's cultural mix of rigorous academics and spirit of clever, playful fun. Once I got to Waterloo, it became readily apparent that this school's spirit died a long time ago, and the marketing line I was fed was a load of crock.

After much thought, I decided that Waterloo needed a place to showcase the few pranks that do occur on campus, much like the IHTFP Gallery (hacks.mit.edu) does for MIT and SkulePedia (skulepedia.ca) does for UofT.

Perhaps by collecting and showcasing the handful of decent pranks that have occurred at Waterloo, it might inspire future students to leave their mark by pulling their own clever stunts, and a sense of school spirit might be reignited."

This vision of Waterloo school spirit is definitely not uncommon amongst students. Anyone you ask will say Waterloo is known for its academics, co-op program, engineering (yay!), but never its spirit. You have to ask yourself, what went wrong? We are a young school not much older than 50 years. Should we not find it easier to shape ourselves into a spirited school unlike schools 100+ years old that are governed by tradition? When asked, Michael said it best:

"When Waterloo was founded, there was a sense among the academic community that universities needed at least 100 years of tradition before they could be considered rigorous. Waterloo's founders were determined to prove this wrong, and when they went to create the first engineering curriculum, they looked at the hardest engineering program in Canada. It happened to be UofT at the time, so they took UofT's course workload and upped it by 10%. Waterloo was going to be an academically rigorous school.

This mentality of 'something to prove' was pervasive throughout the beginning years, and once Waterloo was well established in the academic community, it continued. It affected the way the school marketed itself and handled issues that arose. Waterloo students would be 100% academically focused. Anything that suggested otherwise would be quashed. This mentality made it into the marketing image of the school. Whether you are aware of it or not, a school's image is its #1 asset. At Waterloo, that image is well protected by a strong marketing team. For example, we see this mentality in the way that the administration handled the Formula SAE 'bikini-gate'.

The second cause I see is the co-op program. Don't get me wrong, it's a wonderful program and I owe my sanity to it. But moving around every 4 months does not lend to developing strong ties to the school. Nor does it help student organizations and clubs to keep going. That constant shake-up does a lot to hurt school spirit."

I completely agree with Michael's points. Our lack of school spirit isn't necessarily contributed by the students who attend, but to the way the institution we pay our money to chooses to run the great machine that is the University of Waterloo. I do think we are spirited students; we just need the right environment to let it shine. What we can do is support each other, and encourage each other to push the boundaries we call 'rules'. This is what pranking is all about. It allows students to work together for a common cause whether it is to improve school spirit, or to pull off the impossible. We as the engineers hold this torch. From the moment we earned our hardhats in Frosh Week, we were told that "you will encounter many challenges, and in meeting them your intelligence, skills and persistence will be vital to your success." Engineers have the mentality to pull off things of greatness, so for those just starting your years here at Waterloo, take note of the little pranks now, and strive to make them better! As Michael puts it, "[The Spirit of WTF] comes from the feeling that any good prank should evoke."

For now, Michael and I are amongst those graduating this April. What becomes of The Spirit of WTF is still unknown. There is no one set to take over The Spirit of WTF going into the future, so the site will lay dormant from April on. To me, this is another sad death to what is, or was, the spirit of Waterloo.

Hopefully, in the next few years, the next generation of students will be able to learn from past mistakes and make a break though in school spirit. This leads into one of Michael's other projects, the Warrior Wiki (warriorwiki.ca). This wiki aims to be the definitive guide for Waterloo history. Michael's motivation behind this website is very profound:

"During my research for The Spirit of WTF, I read lots of Waterloo History. And in my readings, you see the same patterns appearing again and again. Student groups especially, making the same mistakes over and over. However, you can't learn from the mistakes you can't see, and I began to wonder about improving accessibility to Waterloo's history.

Currently, most of the documents related to Waterloo's history are accessible only through the Waterloo archives in the Rare Book Room of the Dana Porter Library. The archives are open 5 hours a day, 5 days a week. You aren't allowed to take anything out of the room so you must do all of your reading during those times. Furthermore, there is no good indexing of the materials, so finding what you're looking for can take many days, or be entirely impossible."

For us students, we change and evolve according to what was done in the past; whether it was good or bad. If we never know what truly happened, then we are bound to make the same mistakes over again. Michael put it best: "You can't learn from the mistakes you aren't allowed to see."

The Warrior Wiki team is currently using various sources of digital media to help populate the wiki. Although the University is unlikely to make their archives digitised in the near future, other areas including *The Iron Warrior* are being used thoroughly to populate the Warrior wiki webpage.

There are many people currently helping make the Warrior Wiki possible, including students, alumni, faculty and staff. The team is always looking for more people to help make Waterloo history more accessible, so if you are interested, be sure to email thewarriorwiki@gmail.com. Be a part of the change, and let's try to learn from the past to hopefully make Waterloo the spirited school it once used to be!

THE IRON WARRIOR

The Newspaper of the University of Waterloo Engineering Society

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The Iron Warrior is a forum for thought-provoking and informative articles published by the Engineering Society. Views expressed in *The Iron Warrior* are those of the authors and do not necessarily reflect the opinions of the Engineering Society.

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

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Waterloo Mentioned in *New York Times* & *Communications of the ACM*

KEVIN VELOSO
4C SOFTWARE

The University of Waterloo has been mentioned in two major publications, the *New York Times* and *Communications of the ACM*. In both publications, they highlight the success of the university's co-op program and the opportunities it has provided to current students and alumni. These publications also highlight and acknowledge Waterloo as one of Canada's top engineering schools, showcasing alumni and former students, as well as the companies they have started. BlackBerry, formally known as Research In Motion, was the fore-running company to start off the highlights. Newer companies were also mentioned in publication including Pebble, the E-Paper watch company started by a UW alumni, and BufferBox, a parcel delivery system which has recently been acquired by Google.

The *New York Times* is famously known as America's most popular newspaper web site, with its print version known as the largest local metropolitan newspaper. On February 4th, 2013, the *New York Times* published an article written by Ian Austen that mentions the University of Waterloo, its alumni and former students, as well as the companies that have developed from this institution. Particularly, the article highlights the kind of approach that our institution has towards research and academics. It is interesting to note that our institution's policy on Intellectual Property is something that has attracted many successful people here.

From the article:

"Different approaches, rather than money, have instead enabled [Waterloo] to attract prominent faculty members from around the world as well as Canada's top engineering and computer science students.

Unusually for a college or university in North America, Waterloo does not require its faculty or students to give it any ownership stake in products or inventions they create there. For faculty members, control of that intellectual property can potentially be far more valuable than any university salary."

The University of Waterloo has also been mentioned in January's issue of *Communications of the ACM*, a monthly magazine of the 'Association for Computing Machinery' (ACM), is known as the world's largest and most prestigious scientific and educational computing society. In the January publication, Salman Khan, founder and executive director of the Khan Academy, talks about the demands of employers versus the educational services offered at most colleges and universities. He proceeds to highlight the co-op program at the University of Waterloo, focusing primarily on the experience of co-ops students that had co-op terms in the Silicon Valley, and how the co-op program at this institution satisfies the need that most employers are looking for when interviewing new hires. The article primarily focuses on a theoretical college that satisfies the job experience needs sought by most employers, and how the University of Waterloo approaches this need through the co-op program.

From the article:

"While the students at most colleges are taking notes in lecture halls and cramming for winter exams, the Waterloo students are pushing themselves intellectually by working on real projects with experienced professionals. They are also getting valuable time with employers and pretty much guaranteeing several job offers once they graduate."

Being mentioned by large publications has given alumni an opportunity to showcase their achievements to a larger audience. According to an email sent on behalf of the Dean of Engineering, Pearl Sullivan, "This recognition represents a milestone for Waterloo in terms of our presence on the world stage, and is something of which everyone connected to the University can be proud." This news coverage has also provided an opportunity to highlight some of the more positive aspects of our university's co-op program, which is already famous for being the largest co-op program in the world. As a school full of dedicated and passionate students motivated to work towards their degree, this recent news coverage provides a larger recognition of the value in getting an education from the University of Waterloo.

Being mentioned in two large publications definitely instills a bit of pride in being a part of the University of Waterloo, as well as being part of the Faculty of Engineering. I look forward to seeing more achievements coming from the talented students within our faculty during their co-ops, as well as from future alumni who are completing their journey through their undergraduate career!

The *New York Times* article, "Once BlackBerry Focused, a Campus Widens Its View", can be found here: nytimes.com/2013/02/04/technology/

The *Communication of the AGM* article, "What College Could Be Like", can be found here: cacm.acm.org/magazines/2013/1/

What Team Yellow Hopes to Accomplish

Continued from TEAM on page 1

VP Administration & Finance: Natasha Pozega

Continue the efforts of the past VPAF to ensure student investments and ideas don't go to waste. Natasha will continue implementing the digital signage initiative, create a long term action plan for the Used Book Store, and investigate a new text messaging system which would act as a tool for students to conveniently text Feds with any issues they have.

Put in place new customer service standards at all of Feds' commercial services. Improved training for service staff will be implemented. Natasha wants to also investigate having meal plan dollars used at Feds services.

Develop a comprehensive sponsorship strategy to subsidize the cost of Feds Welcome Week and Frost Week events.

VP Education: Adam Garcia

Ensure that student money is well-utilized with the University. Adam wants to work towards a new fee agreement with the University which includes a new ancillary fee agreement that gives students a mechanism to determine fee levels. He will also advocate for a multi-year tuition freeze.

Ensure that Waterloo classrooms are adapting to new technologies, using new learning strategies, and course evaluations go towards improving teaching quality. Adam wants to initiate an advocacy campaign called "Fix My Lecture", advocate for a centralized course evaluations process, and work with the Teaching Fellows and the Centre for Teaching Excellence to advocate for a peer evaluation model of instructor evaluations.

Ensure that Waterloo is a liveable city for young graduates. Adam wants to work with stakeholders and partners from the Town & Gown Committee of the City of Waterloo to begin the development of a city-wide student employment and graduate retention strategy.

VP Internal: Devin Drury

Work with Campus Life staff and students to define what a club and a service is to ensure that each is effectively serving students. A "Service Framework" will be created to define what requirements a service must meet to be considered a service and not just a club. Devin will consult Service Coordinators to create a "Customer Service Standard" for each service.

Increase promotions and awareness of clubs, services, and societies and what they provide. Devin wants adequate and informative signage within the Student Life Centre, encourage standalone websites for clubs, and will support Natasha with the digital signage initiative.

Increase collaboration between student groups, and increase event continuity and success by documenting best practices. Devin wants to create a publicly accessible database of events and activities run by clubs, services, and societies to provide information for future events.

Increase communication with volunteers in the Campus Life department to promote easier access to the Executive resource. Devin will utilize an improved research department to solicit feedback from students and utilize the feedback to critically assess existing services.

What Team Yellow has planned for Feds is both practical and attainable. They want more transparent processes, improved services, better allocated resources, proactive advocacy, and increased consultation; all in the best interest of students. Before we go around saying Feds does nothing for us, be sure to take the time to become informed, and you will soon realise they do much more for us than the running stereotype makes us believe.

Ontario PCs Announce Proposed Education Paths, Leading to Questionable Prosperity

JACOB TERRY
2T NANOTECHNOLOGY

Ontario has a new premier, which means the legislature will be back to business soon, there is now only one Liberal leadership election on the horizon instead of two, and the opposition is coming out in full force with policies they feel would benefit the province should they be elected. Ontario PC leader Tim Hudak was vocal in the last week on a variety of topics, specifically education and transit, presumably in a bid to bring attention to his ideas for how Ontario should move forward funding these sectors as MPPs again convene for legislature.

The PC plan for education, titled "Higher Learning for Better Jobs", is a 28-page report outlining twelve main ideas that they believe will put universities on track to save costs, improve quality, and give students better financial access than our current system. One aspect they do address well is noting that universities can no longer rely on growth and expansion as being one of their primary objectives. The world's population is decelerating in growth, and there's only so many people you can keep adding to a system before it becomes unsustainable to depend on growth, so it's best for any business, including universities, to find ways of maintaining successful operations without depending on everlasting growth.

However, some of the more questionable sections of the policy arise when the paper begins discussing its funding mechanism. In the paper, much criticism is directed at the current Ontario Tuition Grant (the source of your termly $800 rebate, students from Ontario), which the incumbent Liberal Party introduced after the 2011 election. There are certainly problems with the grant as it is now, notably that students in their last year at Waterloo and other schools with effectively five-year co-op programs are ineligible for the grant, even those who have not had any deferrals or repeated terms. It is also advertised as being 30% off tuition, where it is in practice a flat rebate to Ontario students and does not take into account the wide variance in tuition fees between programs and universities.

The PC proposal is to scrap the grant and replace it with school-managed aid and loans tied to various factors. Their argument is that studies have shown that as tuition increases, money allocated to low-income bursaries also increases, and that their goal would be to establish this practice of universities setting aside their own money for low-income students as they see fit when tuition increases. They also state that student loans should be tied to "rewarding good behaviour", which in their terms means "not only making the smart and efficient choice about where to go to school, but also keeping students accountable for how they choose to spend the money the government is lending them."

It's unclear what constitutes a "smart and efficient" choice, but the rest of the paper talks primarily about an increased focus on sending more students to colleges instead of universities. Part of the independence of heading to college or university is having the choice and freedom to choose wherever you feel is appropriate for you, and if you're an Ontario student studying in Ontario, you are currently guaranteed to receive the same treatment with respect to loans for studying at Waterloo that you would at Conestoga. If this is supposed to suggest that your loan funding would be tied to making the choice to go to Conestoga instead of Waterloo, or an Ottawa-born student having to choose Carleton over Lakehead since they could live at home, that reduces the ability for a student to independently determine their own future, leading to an experience more similar to the transition from elementary to secondary school where students are funnelled into their next school primarily based on location. Of course, having loan funding be tied to which school you attend doesn't restrict you from applying or attending, but for people who depend on student loans or other forms of aid to get into university, it could effectively remove their desired school from their list of options.

The alternative interpretation of this sentence is that students would have to pick an appropriate program. There are some instances where it is mentioned that students aren't getting jobs out of university, and trades need to be emphasized more when students are choosing programs. As with the previous scenario, shoehorning a student into picking tool and die over world history won't make them like it any better. It would be interesting to see what the people who wrote this policy chose, since political figures have a tendency to choose more arts-rooted courses, which you could argue don't get you a direct job out of university, but could likely help develop the skills to find a job outside of number-crunching and logic. Hudak has multiple degrees in economics, and Rob Leone, a Laurier professor who is the MPP for Cambridge and helped lead the writing of this policy, has multiple degrees in public policy. It could be argued that if they are attempting to funnel students through financial aid or other means into picking different majors that have more direct, applicable skills to the workforce, that they are trying to restrict the ability for students to follow what they had done themselves in past decades.

There is also an issue with a statement they make that follows shortly after, claiming that aid should be tied to students who are able to "demonstrate a minimum level of success". Again, it is unclear what defines student success, but tying financial aid to academic success will likely punish those who need aid but are not at the very top of their class. Already, most scholarships are heavily biased towards those who are able to demonstrate superior grades, extensive leadership and/or another superlative measurement. Biasing aid towards those same people only makes it easier for those people to get financial assistance while leaving those who are not at the same level not only trying harder to get through classes but distracting them from focusing on their studies by having to focus on finding more sources of income to pay for their schooling. Additionally, students who require more aid are more likely than not those in more expensive programs, such as accounting or engineering, which have much more rigorous and demanding academic workloads. So by tying aid to success, you make students in more challenging programs suffer or unintentionally steer them towards bird courses and other easier electives in an attempt to lighten the load to get better marks, so they can get more funding.

Some of the ideas the Ontario PCs have are good. There should be more students going into colleges when that is more appropriate for them, and colleges should focus more on being colleges and universities on being universities, instead of trying to do each other's jobs. The method they propose in going around this though is unacceptable and shows they do not truly have a good grasp on what makes students choose their schools. Hopefully, by the time the next election comes around, they will have put a bit more thought into how to get smart students from all income brackets to have an equal chance to attend our schools.

Counter-Strike Map Modeled on Montreal Metro Prompts $50,000 Fine

NANCY HUI
3A CIVIL

Diego Liatis and Frederik Denis face a fine of $50,000 for creating a map of the Berri-UQAM station in Montréal for the game Counter-Strike: Global Offensive, a first-person shooter game. The map was made for a LAN gaming competition at the Ecole de Technologie Superieure de Montréal in March.

After releasing previews of the map on YouTube, the two were sent a cease-and-desist letter by Montréal Transit Corporation (Société de transport de Montréal, STM) after the homage was previously approved. As the game clearly displays STM logos and maps, the STM may have a case for trademark violation. However, given the nature of *Counter-Strike: Global Offensive*, there may be other motives at play.

If someone created a virtual map of South Campus Hall, I'd be flattered, and maybe as gleeful as when Toronto City Hall blew up in *Resident Evil*. On the other hand, a map of Pacific Mall – where shootings have previously occurred – would be both flattering and slightly disturbing. A map of Newtonbrook Public School would just be in appalling taste.

It's not really dangerous, in that all of these – besides Newtonbrook, anyways – are public places, and that any maniac with a gun and a bus pass could scout them out. Both the British and American army has experimented with video games as training devices for soldiers but I really don't think bunnyhopping between benches, or being able to leap from one ground level to another without suffering impact damage is going to help anyone develop their real-world reflexes and abilities.

Claims that terrorists used *Microsoft Flight Simulator* to train for 9/11 are also unsubstantiated.

The point is, anyone planning to attack the Montréal subway will not base their decision on the existence of a *Counter-Strike* map, nor improve the effectiveness of their attack by training with *Counter-Strike*.

As for bad taste… well, would the STM be as offended if Liatis and Denis had published an extensive *Skyrim* dungeon modelled on STM tunnels and packed it with undead Nords? Not that political correctness has ever stopped modders, as evident from the extremely popular "Killable Children" mod for *Skyrim*.

I'm not familiar with the application of copyright law in this case, but if the STM is so intent on dissociating itself from the map, it's easy for the developers to rectify the problem. Liatis and Denis can slap peace signs over the system-specific logos in their map, take inspiration from the nomenclature of *Grand Theft Auto*, and re-christen their map "Tourtiere City Subway Station."

Point vs. Counterpoint

Industrial Exemption Repeal for Ontario Regulation 941 for Professional Engineers

POINT

COUNTERPOINT

Disclaimer: Since 2010, the Government of Ontario began to implement changes to section 12.(3)(a) of the Professional Engineers Act. This section of the act gave exception to industrial companies for the need to have a professional engineering license in relation to the machinery or equipment being used or produced by the company. The repeal of this act will now require industrial companies to have licenced engineers to either supervise or be the person responsible for performing the work previously mentioned. Other examples of professional engineering work include designing, installing, evaluating and composing the layout of new equipment and much more. As of March 1st, the repeal of the industrial exception act will become an official law.

FARZI YUSUFALI
3T NANOTECHNOLOGY

While the procedure changes made above seem convoluted and unnecessary as a student who works in such environments, the question is, would you keep this opinion when it comes to the safety of you and your family as consumers? Is the safety of the average person worth this inconvenience of being certified?

For one, what is the purpose of becoming a professional engineer and what is there to gain from such a title? With this designation, there comes, in its responsibility, additional accountability in the actions taken by such individuals. With that said, professional engineers are held accountable to any actions unlawful as well as unethical that would not be said otherwise when it comes to other unauthorized counterparts. Where a technician can only be held for negligent or illegal actions, a professional engineer can be held for much more than that. For instance, failing to mention conflicts of interest, being uncooperative with peers, or even being inattentive when it comes to technical documents can be punishable under the Professional Engineers Act. Such punishments include heavy fines, suspension of licenses, and, in some cases, criminal charges. With more severe punishments for working professionals for indiscretions as those mentioned, it would be more comforting to know that they are responsible for any products being given to the public.

What exactly is entailed in obtaining a professional engineer? While the necessary work experience under qualified professionals is required (which in itself is a learning tool for working ethically), an examination is required which tests the prospective professional engineers on the ethics and laws relevant to the profession. Again, technicians are not required to take such examinations to be qualified to work in their respective fields. While this may not seem to be of importance, it lends to the fact that every engineer has, in the very least, been exposed to the laws of being a professional and are aware of the rather serious consequences of failing to perform in their position. As such, a small form of negligence, such as inconsistencies between drawings for a new design in production would be punishable to a harsh extent for a professional engineer while a technician would not be held to such terms if the same crime was committed. Furthermore, such mistakes would become less common because certified engineers would know the consequences of such blunders and would do everything in their power to prevent them. At the end of the day, the manufacturing process will be streamlined and there will be less error overall since care is taken to prevent them. As the average worker on the production floor, the extra care taken in ensuring safe practices would ensure a safer working environment due to the reduced instance of danger. Finally, when it comes to the average consumer, design malfunctions and dangers would be less frequent due to this added care just mentioned.

Finally, how much harm is there in ensuring that all changes are signed by a professional engineer? From the perspective of the manufacturing body itself, it just ensures that the professional engineers, who are usually managers, are involved in every decision made on the floor. Sure, it means that there will be some additional time taken to ensure that the proper measures are taken to satisfy the new amendment being passed in a couple of weeks, however, there ensures a person of authority held directly accountable to any carelessness that should happen to occur on the production floor. With that said, since said person is held accountable to a higher standard than others in that workspace, such mistakes are less likely to occur due to the dire repercussions that are sure to follow. Unless, there is a huge overhaul in production, realistically, there aren't going to be major changes made every single day such that significant backlog occurs. Like all industry, these changes happen over time over which one more step has been added to the many required. In fact, by adding said step, there is less interference from external sources (in particular, the government) which can add significantly to the time required to make any significant change. For instance, when manufacturing a product for the public or installing equipment for the factory floor, certain government regulations must be met to ensure both the workers and consumers' safety. By reducing this back-and-forth communication between an external body and the industrial entity, there is a lesser probability of misunderstanding between officials since the onus of ensuring that such standards are met will be taken on by the engineer.

Going off of what was said earlier, having a professional engineer onsite especially makes the process of implementing change a more streamlined endeavour since the engineer will have a better working knowledge of the nature of work being done on the production floor compared to any external party. When authorizing such changes, the engineer will have the efficiency of the production floor in mind and will be personally invested in a modification that affects the safety of the workers and the consumers. As such, the professional engineer will use their discretion in this regard to approve such changes in a faster manner since they already know the environment as compared to an external body who would have to analyze the environment first before approving any changes. This also ensures that small changes like the layout and auxiliary plans for the production floor are done in a timely fashion as opposed to a drawn out process that is usually the case.

Yes, while this law means that there needs to be a shuffle in resources to accommodate the inclusion of a professional engineer into the normal working pace of industry, such a transition will be beneficial in the long run since someone to lose is being held accountable to uphold government standards for products and equipment while removing the unnecessary red tape to authorize any changes taking place in any manufacturing environment.

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Beginning with a very brief history spiel. The industrial exception has been enacted since 1984. The requirements, at the time, were to get approval by the engineers from Ontario's Ministry of Labour for pre-development of processes and equipment. The requirement proposed by the exception was later replaced by a different regulation (Regulation 851), which fell under the Occupation Health and Safety Act. This, in fact, is the current requirement for industry where they must seek approval from professional engineers for pre-start health and safety reviews.

The Government of Ontario brought in this change to promote more competition in the current business market. However, there are a few problems that seem to have been overlooked. The first problem circles around start-ups and any other newly proposed businesses that are aiming for mass production. With the need to either hire and train another permanent employee (who is a licensed professional engineer or plans on applying to be one) or to hire an external consulting firm, the cost of starting up an industrial company increases. With everything from new equipment to modifications now needing a seal of approval from a licensed engineer, the cost of set-up may be unfeasible for many of the entrepreneurs out there.

...the additional cost of the licensed engineer approval can go nowhere but to the pockets of the engineers who sign and seal the papers.

However, all these additional costs also impact current industrial companies. Large companies may not have enough licensed professional engineers to accommodate the changes being imposed by this repeal. This would mean that these companies need to rush to hire more professional engineers as well, which does create more jobs, but the selection is from such a specific group of people that it doesn't really help society at all.

Another issue that arises is the amount of wasted time due to getting constant approval from a licensed professional engineer. Rather than having the design and implementing the changes within the company, this act will now require the company to wait until everything is properly reviewed, signed and sealed. All of this will also depend on the availability of the licensed engineer, which could be a hassle if the company is relying on an external consultant to undergo the review process. This delay could then result in major financial losses, depending upon the importance of implementing the new design.

Furthermore, with the implementation of the modified act, it will allow companies to have more standard regulations. However, now meeting these regulations is dependent more on the professional engineer rather than the government itself. This could lead into many ethical problems, where licensed engineers could provide approval with very little concern over any alarming aspects of the design. This could then lead to many workplace hazards and possibly endanger employees significantly. An additional ethical problem could be the implication of a company using its licensed engineers from different departments for the approval of the said equipment implementation. Though the person approving the design is a licensed professional engineer, by signing and sealing a project that is outside their field of knowledge, they are in fact going against the Professional Engineers Act and what it stands for.

To continue, like with any other law or act modification, it requires the use of tax payer's money. The government has spent a great deal of money to host seminars and webinars, company site visits, etc. over the past 3 years. All this money spent for changing a section of the Professional Engineers Act that has brought up very little problems in the past, if any.

Finally, the biggest problem of the repeal of this act is that it will actually take money away from the economy. The reason for this is that the additional cost of the licensed engineer approval can go nowhere but to the pockets of the engineers who sign and seal the papers. It can't even go to the Professional Engineers of Ontario organization because that is non-profit. Therefore, industrial money will go straight to a small group of individuals rather than to hiring more employees to increase the job market, create more products that consumers can buy to help stimulate the economy or even research for the improvement of processes and products.

It can possibly be said this is almost like monopolizing the available money, where a few people really benefit from the change, but that is all. How does this help the common folk? Increased safety and more standard requirements is what we are told, but has anyone really had a problem with the way industries designed and maintained their equipment in the past? Employees could always rely on the health and safety act to ensure their own safety in the work environment. Does having additional approval of a licensed engineer, who is already approving the pre-start and safety reviews, really improve upon it enough to justify this repeal? Not too long ago there was a huge concern about the rich getting richer, and the poor getting poorer; does this not fit into this concern?

Study Finds One Percent of Trips Contribute to 18 Percent of Congestion

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A preliminary December 2012 study conducted by the Massachusetts Institute of Technology and the University of California has identified the source of traffic jams in the Boston and San Francisco area by tracking vehicles using three weeks of anonymous cellphone and GPS signals.

This study is notable in that is it the first traffic study to track travel using anonymous cellphone data rather than traffic surveys or censuses.

Over the course of three weeks, researchers collected cellphone logs from 680,000 commuters to obtain information about travel routes in Boston and San Francisco. The logs identified the towers used to transmit calls, and allowed researchers to trace each individual's commute from origin to destination. A driver's home neighbourhood was inferred based on the regularity of a travelled route and the volume and location of calls made between 9 PM and 6 AM. This information was combined with population density and capacity of road networks to determine which neighbourhoods contributed the most drivers on each road segments.

However, cell tower data provides good location about location and routing, but imprecise at positioning. Thus the data collected was checked by obtaining traffic speed from GPS sensors in taxis, from which congestion levels were determined.

It was found that during rush hour, 98% of roads in Boston were below traffic capacity. The 2% of roads over capacity included highways, a number of downtown streets, and some suburban arteries, all of which were key to connecting different parts of the metropolitan area. Additionally, only a small number of drivers from a small number of neighbourhoods were responsible for congestion on major routes. Delaying 1% of trips across an entire road network would reduce congestion delays by 3%, but cancelling trips in carefully selected neighbourhoods reduces travel times across a road network by up to 18%.

Study authors note that although it is easy to point fingers at which suburbs are responsible for the traffic snarl (why hell-o, Streetsville), it is still difficult for policy makers to decide whether and how to target specific geographical areas.

The authors anticipate that their methodology could be applied to almost any urban area where population density, topological road network information, and cellphone data are available, especially in the developing world, where traffic surveys are not in widespread use.

Google Leaps Headfirst Into Hardware

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The main news in the technology world in the past couple weeks was the PlayStation 4 reveal, but Google took the opportunity in the same week to announce some updates to its ambitious Google Glass project.

Google Glass was first shown in a video last May, demonstrating some basic concepts they had been working on for a glasses-like display. It was initially assumed that Glass was a prototype of Google's vision for the future, one of those videos that never gets released but shows that the company has an idea of how we should live in the future. At their Google I/O conference the following month, Google demonstrated a live demo of skydivers using Glass to jump down onto the presentation centre's roof, followed by bikers who rode off the side of the building in an impressive and flashy demonstration of the technology. They then clarified that the technology was not just a prototype but that they intended on bringing a $1500 Explorer edition to developers sometime in early 2013 and a consumer version within a year afterwards.

News from Google this week suggests that they are making good on their promise and aiming to allow creative individuals to pre-order Google Glass, in addition to the developers who have already preordered, for the same $1500 price and an entry into a short competition demonstrating what you would do with the device. They have also pushed up the estimated launch date to late 2013, and said it will cost less than the $1500 charge that developers paid for pre-orders.

Google's new video shows some updated interface and usage scenarios so people have a better idea of how the device can be used. A little soft grey rectangle sits up where the display is in the lens frame, and Glass is alerted by either lifting your head up or touching the side of the device. Once it has been alerted, commands are ordered by saying "OK Glass", followed by what you would like the device to do. The command structure is very similar to Google Now on Android, making this seem like a natural evolution of their existing technology. Glass has so far been demonstrated to take commands on directions, voice messages, web searches, video recording, Google+ Hangouts, photos and translations. The recording feature shoots surprisingly high-quality 720p videos, an impressive feat considering the tiny frame of Glass.

Glass works by connecting to Wi-Fi networks, or by Bluetooth tethering to iOS and Android devices to make use of their cellular data. It has a GPS chip as well which may help in assisting with the integrated location services. Software features will be updated on a monthly basis once the developers start receiving their pre-orders.

The device itself has a more finalized and finished form than when we had seen it last. At first it appears to be a normal pair of glasses with a weird rectangle in the upper corner, but in most images there are no lenses. The frames come in grey, blue, black, orange and white plastic which contains all the hardware. The design allows for swappable lenses to allow for sunglass lenses or prescriptions if they are able to build the correct partnerships. Unfortunately, it is still strange enough that it could have the potential to make you feel self-conscious if you were to wear it on the street, since it has a bit of a science-fiction look. Google is apparently in talks with Warby Parker to work on the design aspect, to come up with something a little more wearable to the masses.

Google also unveiled some more traditional hardware during the same week with their new laptop, the Chromebook Pixel. Originally leaked through a video that people suspected was fake, it turned out to be Google's first laptop made with their own hardware, running their desktop operating system Chrome OS. The 12.85 inch laptop has a resolution of 2560 pixels wide by 1700 pixels tall, giving it a pixel density of 239 pixels per inch, narrowly beating out Apple's 13.3 inch MacBook Pro Retina display, which has a density of 227 pixels per inch.

Apple's high-resolution laptop is the first obvious influence in the design and marketing of the Pixel, right down to the arrow key design, distinctive hinge, trackpad and profile. While it's not Apple's right to be the only ones with thin laptops, it would be naive to assume that Apple was not a major influence in how the laptop was built. Some improvements have been iterated on Apple's design, like improved keyboard noise filtering when using the microphone and more rounded edges on the laptop's body to avoid having the sides dig into your wrists.

One feature Google brings that has only primarily been seen on Windows PCs before is a touchscreen, but a demonstration from *The Verge* showed that even with a lightweight operating system, the scrolling is still fairly jerky. Chrome OS is also essentially Google Chrome minus the operating system, so playing your favourite games outside of ones you'd find on Facebook or Google+ (i.e. Flash games) will be out of the question. That's great for people who only want to use those web applications, but surprise, the Pixel costs $1300, and comes with a paltry 32 GB of SSD storage.

endtasks.com

The Google Glass design allows for swappable lenses to allow for sunglass lenses or prescriptions

If it's all web-based, naturally everything is being stored on the server in your Google Drive account. You get 1TB of Google Drive storage for each user for three years free. After that though, you'd have to pay up the $50/month it costs to have the same privilege. Assuming you only expect three years from your computer, maybe the same deal will be on once your free period ends and you can get another one, but that's an awfully high price to pay to store your files basically on your computer. The MacBook Pro it's competing with costs only $200 more, comes with 128 GB of SSD storage, and has an OS that will actually run most of the applications you would want, plus can partition into Windows for anything that doesn't run on it.

A Windows laptop may not necessarily come with the high-resolution screen, but you could get one with similar or better specs than the Pixel for the same price or less, and run pretty much everything you'd need. The resolution on the Pixel doesn't really seem to be worth the investment, considering the most you'll be getting out of it is cleaner gradients on Google's websites and some low-intensity web games that will look a little smoother than they would have otherwise. The Pixel certainly fills a niche (however small), but the appeal of this laptop will only be fully realized if it becomes cheaper or our Internet connections can bring us richer applications and constant connections.

To wrap up their week in news, rumours have been circling that Google may be planning to follow Apple and Microsoft's footsteps in introducing Google Stores. Where they would be is uncertain for now, but would be an ideal location to demonstrate how Glass works in person and would likely help in pushing a few Chromebooks. If this holds true, Google's jump into hardware will be bold and risky. If it succeeds, it will certainly cement its leadership position in the technology industry for years to come.

You Can Now Buy Pizza With Bitcoins, But That Doesn't Mean You Should

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3A CIVIL

A startup called PizzaForCoins now allows users to pay for the delivery of Domino's pizza with bitcoins, with Pizza Hut and Papa John's soon to follow.

Bitcoins is a decentralized experimental digital currency that can be exchanged between computers or through physical banknotes and coins. Their distribution relies on a transaction log that timestamps, records and verifies transactions to prevent double spending.

These transaction verification activities also award bitcoins to the bitcoin nodes, or bitcoin miners, who run software to verify peer-to-peer transactions, because it requires intensive computing effort and electricity. The total current value of circulating bitcoins is $275 million.

The bitcoin currency was originally implemented by an individual or group known as Satoshi Nakamoto. In 2008 Nakamoto published a paper arguing that money is an arbitrary object accepted as payment for goods and services. This coincided with the American financial crisis. In 2010 Nakamoto designed and implemented the original bitcoin protocol. Nakamoto ceased contributions to the bitcoin movement soon after.

Despite the years since bitcoins were introduced, bitcoin use is still far from mainstream, since few are willing to devote the computing power required to process transactions, it's not recognized as a currency by the World Bank, and governments haven't figured out how to tax it yet. Since it is difficult to associate bitcoin addresses with real-life identities, bitcoins have become the medium of exchange on several online marketplaces, most notably the Silk Road, which sells both legitimate and illegal products, ranging from apparel and books to pornography, machine guns, and drugs.

By itself, using bitcoins to pay for pizza is neither novel nor practical. In 2010, a pizza was purchased using 10000 bitcoins. Today, 0.72 bitcoins – or $16 US – buys one large Domino's pizza with two toppings, but for $16 you could instead buy two medium double-topping pizzas with tax and delivery fee included on Dominos.com. Either way, the premium for secrecy is pretty redundant since an address needs to be provided to PizzaForCoins in order to receive the pizza. Is there really room for bitcoins in the pizza market? What kinds of munchies are so demonized and reviled they require the utmost secrecy to satisfy? Unless you're the president of Pizza Nova scouting out the competition or regularly prank call Dominos, using bitcoins for privacy is a little bit paranoid.

Furthermore, PizzaForCoins is not the only service to accept bitcoins as payment. WikiLeaks, LaCie, and the Electronic Frontier Foundation have all accepted bitcoins for donations at one point. Kim Dotcom's filesharing service Mega accepts payment in bitcoin. Over 1000 merchants support bitcoin usage under the BitPay payment processing service. Financial firms such as Morgan Stanley and Goldman Sachs are reported to have visited bitcoin exchanges up to 30 times a day.

PizzaForCoins makes it easier to exchange bitcoins for real-world goods, but doesn't make it significantly easier to acquire bitcoins or receive pizza deliveries. The startup's founders hope that they will later be able to acquire the volume of sales required to get discounts on the giftcards PizzaForCoins uses to buy pizza and pass those discounts on the customer.

Until then, you're better off getting pizza without the middleman.

Surface Pro: Release or Remake?

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The long awaited successor to the Surface RT has finally arrived. After months of waiting, users can now finally experience what the RT *should've* been like. It is a responsive, multi-purpose tablet that functions in the awkward area between a tablet and an ultrabook. There has been some very interesting pre-release and post-release news that surrounds this fledgling in the hybrid space of a tablet and ultrabook.

Before the release, there have been major gripes about the memory that this device has. This is because the Surface Pro has a full desktop version of Windows 8 running on it. The 64GB model has 23 GB of free space out of the box, and the 128 GB model has 84 GB free. Many reviewers were freaking potential customers out with this point- you're getting roughly 50-60% of the advertised storage for the device out of the box! I mean, what's up with that? In fact, Andrew Sokolowski, a lawyer in LA had made a point of filing a sue against Microsoft for this problem – only with the Surface RT. He had bought a 32 GB model Surface RT but it only had 16 GB of free storage to use. Despite many reviewers highlighting this point, they have failed to make a comparison to another popular device that (with a stretch in definition) is similar to the Surface Pro in its hybridized nature as an ultrabook in an ultra-portable form factor – the Macbook Air. That's right, the Apple Macbook Air has 128 gigs but it has a higher reported usable storage space due to the fact that it uses a base 10 system to calculate its free space, as opposed to Microsoft who uses a base 2 system. As a result, Microsoft products will generally have a lower reported free space. What's more, the models being shipped out to retailers use a slightly different Windows 8 disk image than the image used for the pre-release reviews. This means that the 83 gigs of free storage may actually be "boosted" up to 89-90 gigs at the models provided at the retail launch. Taking this into account, if the Macbook Air and Surface Pro both use the base 2 system calculation the Macbook Air would have 92.2GB of free space, and 89.7GB for the Pro (both on 128GB models).

All this aside, the launch day for the Surface Pro was certainly interesting. Within hours, the 128 GB model had sold out in online Microsoft stores. Also, in an even shorter time period, the 128 GB models had sold out in all the big box retailers and brick-and-mortar Microsoft store locations. For a product to sell out on its launch day is definitely a great thing, but what if a large portion of the people who went to the stores had reportedly only found one to 5 units in stock – and even none for some? Understandably, this may have been a move by Microsoft to pull back on its sales in some sort of fear that it will not perform as well as expected after underwhelming amount of units sold for the Surface RT (they had sold less than half of their expected amount in the first month of sales). Another possibility could be that Microsoft was trying to get under the banner of accomplishment of selling out on the opening day, resorting to tactics such as under-stocking the stores. No matter how you look at it, it is unacceptable for a company to keep so many customers waiting on a day as important as its launch date.

The reviews for the Surface Pro have largely been asking the same question: Is the Surface Pro a tablet, or an ultrabook? Microsoft has said that they had designed the Surface Pro with the idea in mind of combining the Macbook Air and the iPad. It's the first of its kind. Even though there are other tablet/notebook hybrids out there like the Lenovo Yoga 13, there has definitely not been the same level of thought and attention paid to detail as in the Surface Pro. This is exactly the problem that people may find in this product – despite the stellar effort put into creating this product, it does not entirely encompass either a tablet or an ultrabook. It is a device full of compromise, a few points to illustrate this would be that it's a tad too heavy to be a tablet, but the screen size is a bit too cramped to be an ultrabook. But if we look at all of these reviews a level higher – we realize that we cannot compare it to any single tablet or any single ultrabook because the Surface Pro is exactly neither of these. It is a hybrid, a product in its own class. It is the first in its class of hybrids. A property of the Surface Pro that illustrates this point perfectly would be another gripe that the general public has with this product: its battery life. Compared to the popular Nexus 7 tablet which has upwards of 9 hours of operation, the Surface Pro only has at most 4 hours. But the Surface Pro as an ultrabook with 4 hours of operation is actually decent given its form factor. If the Macbook Air were to be shrunk down to this size, it would definitely be performing equally if not less in terms of battery life.

The Surface Pro may serve as a decent laptop replacement (I mean, if you're going to spend nearly 1 grand on this device, it would be best to not make it a secondary device right?) given its ultra-portability and for some, its' stylus is a major bonus too. But the Battery life and storage (which can be expanded thanks to the Micro SDXC card slot to 64 GB currently) can be a hindrance to some who cannot find an outlet on the move. Currently, this device is definitely part of a niche market. But this may all change when the next generation of mobile processors by Intel is ready for integration – the Haswell Chipset.

It's Alive! PlayStation 4 is Here!

JON MARTIN
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FUTURE OF GAMING

Well, it's official: the PlayStation 4 is coming out this holiday season, but there is still lots of info to come in the next few months, so let's look at what has been revealed so far.

First, a bit of a recap on the release of this info: About a week ago Sony released a video advertising a press conference on November 20 about the future of PlayStation. This conference was by invite only, though it was live streamed online – at a horrible quality that failed for me partway through. If you want to catch the entire presentation you can easily find it on YouTube. In the lead-up to this conference, Sony released a number of videos showing the evolution of the PlayStation brand, one each for the PlayStation through PS3, and another about the PSP and PS Vita. So in pretty much the worst surprise ever, Sony officially announced the PlayStation 4, focusing on its system specs (kind of), its new controller and camera system (kind of), network (kind of), and some of the new games under development. As you can tell from my description, the 'reveal' of the console definitely left something to be desired as they used a lot of buzzwords, pretty visuals and slides, but really didn't give many hard facts.

First the hardware where Sony did a great job of making admitting defeat and following everybody else sound like they were being revolutionary. The PlayStation 4 features an integrated CPU and GPU to allow for increased performance through shared memory and resources. The overall system uses 'supercharged' PC architecture and features 8GB of GDDR5 RAM. The RAM increase is definitely a great improvement (the current PS3 only has about 256MB of RAM) that will allow for much more demanding games. The funny thing is that Sony was really proud of themselves for being revolutionary when they brought out the PS3 because it used a Cell style system that was partially designed by Sony. While the cell system has great capability it was a pain for developers to program for and still is. The industry has traditionally used the same style of coding for pretty much all games – you design a game for PC and it will work on an Xbox without requiring a complete re-write of the code – but not with the PS3. Developers had to completely re-write entire games to work on a completely different system architecture. So now you have Sony bragging about how they are going with a PC architecture to help developers unlock the system's full potential – oh, so the same kind of system you ditched in the last generation for something revolutionary – welcome back Sony.

Another piece of hardware that was revealed was the new controller, which Sony pretty much had to show as pictures were leaked last week of the hardware. The cat was out of the bag and Sony had no reason to try and keep it a secret. The controller looks fairly similar to the PS3 controller (no attempt at another boomerang controller this time) with some minor tweaks to the controls. The analog sticks appear to have a concave top similar to the Xbox 360 controller, which should help with aiming so your thumbs don't slide off anymore. Also, the triggers seem to be changed to flare outwards rather than tapering back, again this is similar to the 360 and gives better grip. The biggest difference in the controller is the replacement of the Start and Select buttons with a single Options button, a new Share button, and a capacitive touch pad. The Share button will integrate with the new community based features Sony is pushing for the new console, but more on that later. The touch pad is similar to the one on the back of the PS Vita and will allow for new gameplay mechanics. A glowing light has also been added to the controller to mimic the glowing light on the Move controller. This light is the new way to visually identify the player instead of the numbered LED on the PS3 controller, and can also be used to indicate when a message is received or when the character is low on health. Sony has also acknowledged that while Move controllers for the PS3 will work with the new system, the Dualshock 3 controller (and all 3rd party I would assume) will not work with the new system.

The PlayStation Eye camera is also getting an upgrade, with the new camera looking more like a cross between the Kinect and Wii sensor bar. The PS4 Eye contains dual cameras and four microphones which will be a huge gain for Move based gameplay. That's another thing – Sony is pushing Move still, and it will apparently be even better with the processing power of the PS4 backing it.

Features of the PS4 focus a lot more on integrated networking and interaction with friends. The new PlayStation Network is being developed with a focus on video game streaming abilities. This will allow for games to be played while they are downloaded, or even through the cloud potentially. Sony is also pushing an instant-play functionality, where you can simply press the power button and the system will go into an extreme low power mode while caching your gaming session into memory. When you return you just start up the system again and you can continue from exactly where you left off. Additionally, most, if not all, of the PS4 games will be playable from your PS Vita, which should hopefully give consumers more reason to purchase the portable system. Part of this network sharing is integration with your friends and social networking, and that is where the Share button on the controller comes in. Press that button on you can post video or screenshots from the last few minutes of gameplay (it appears to be cached for a period of time to allow for recovery of the perfect screenshot). Through the new network you will be able to view live broadcasts of your friends playing their games, and even take over their controller if they need help (is it just me or does that seem kind of creepy). Sony is also pushing for more sharing through your real identity, not just a gamertag style identification. Potentially mining from your existing social networks (like Facebook, Twitter, etc.) your profile will be based on your actual name and picture, with the gamertag remaining for times when you want more security.

Sony Entertainment Company

The new PS4 controllers come with an integrated touch pad to allow for new gameplay mechanics

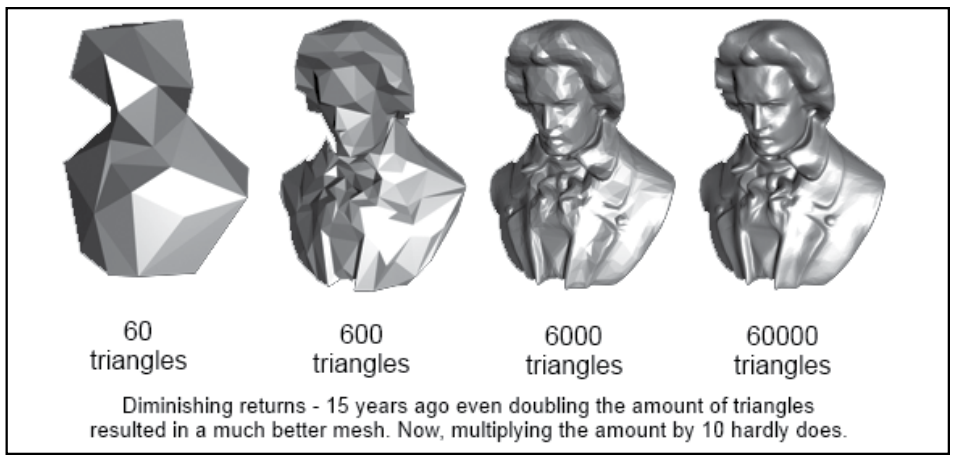
As part of their presentation Sony showed off several games that are currently in development, including *Kill Zone: Shadow Fall*, *Knack*, *Drive Club*, *Second Son*, *Deep Down* (Working title from CapCom), *Diablo 3* (coming to consoles from Blizzard), and *Destiny* (new FPS from Bungie). *Knack* is a platforming game similar in style to *Ratchet and Clank*, where your main character is a tiny robot that can use telekinesis to pick up items and weapons to increase its size. The sheer number of individual items that are rendered as components of the robot's body show the processing power being used.

In a similar thread, Sony showed the development of video game characters through the years as the processing power increased and polygon counts for characters increased. A beautiful rendering of an old man showed the potential for character modeling using up to 30,000 polygons. Of course, the detail of a character is not the end-all be-all of showing emotion in characters. The story and characters have to be good, you can't just increase their polygon count and assume it will suddenly make a boring character more emotive. Also, we are nearing the point where increased polygon counts are really useless. When you increase a character from 50 polygons to 500 you get a huge improvement, 500 to 5000 it is even better, but 5000 to 50,000 really isn't noticeable, so why put in the effort? Of course you could theoretically render ten times as many 5000 polygon characters on screen, but the improvement to a single character is pretty much pointless at this point.

So you may have noticed that I didn't comment on the appearance of the system, and there isn't an accompanying photo of the system for the article. Well, that's because Sony didn't actually show the console itself, which is kind of weird. Pretty much everybody interested in the next generation of systems knew that the PlayStation 4 was in the works, there were plenty of rumours about system specifications and new games under development. The fact that Sony was backing down and returning to a PC architecture was also already known. The new controller was leaked a week ago, and there was plenty of speculation about what its capabilities were. So besides some details about the network (which is still rumoured to be using a paid system like Xbox Live), and actual confirmation of some specific games, Sony really didn't deliver much. What would really have gotten people talking about the system would have been actually showing the system – what does it look like, what will it cost, and what is the actual release date? In subsequent reports, Sony executives confirmed that they haven't even seen the finalized console, while the new controller was only finalized a couple days before the news conference. Another press release had some actual data on the system specs, showing that the system will feature an internal hard drive (capacity and user-replacement is still unknown), Blu-Ray drive (support for 100GB discs is unknown), USB 3.0, and HDMI output. Interestingly, the console will apparently support 4K 'user content' such as pictures, but games will not be offered in the new HD level.

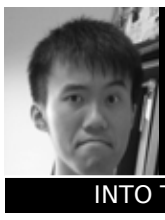
While news outlets rarely give any attention to gaming (unless they are blaming some kind of violence on games) they likely would have given more coverage to the release of the PS4 if they could have actually showed off the console. Showing off the controller? Definitely not as interesting. Everyone had their eyes on Sony on November 20th, and they had the opportunity to really show off the new system, but they didn't. Now they will likely wait until E3 to reveal the actual console, and it will be after this date that they can actually start advertising for the full launch (giving them a window of about four months). Sony had the opportunity to unveil the console and be the only real 'Next Gen' console in the news until Microsoft announces the new Xbox. Now they have lost the momentum they built, and Microsoft is going to benefit. Now that Sony has shown part of their hand Microsoft has the opportunity to plan an even bigger event (and maybe get the live streaming working better), show their new console, and steal Sony's spotlight. Consumers are visual people and nothing sells a product better than an image of the actual product, not just a listing of some buzz-words and veiled specifications.

Microsoft is definitely planning the best reveal they can come up with, benefiting from Sony's mistakes, and once again getting the opportunity to be the first console out of the gate (at least in terms of marketing) while being able to still view their competition. This will be a very interesting next couple of weeks as I am definitely expecting Microsoft to announce their own press conference within the next month. Until then, enjoy your current generation system, think about how you are going to be able to justify a new console (maybe you really don't need some of those textbooks), and Keep on Gaming.



Sony Entertainment Company

Coal-Direct Energy Nears Pilot-Scale Development



BRIAN SO
1B NANOTECHNOLOGY

INTO THE NEW WORLD

Liang-Shih Fan, professor of chemical and biomolecular engineering and director of Ohio State's Clean Coal research laboratory is pioneering a new form of clean coal technology. The new process will be able to harness the energy stored in coal without burning it and as a result, capture 99 percent of the carbon dioxide emissions. This new process, dubbed "Coal-Direct Chemical looping (CDCL)", was successfully run for 203 hours by a team of researchers at the Ohio State combustion unit at the Ohio State University. This is a major milestone, and the technology itself is very near ready for testing at the large scale.

Fan states that "In the simplest sense, combustion is a chemical reaction that consumes oxygen and produces heat. Unfortunately, it also produces carbon dioxide, which is difficult to capture and bad for the environment. So we found a way to release the heat without burning. We carefully control the chemical reaction so that the coal never burns – it is consumed chemically, and the carbon dioxide is entirely contained inside the reactor". According to Dawei Wang, a research associate and one of the group's team leaders, commercial-scale use of CDCL plants will be able to help keep the air clean and create new jobs for America in addition to promoting the country's energy independence as America's natural resources would be used.

One would think that harnessing energy from coal without burning it is a common goal of many labs in the world – and it is. The thing that separates Fans' lab from the others is the way they process fossil fuels. The Ohio State group studies coal in the two forms that are already widely used in the coal industry – crushed coal and coal-derived "syngas". Syngas has already been successfully studied in a second near commercially complete unit, using a similar process called "Syngas Chemical Looping (SCL)".

No other lab has been able to run a coal-direct chemical looping unit for as long as the Ohio state lab. According to Elena Chung, a doctoral student who is part of Fans team, the team could have actually ran the experiment for a longer time period. "We voluntarily chose to stop the unit. We actually could have run longer, but honestly, it was a mutual decision by Dr. Fan and the students. It was a long and tiring week where we all shared shifts," she said. At any one time, each of the units produces about 25 thermal watts.

Due to their successes, the researchers are about to scale up their technology for use. A larger scale pilot plant is being constructed at the U.S. Department of Energy's National Carbon Capture Centre in Wilsonville, AL. This new plant will be able to produce 250 thermal kilowatts by using syngas.

The CDCL technology involves two main things, ground-coal powder measuring roughly 100 micrometers across per particle, and larger metal beads of iron oxide at 1.5-2 mm in diameter. These two components are heated to high temperatures which results in a reaction where the coal binds with the oxygen in the beads creating carbon dioxide, leaving behind iron and coal ash. As the waste iron is so much larger than the coal ash, separating the two requires little work. The iron then oxidizes again as it is introduced to oxygen and may be recycled for use again. The coal ash is then removed from the process.

This new technology exceeds the goals of that the DOE has set for clean energy, as it captures nearly all of the carbon dioxide. As such, new technologies that use fossil fuels should not raise the cost of electricity by more than 35 percent, at the same time capturing much of the carbon dioxide created in the process.

North Korea Opens 3G Data To Foreigners, Citizens Still Left in the Dark

JACOB TERRY
2T NANOTECHNOLOGY

While North Korea has been keeping the strings in the Korean Peninsula tight over its nuclear program, a small window of freedom opened up in one of the world's most oppressive and isolated states as North Korea's sole mobile operator, Koryolink, announced on February 22 that foreigners in the country would begin receiving 3G data service before March 1.

This past January, Google chairman, Eric Schmidt, visited the country to discuss the benefits of free and open Internet, among other goals. At one point, he criticized the North Korean government for not allowing their citizens to have basic Internet access, forcefully noting that they would "remain behind" if they continued down their current path. He also noted that the current network setup by Koryolink already supported a million phones so it would be easy to implement data services for its current subscribers.

The mass North Korean populace has access neither to the Internet nor often with anyone from the outside world. Schmidt's daughter, Sophie, maintained a blog covering their trip in North Korea and, at one point, noted that she gathered that "North Koreans are taught to believe they are lucky to be in North Korea" and that it appeared similar to "The Truman Show, at country scale". While some do have limited mobile phone usage, access to the Internet is completely unavailable; when it is available, it is either to the Korean intranet in the universities or, if one is lucky enough to access the Internet, users are literally supervised over-the-shoulder. The lack of Internet is likely not the biggest concern to the well-being of North Korean lives, with food and other basic needs in routine mass shortage, but can open up citizens to ideas and education from around the world.

Koryolink's move to allow foreigners access to their Internet services will give visitors the ability to communicate in a country where they only recently were allowed to keep their cellphones when entering. Unfortunately, this doesn't help the country's millions of citizens gain access to an increasingly important global resource but, hopefully, it is a stepping stone towards more personal freedom for North Koreans. If the citizenry can gain even limited access to the Internet, it may help the country prevent themselves from falling even further behind technologically and economically but, given the current state of the country's leadership, it is more likely there won't be much further change with respect to ordinary citizens.

Volkswagen Debuts 261 MPG Production Ready Car

ANDREW FISHER
4B CIVIL

In the world of the automotive industry, fuel efficiency is the number one priority. Just this past year, our neighbours to the south mandated an average 54.5 MPG fuel efficiency standard for automotive manufacturers by the year 2025. That is an 80 percent improvement in mileage! Not too soon after, the Canadian Government agreed to draft new rules which would harmonize with these standards.

In order for automakers to meet these lofty standards, they must sell more fuel efficient vehicles. This means more hybrid and electric cars added to their lineup, all of which need to be at an affordable price. After visiting the Canadian International Autoshow (CAIS) this past week, it was clear this was the trend. Almost every model had a hybrid variant and electric cars were more preventable than ever. Fortunately hybrid vehicles are becoming a status symbol to the public eye, and with gas prices not getting any lower, the demand automakers have hoped for is present.

One of the big announcements which came this week was Volkswagen's new 261 MPG (0.9 L/100 km) production ready XL1. Previously shown as a concept vehicle in 2011, it has only now been revealed as a production ready model.

To put this mileage into perspective, a road trip from Waterloo to Vancouver in the Volkswagen XL1 would cost the traveller approximately $49 in fuel. This is outstanding considering doing the same trip in a Smart Car would cost the traveler $355, and in a standard mid-size sedan $534. This is assuming a gas price of $1.27 per liter.

As a result, this car is billed as the most fuel efficient vehicle on the road. Its small dimensions of 3.8 m long and 1.15 m tall make it only roomy for 2 occupants, but keeps it lightweight. On top of this, extreme weight saving measures, including a 1.2 mm thick carbon-fiber reinforced plastic body, and a 3.2 mm thick glass windshield sees the XL1 weigh in at 795 kg.

The car is powered by a diesel-electric plug-in hybrid system. This system combines a 0.8 litre two-cylinder diesel engine, electric motor and a seven-speed transmission. The electric engine is powered by a lithium ion battery. The combined power of the two engines is 73 horsepower, which is slightly more than the 70 horsepower Smart Car.

Using its light weight to its advantage, the car is able to produce a 0-100 kph time of 12.7 seconds and a top speed of 160 km/hr. These are very comparable to that of the Smart Car; however the Smart Car is only able to achieve 36 MPG (6.5 L/100 km).

High Gear Media

The XL1 saves weight by using a 1.2 mm thick carbon-fibre body

The driver can choose between two driving modes: diesel-electric or pure electric. In pure electric mode, the car can travel 50 km on the lithium-ion battery alone. In diesel-electric mode, the diesel engine aids the electric motor by supplying additional power, allowing the battery charge to last longer.

For creature comforts, the XL1 comes with the standard features most new cars come with today. The trunk is located at the front of the car (the engine is located in the rear) and is the only large storage area available.

Although this is a production model, don't count on having one of these in your driveway anytime soon. Volkswagen plans to do an initial run of 50 cars, with production being altered afterward based on demand. Pricing has yet to be released, however speculation puts it between $45,000 and $100,000.

Full specs will be revealed at the Geneva International Autoshow where it is to make its official public debut.

NASA Developing New Fuel Efficient Aircraft and Procedures

NINA FENG
2A ENVIRONMENTAL
LEAFY THOUGHTS

In terms of modes of transportation, aircrafts are among the least environmentally friendly. They tend to have high fuel consumption, emit greater amounts of pollution, and even contribute to noise pollution. The situation only worsens with the ever-growing number of air travelers (expected to reach 1.21 billion/year by 2030). Many developments have been made to counteract their effects, including solar planes. Recently, NASA, partnered with Pratt & Whitney and Boeing, has also been attempting to remediate the environmental effects of planes.

The plane designs that are being developed have a lot of potential and may begin to be manufactured in 8-10 years. They have created a prototype of a blended wing-body aircraft, a stingray-esque model called the X-48B. It is made out of a light-weight carbon composite material with a larger wing surface to improve lift and reduce drag by increasing laminar flow(smoothing the airflow). The ultra-high bypass, open-rotor engines are more fuel efficient. Further, alternative fuels, batteries, and fuel-cells are being considered to run the engine. The twin engines are being placed on the plane body at the back, in hopes that it will direct the noise upwards. They hope to reduce noise pollution to the point where plane sounds cannot be heard past airport boundaries. The challenge with such planes include the fact that it's flat shape makes it harder to maintain cabin pressure and navigate at low speeds. Currently, NASA also works to implement smaller changes to the current tube-shaped commercial airplanes.

NASA's aeronautical research and development goals actually encompass many different green aviation initiatives, not only in the planes themselves. One goal is to improve the efficiency of air traffic management in order to reduce fuel consumption. This includes the addition of satellite-based traffic information, the improvement of communication methods, and the incorporation of new management procedures. For example, currently pilots are required to ascend and descend to their desired altitudes in levels, consulting with air traffic controllers at every stage. This, however, results in a waste of fuel. Direct climbs during ascension could reduce the fuel consumption worldwide by 188 million gallons per year, while continuous descents would reduce fuel by 218 million. With better coordination, flights could take more direct, efficient routes without longer detours, resulting in the conservation of 200 million gallons/year. The new plane designs aim to reduce the plane's fuel use by 33% - 50%.

In terms of pollutant emissions, it is thought that at least 6% of the gases produced by commercial flights can be cut. Currently in the U.S., commercial carriers create more than 250 million tons of CO2 per year, as well as copious amounts of nitric oxide (NO), nitrogen oxide (NO2), and sulfur oxides (SO2), all contributors to the thickening of the ozone layer. With the new regime, prominent greenhouse gases like the NOxs may be reduced by more than 50% by 2025.

NASA's space program might have been put on hold, but as they happen to be the inventors who brought us water filters, memory foam, shoe insoles, long-distance telecommunications, scratch-resistant lenses, and now fuel-efficient airplanes, perhaps the government should think twice about cutting their funding.

Being a Globally Aware Citizen on a Student Scale

CAILIN HILLIER
MASTER'S EARTH SCIENCE

Being a globally aware citizen is something everyone should strive to be. To me, there are two main components to this idea: education and action. In this instance, education refers to being informed about issues in your community and around the world. It means being privy to your government's actions, whether that is reading about new legislation or attending a town hall meeting. Having a scientific understanding of the world in which we live also leads to being globally aware.

As an undergraduate student, I was able to be very informed about things involving the Faculty of Engineering, and on occasion, the campus at large, yet I had difficulty prioritizing time to gather information at a large scale. With the internet, obtaining this information is not difficult and for that we are very lucky. However, making the time for this information is often challenging.

I have found it helpful to set aside time in my daily routine to obtain this type of information, whether it be a morning ritual to have with coffee or something to read before falling asleep each night. Websites like bbc.co.uk, cbc.ca/news, and therecord.com have all proved very reliable to me; I am sure everyone reading this has their own favourite news sites to frequent. I have also been pleasantly surprised by YouTube news broadcasts that have been both entertaining and thought provoking. One such example is SourceFed. It's heavily weighted towards nerdy, American news but informative and engaging nonetheless. Something I have been meaning to do lately is look into Twitter, reported as one of the most reliable news outlets at our disposal today.

It is also great to educate ourselves on a more general level. Choose a specific cause to learn about. Delve deeper into a topic mentioned in class. Investigate opinions and form your own educated ones. I am particularly interested in ted.com which stands for Technology Entertainment Design (TED), scienceadvise.ca produced by the Council of Canadian Academies, and switchboard.nrdc.org, the Natural Resource Defense Council Staff Blog. There are an endless number of sites out there so I encourage you to explore and share them with others.

However, there is more to being a global citizen than just being aware or educated. Part of being a citizen is to contribute, meaning one must act. It is not enough to merely have thoughts; putting those thoughts into action is the next step. Actions can take many different forms, including a myriad of things on scales both small and large.

Being politically involved is a great way to act on those well informed opinions we have. In case you didn't know, Peter Braid (peter.braid@parl.gc.ca) and Catherine Fife (cfife-co@ndp.on.ca) are Kitchener-Waterloo's Member of Parliament and Member of Provincial Parliament, respectively. Waterloo City Council meets throughout the year, normally on Mondays; they are open to the public. Meeting dates, agendas, and minutes, as well as many interesting bits of information, are available here: waterloo.ca/en/government.asp. Providing feedback and constructive criticisms of our government is the best way to make an impact. I find that in today's hectic world there are so many opinionated people around us. Opinions are great, especially when founded on evidence, however making something constructive arise from those opinions is much better. Write letters or articles or attend meetings to get the attention of important political figures that can inspire change. Starting a conversation regarding something you care about can be a great first step.

This leads to my next point. My personal passion is environmentalism and sustainability. This is something I have found to be sorely misconstrued from an ethical and technical standpoint due to economic motivation. Essentially, I feel like someone has misappropriated my cause. A common trend in today's society is to lead an environmentally conscious lifestyle. The promotion of energy efficient appliances and green products is continuous. From this vantage point, being ecologically friendly can seem cost prohibitive, tarnished by large companies. I urge you to be a smart consumer and look beyond the label of the products you buy. Just because something says "all natural" does not mean that it actually is.

Caring for our planet does not need to be at all expensive. And if done properly, it is so rewarding. As consumers, we are very powerful. Selecting in season, organic products, choosing fair trade alternatives, and visiting local farmers markets are all reasonable and ethically moral practices. Carpooling, conserving water, and being mindful of electricity use are highly beneficial steps. Making smart choices does not mean that we need to alter our behavior at all. Spend wisely, not necessarily more, and use everything consciously. Observe what you do. With that awareness, small changes are easy.

I recently attended a workshop on campus called Project WET (Water Education for Teachers), hosted by SWIGS (Students of the Water Institute, Graduate Section). The instructor of this workshop said something that really struck me. Canada is very naturally beautiful and abundant in resources, especially water. From our perspective, it can be difficult to imagine water scarcity problems that are all too real in different parts of the world. But we need to try to keep this in mind. We cannot be wasteful or contaminate this precious resource. As Canadians, we are environmental stewards and caretakers for the planet's supply of freshwater.

So from this mindset, here is what one person, one student, can do. Through my involvement with SWIGS Outreach, I have become aware of campus-wide events in the vein of this cause. The UW Ban the Bottle Coalition is a campus-wide effort to ban the sale and distribution of bottled water at the University of Waterloo. This team, comprised of SWIGS, Waterloo Public Interest Research Group (WPIRG), Bring Your Own Bottle (BYOB), and the University of Waterloo Sustainability Project (UWSP), meets every Monday from 3:30 to 4:30 PM in the WPIRG office on the 2nd floor of the SLC and is always welcome to new members.

Water 4 Life, taking place on Friday, March 15 from 11:00 AM to 5:00 PM on the BMH Green, is an awareness raising event to raise money for the Clean Water Project in Kenya. People can participate in 20 L water carrying events in an effort to bring attention to community-scale water shortage and sanitation issues. People can register in the SLC on February 26 to 28 from 12:00 to 2:00 PM. Booths and speakers will also be set up in the SLC throughout the day.

World Water Day, taking place on March 22 at Wilfred Laurier University, is presented in collaboration with the UW's Water Institute, SWIGS, and WLU's Water Science and Cold Regions Research Centre. This 4th annual conference is full of keynote speakers and discussion sessions in promotion of the United Nation's Water Co-operation theme for 2013. More information for this event is available here: wlu.ca/WWD_2013.

This year's campus clean up event, organized by the Faculty of Environment and SWIGS, is taking place on Friday, April 5. Everyone is welcome to participate, as this year's clean-up is set to expand to north campus around Columbia Lake. The exact meeting time and location have yet to be determined but will be posted on the campus event board and the SWIGS website (swigs.uwaterloo.ca) once information is made available.

The Waterloo-Wellington Children's Groundwater Festival, taking place from May 27-31 at the Waterloo Region Museum, is looking for volunteers. The objective of the festival is to educate youth about the environment and the importance of water conservation. More information for how university students can get involved as volunteers is available here: wwcgf.com.

All of the information above regarding campus events is something I am passionate about, however there are so many more programs available that might pertain more to your interests. To always find out what is happening on campus, visit uwaterloo.ca/events for the UW events calendar. The Engineering Society Calendar, available at engsoc.uwaterloo.ca/events, is another terrific resource. If you are interested in anything on campus, from student societies to joining a club or volunteering, feds.ca/get-involved is yet another place to visit.

While at the University of Waterloo, I have been endlessly inspired by work conducted by my peers in support of various causes. I hope that I might have inspired you to become educated and act in support of something that matters to you. And as a point of personal interest, take the time to go outside and truly observe the world around you. Time in nature has proven to promote health and well-being and de-stress. Start by aiming for one hour a week outside, without music or your phone, and just be. This Earth Day, Monday, April 22, be a global citizen.

The Value of Your Degree

KEVIN VELOSO
4C SOFTWARE
THE GRADUATING WARRIOR

Graduating students will be receiving their degrees in a couple of months! That is, if they submit their Intent to Graduate form by March 1. If they choose to complete their degree later this year, this form isn't due until the Spring 2013 term. Having earned their iron rings, the bachelor's degree is the next item (and possibly their last item) on their "to do" list during their time at Waterloo. However, what does it mean to have a degree? What is the value of the degree you will receive once you complete your undergraduate education? I believe that most students understand the value of the degree they will receive, but in this article, I highlight various aspects of the degree that contribute to its overall value.

Do you assess the value of your degree from a monetary standpoint? After spending five to seven years here, you've given the university tens of thousands of dollars, and thousands more if you're an international student! As engineering students, you pay more tuition for your engineering degree than almost all other students at the university. However, some lucky students have their parents pay for their education. Others have earned various scholarships and awards to help pay for their degree. Congratulations to you! Interestingly enough, as Waterloo is not a private school, a portion of the tuition is subsidized by Canadian taxpayers. Unless you've worked very hard to squeeze every dollar you have to pay tuition, not all students view their value of their degree from a monetary standpoint, especially with co-op assisting with financing tuition.

Maybe you view the value of your Waterloo degree through your co-op experience! As it is required for your engineering degree, you would have completed at least five co-op terms, which means at least twenty months of documented work experience. Some students may find that their co-op experience reflects more of their degree than any other aspect. As mentioned in previous issues, many students take on co-op jobs not directly related to their program, finding that their time at co-op may be more valuable than their time in lectures. There are some students that may have had one or two co-ops that weren't too pleasing, but still completed all their co-ops to fulfill their degree requirements. Just like the monetary perspective, the co-op perspective might not be the aspect of their degree that some students find as valuable.

Although the co-op program at Waterloo is quite distinctive compared to other post-secondary institutions, some students may feel that their education at Waterloo is what makes their degree valuable. Many students have learned a lot in their lectures and labs, applying what they've learned during their co-op terms. Maybe you're a student that values education as a large part of what makes your degree valuable, aiming for those high 90s, or even 100 if the instructor of the course bell curves the marks. Maybe you're a student that values your education, but doesn't get those high marks. My TA for Calculus 1 didn't care about the marks we got for this course, but he cared if students understood the material taught in the course. There are some courses, whether compulsory or a CSE, that may be about memorization and regurgitating information (CLAS 104 comes to mind) instead of focusing on concepts. However, each course is different, and each engineering program is different. Furthermore, the education you get at Waterloo may be different compared to the other students in your class who may be completing options offered in their program, or even minors if they're really ambitious. The educational experience one gets at this university can't be easily compared to others, even among the students of the same class. Some find learning from the textbook more efficient, and choose not to attend lectures or tutorials and still get high marks. Others may rely heavily on lectures and tutorials, even attending additional help sessions and office hours. Those that are getting as much out of their education from this university as they can may appreciate their education as a large part of what makes their degree valuable.

Kevin Veloso

What will your degree mean to you?

However, for a lot of students, including myself, the value of their degree comes from all the time spent during your undergrad. The degree you receive upon completing your undergraduate requirements will say what school you have attended. The University of Waterloo is a well-regarded school, widely known for its students and alumni starting successful companies, as well as making large contributions to the world around us. Notable former students and alumni include the founders of BlackBerry (formerly known as RIM), as well as the founders of more recent project and companies like BufferBox (a parcel pickup station and service) and Pebble (an E-Paper watch). Probably one of the reasons you've enrolled at the University of Waterloo in the first place is your appreciation of work that the students, staff, and alumni produced during their time here. Though you may not have begun a startups of your own, attending Waterloo has given you a large opportunity to participate in activities, clubs, and student societies. For those that aren't as active with activities and services available on campus, you may have instead spent your undergrad with friends that you've made during your time here. For a lot of students, the people they've met and the connections they've made here is what they find most valuable about their Waterloo degree.

The bachelor's degree you will earn at the end of your undergraduate may be quite valuable to you. Some people think that their iron rings are worth at least $60,000, but I would like to remind the graduating class that the journey's not over, that they still have to finish their 4B term before they can properly bask in their undergrad achievement. Whether you think the value of your degree comes from the money you've spent on tuition, the co-op experiences you had, the education you've gained, the time you've spent during your undergraduate years, or all of the above, it's no doubt that the degree you will receive is very valuable and means quite a lot. Engineering Class of 2013, convocation is less than four months away! Let your dedication towards completing your degree help you through your last several weeks in class! You'll definitely earn that degree in no time!

UW Leaders in Infrastructure: Meet the Leaders March 7

ASHLEY QUASHIGAH
4B CIVIL

In early March, four experts from respected engineering and construction firms will engage in a comprehensive discussion of the Canadian infrastructure industry. "Meet the Leaders in Infrastructure" will take place in AL 113 on Thursday, March 7, 5:15 to 7:30 PM. Students are invited to attend this event to meet with professionals and to understand the trends in the industry.

During the discussion panel, students can expect the panelists to discuss the emerging trends in municipal infrastructure and construction projects, provide insight on project management and professional leadership, and reflect on their past experiences. There is a Q&A portion in which students will also have the opportunity to ask their own questions to these industry experts. A networking session will follow this discussion panel, where students can personally meet a number of recruiters, EITs, and experienced engineers from companies like PCL, AECON, Dillon, MMM Group, Stantec, and Parsons Brinckerhoff. Prizes, including an iPad Mini, will be given away throughout the night thanks to the donations from our sponsors.

The discussion panel and networking event is one of the first of its kind for Waterloo Engineering. While the faculty provides an excellent technical background, there are few opportunities to enrich this training with professional skills that are expected of accomplished managers and industry leaders. Seeking to fill this gap, this event provides the opportunity for students to practice networking, which may be useful when approaching a senior director with an original idea, or when meeting potential clients. This event is for everyone – from the first year student intrigued by the construction industry to the senior year student looking for project and people management advice!

The event is hosted by UW Leaders in Infrastructure, which is a new initiative set out to bring the industry to campus, and weave the professional development experience into the academic terms. By providing professional relevance to the academic curriculum, the hope is that Waterloo students will make prudent co-op choices, informed academic decisions, and graduate as high-performance contributors to the Canadian infrastructure development industry.

Find us on Facebook at facebook.com/UWLeadersInInfrastructure

What is Intelligence?

KRISHNA IYER
3T NANOTECHNOLOGY

INTERESTING THINGS

With the rapid evolution of technology, there is a resulting change in the societal perception of intelligence. With smartphones in everybody's pockets, almost all of the information we would ever require is made freely available to us at the touch of our fingers. Over time, memory and intelligence have become more and more distinct to a large degree and no longer is somebody who can memorize a large amount of knowledge considered "intelligent" by most peoples' definition. In school, I remember that the children who could best remember the course material were considered intelligent. Technology is forcing a paradigm shift in that perception because we no longer have to rely on our memory bank to store copious amounts of information.

With this change, the relevance of the "two factor" theory on general intelligence is surfacing as a very important consideration. The two factor theory on general intelligence hypothesizes two different types of intelligence; Crystallized intelligence and fluid intelligence. Crystallized intelligence is the ability to use prior experience, skills and knowledge to solve problems by accessing some information from the long term memory. Fluid intelligence is the capacity to think logically and solve problems in novel situations. As an engineer, both these forms of intelligence are important for ones' success.

As a professional engineer, you are expected to apply concepts learnt in a university education to real life problems. University education assists in crystallizing the knowledge into the long term memory. This is why for a university education, tests and examinations are important as a gauge of understanding (not as a gauge of intelligence). Thus, when going into the real world, we can perform all the tasks that we once did for marks in a manner that is expected from professionals. Crystallized intelligence also includes learning from prior mistakes and not repeating them. This is obviously important for not just being a professional engineer, but also to survive.

With the evolution of technology, the importance of fluid intelligence is rising. With the access to the body of intelligence on the Internet on our fingertips, some things need not be crystallized into our long term memory. Just like we do not have to waste time on arithmetic labour when we have calculators, I envision a time in which you are not expected to remember information, but apply it. Such an approach is important to solve the bigger problems facing the global community. The idea of open book tests is very important for this. Although there is some debate as to whether or not fluid intelligence can be improved by training, open book tests are the university mockup of real world problems in which you have all the resources available at your disposal to solve problems. With the rate at which the vast body of knowledge known to man is growing, it is going to become imperative that a successful engineer be able to learn new skills rapidly and deploy novel solutions.

Some educators recognize the importance of fluid intelligence and are working hard to train students on developing such skills. One of the first instances of such things are some computer games that we played as children. The Carmen Sandiego series taught me a lot about history and geography and the Magic School Bus taught me about science and environment. I particularly remember a game in which we were supposed to build machines to perform specific tasks by first learning the principles of simple machines and combining knowledge from these modules to integrate a solution. Researchers say that enjoyable educational games increase fluid intelligence by stimulating creativity in ways that encourage plasticity of neurons and also enhance reaction times.

A Scientific American article illustrates a few tips to enhances your fluid intelligence. They are

- **Seek Novelty:** Do new and challenging things all the time! Novel activity triggers dopamine which is thought to stimulate neurogenesis and make new synaptic connections
- **Challenge yourself:** There are several activities you can do to challenge your brain. HOWEVER, once you get good at them, it is imperative that you move on to other challenging tasks and constantly challenge yourself
- **Think creatively:** Learning something in a creative and fun way makes you learn the topic better and have more fun learning. These may include things like rapping what you need to learn etc.
- **Do things the hard way:** Take the example of GPS. By using a GPS, your weak navigation skills get weaker. Instead, every now and then, challenge yourself to do things the hard way and you will be surprised by the results.
- **Network:** Meeting people and making connections often expands your horizons and consequently, encourages thinking farther away from "the box"

That is all I have for now. Have fun and get smart NOW.

Look at the Past... It Might Be Our Future

LEAH KRISTUFEK
2N CHEMICAL

As humans, our claim to fame has always been our ability to create and innovate. First, we invented fire. This discovery was soon after followed by the realization that, hey, if you stick meet over the flames it becomes oddly more delicious. As time passed on we progressed slowly but somewhat steadily. Some of our early inventions included tools and the wheel. Life was good, populations increased and farming became a going concern, towns developed, and cities grew up from them. People developed communication then used it to disagree with each other about changes they were willing to make.

These days we take it upon ourselves to constantly master new versions of our favorite software and devices as the old ones fall obsolete, something that seems to happen every 6 months. Society has gone from a family pack roaming the Sahara to hierarchies of power with lords in their castles commanding legions of serfs and slaves. People were granted rights and people have had those rights taken away.

For great innovations there are often great setbacks. Throughout history empires have risen and fallen, and with them, technologies have been created and suppressed. Things have been tried which have failed sometimes even after they were counted as a success. Lead Paint, Asbestos, products which create green house gases. When you look at it, a lot of what we see as permanent parts of human knowledge and inventions actually quite insignificant and flawed. All these efforts and these innovations that have occurred over the ages have been in pursuit of one thing and one thing only: an easier life. When things take a long time and are difficult, no one will willingly do it. People with power rise up and squash the less able down beneath them.

It was only recently that a large middle class has emerged, a group that is neither downtrodden into destitution or doing the treading. What is the main reason for this? Only in the past couple centuries has life been easy enough for most. Though it started with the industrial revolution, the discovery of oil and its portable energy properties has proven to be the greatest equalizer. With machines and robots to do high risk difficult tasks there is no longer a need for disposable labour. There is a future for everyone. In places like Canada, only details like the make and model of a car speak to your economic status, not whether or not you have one. Food again is plentiful, even if it is from far away. If you can afford to buy groceries, you can afford to buy imported fruits and vegetables. Oil has created prosperity for the common man. It's not to say it hasn't caused suffering too; there are many great wars to attest to that. But even then, wars have lead to social discourse, civil rights and change which often favours the common man.

The future of oil is questionable. The easily accessible supply is running out. That's why techniques once deemed too expensive are being employed in places like the Alberta Oil Sands to extract as much oil as possible. That is also the reason why companies are moving further north to the poles or deep under water where oil exists but is extremely difficult to drill. In the end, no matter the cost, we will still pay. We as a society like the convenience of our personal cars, the easy maintenance of natural gas piped directly in to our homes and our plastic devices. We use it up, even as we are constantly told it will run out.

The thing is, oil will not run out all at once just like it didn't pop up fully harness able at the beginning. So ask yourself, how will this go down? All those places we've discovered since the advent of planes and vehicles that even now rely solely on supplies being shipped in. There are all those cities without farm land and suburbs without factories or grocery stores. Not to mention the infrastructure we've knocked out. The train tracks converted to walking trails and family farms pressed from business by developers and cheaper imports.

What will happen to society? Who will get richer? What will we do, how applicable will the pencil pushers and desk jockeys of today be to the society of the future? The day might come that a car being driven down the street will be a cause for you to pause and watch. It might be a place where a Christmas orange is special because you will only ever see oranges at Christmas. There might come a time where you don't waste food not because of some poor child in Africa, but because of poor children in your own back yard. For all this technology we've created, the future might not look so different from the less recent past. Serfdom anyone? Oh, and what was the first use for the newly discovered oil? They used it to replace whales' oil as fuel for their lamps.

Armour Manufacturing At Home – Aren't You A Little Short For A Stormtrooper?

JON MARTIN
4B CIVIL

Anybody who has ever been to a Comic-Con can attest to the amazing costumes that cosplayers make in their own backyards to pay homage to their favourite characters in movies, comics, anime, and TV. One of the most famous cosplay groups is the 501st Legion – a group that makes movie accurate costumes of 'evil' Star Wars characters, including Darth Vader, Boba Fett, the Emperor, and every type of trooper (Storm, Scout, Dark). The 501st Legion is involved with many different organizations, especially the Make a Wish Foundation, where they fulfill the dreams of kids who want to meet Darth Vader and a contingent of his stormtroopers. While the 501st Legion is incredibly focused on detail, another group – The Mandalorian Mercs – is more focused on individual creativity. In the Expanded Universe, which refers to all the books, comics, and stuff outside of the core movies, the Mandalorians all had a similar visual style in their armour but each individual would customize their suit for their personal needs and style (like Boba and Jango Fett).

Some groups don't even build costumes. For example, the R2-D2 Builders Club, who build functional models of that famous astromech droid. In addition to R2-D2, members make their own R2 units, as well as R1 through R5 models. Most of these units are remote controlled with working lights, sounds, and sometimes even tools.

How does one actually make cosplay armour? In many cases, the suits you see at Comic-Cons are made by a small number of people who sell their work. A full custom fitted suit can cost thousands of dollars, and is manufactured to exacting standards, fitted with padding, often including a full microphone and speaker system. Many of these suits are made using vacu-form processes and fiberglass, which makes them very strong but also very expensive. But if you aren't really worried about having all the bells and whistles, or can put in the time and effort to add those yourself, then keep on reading.

This year I decided to make my own helmet for Comic-Con (FanExpo Canada specifically) and hopefully finish in time for IRS as well. While the snow day forced the cancelling of classes and kind of killed our costume party, it was still a great day, and some people may have seen the helmet pictured in this article. It is essentially made of fiberglass, but without the vacu-form molding.

The basic structure is made out of cardstock (100 lb) paper cut into approximately 500 pieces, folded and glued piece by piece. This paper modeling is commonly known as papercraft, and is not to be confused with origami. The goal of papercraft is to make 3D shapes out of paper, by assembling many individual pieces of the outside shell, based on corresponding tabs. The individual shape of a piece may seem weird, but when properly assembled, the flexibility of the pieces results in the model achieving the curvature and shape of the desired subject.

You can find printable papercraft patterns in pdf online. Some of my favourite papercraft models are a six foot tall Bumblebee (from Transformers) and a particular site that has every single Pokemon – both normal and 'shiny' versions. When you are using somebody else's model, you benefit from them having already figured out the flat shapes that are required to make a 3D model.

You can also make your own model if you can't find the exact subject you want, or a model in the level of detail you wish to achieve – and it's not as difficult as you would think. The most common program used is Pepakura Designer, available from tamasoft.co.jp/pepakura-en/ in both free and Designer ($38) versions. The program allows you to import a 3D model from many different industry standard formats and 'unfold' the model, breaking it down into 2D faces and suggesting a basic layout for the pieces. This initial suggested layout is always stupid for anything more complicated than a basic cube, as it normally results in multiple pieces overlapping on a sheet of paper – impossible to cut out. You can then use the program tools to split large pieces into smaller segments, and change the fold points of the model. For the Stormtrooper helmet, the model resulted in approximately 5000 faces, and about 500 pieces. Basic models are easy to organize for printing, but more complex models take exponentially longer. The difference between the free version and the Designer version is that only the Designer version can save files. Personally, I found the investment worth it as I ended up spending a lot of hours over my co-op term breaking up the 3D model to make it easier to build.

To obtain a 3D model, Google reveals that many people have done their own 3D modeling and have made the files available for free on the Internet, including the Stormtrooper helmet model I used. It should be noted that the higher the polygon count of the model, the more detailed it is going to be, the better defined the curves will be, and the better the final model will look. However, the higher the polygon count, the smaller and more numerous the paper model pieces are going to be. The model will be more detailed, but it will take much longer to build and will likely bring you to the point where you want to crush it in anger. The other trade-off comes in during the fiberglass process, where you will need to use automotive body filler to smooth the model. The blockier the model, the more body filler you are going to need ($$$) and the longer it is going to take to get the model smooth.

Jon Martin

A gloss clear-coat and internal padding finish off the helmet

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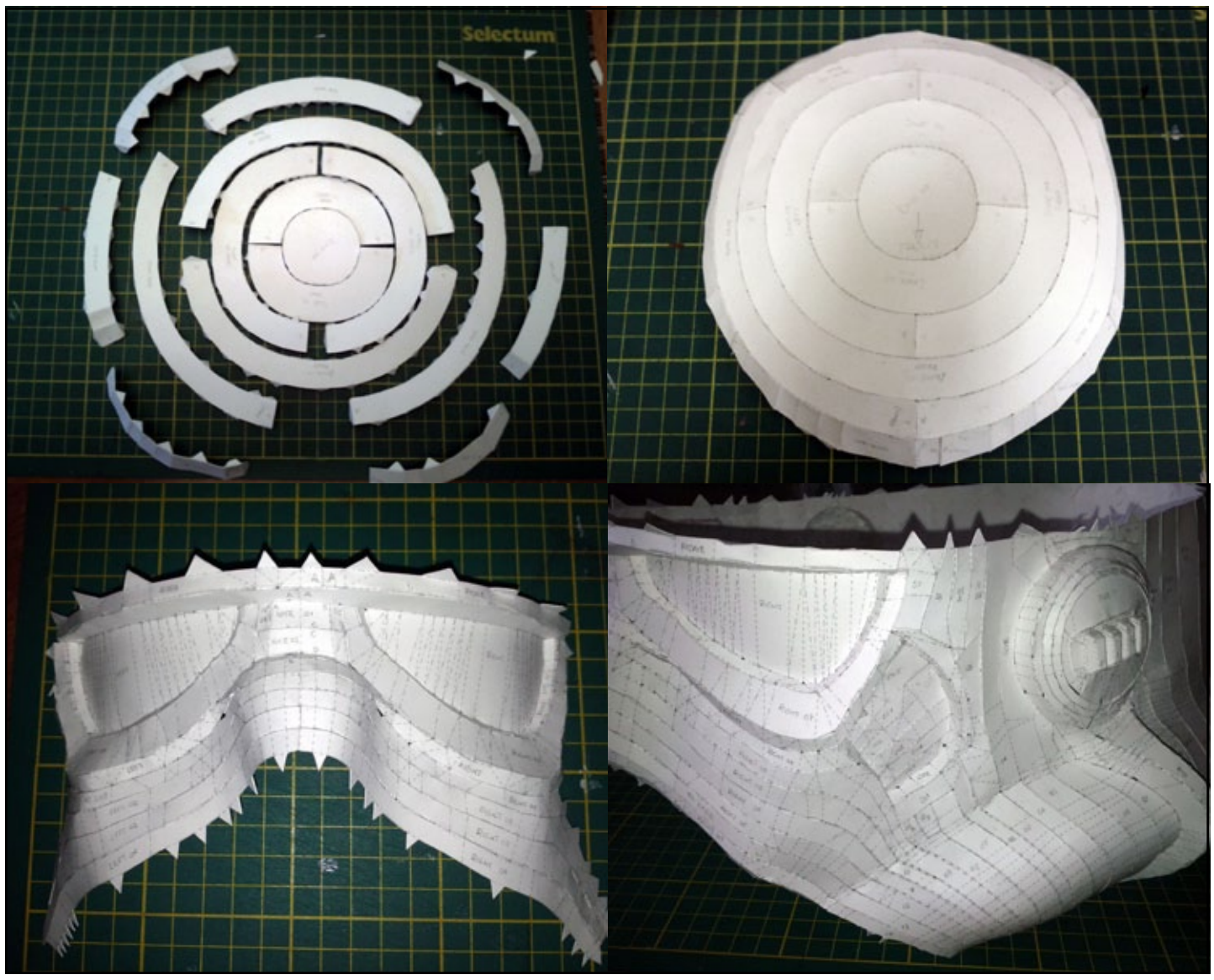


Jon Martin

The unfolded helmet design is printed on card stock, then creased, cut, and folded to create a solid paper shell

Once you have your 3D file unfolded, split, and printed to pdf you need to print the model. Here, you again have a decision to make. You could print the model on regular paper, which is approximately 20lb weight, but then your model will be really flimsy and will probably just dissolve when you apply the resin. So I would advise using cardstock, either 80lb or 100lb. I used 100lb cardstock, which is the same as business cards. FedEx Kinko's will sell you the paper and you can print it for a pretty good price – don't try printing on card stock in a home printer with a roller feed because it will either jam the printer or crease the paper a lot. Use an office style printer instead. I would definitely advise labeling the pieces in either Pepakura or by hand afterwards while referencing the unfolded file, as the many pieces will all start to look the same once they are cut out.

As for materials, you will need a hobby cutting board so you don't slice up the table you are working on, a hobby knife and spare blades (they will dull surprisingly quickly for cutting through paper), and simple white glue. Work on small sections at a time and cut out only a few pieces at a time so you don't lose them or get them confused. I found that a good process was to have one or two sections going at a time, cut, glue and hold one piece for a bit until the glue is tacky enough to hold, then cut, glue, and hold a piece on the second section. By the time the glue is tacky on the second piece, the first will be strong enough to start the process over again, attaching the next piece to it.

Another tip that I learned after hours of experimentation and horrible frustration is to plan the section you are going to build before you start, and choose them so that combining sections will be easier later on. As an example, in the Stormtrooper design I assembled the nose section up to the top of the mouth, then the mouth and chin as another section. When it came to assembling the final model and attaching these two pieces, the joint ended up right on the edge of the mouth and was extremely complicated and difficult to glue and hold correctly. Instead, building the mouth into one of the two sections with a few rows beyond would have put the joint on a simple line instead of on the complicated mouth section. Other areas in the model also required additional reinforcement, which the unfolding process cannot identify. You need to anticipate weak points, identify convenient joints, and problem areas that would benefit from a different construction process.

As you can see from the pictures, the final paper model will be relatively strong and stable – this is another benefit of using cardstock over paper, as the model can pretty much support its own weight without imploding. However, it will easily collapse under excessive loading, or if it gets wet (of course), which is why you will need to use a fiberglass resin. While you would normally use fiberglass sheet (a kind of mat of interwoven glass threads) soaked in resin, here the paper itself acts as the binding ingredient (so technically it really isn't fiberglass). The resin comes as a two part mix: a gel-like resin and a small tube of hardener. Follow the instructions and you can mix up the resin and apply it liberally over the entire helmet (put a sheet of wax paper underneath to protect your work surface) and it will soak into the paper. Don't apply too much resin as this could cause the paper to break down, and you will need to start over. One or two coats of the resin will bring the helmet to a point where it is basically fiberglass. If you really want to make it fiberglass you can put the resin soaked mat material on the inside. This will strengthen the helmet substantially, but is really annoying as the resin and mat will stick more to your gloves and brush more than to the helmet itself (I have a pair of solidified gloves and a paint brush that are literally solid fiberglass as proof).

After that optional stage, you are now going to improve the helmet structurally. The resin is very strong, but brittle, so you now bring automotive body filler into the mix. The filler is not very strong, but very pliable, so if you mix the two together you get a product that is strong and flexible to give the helmet a bit of flex. Mix the resin and body filler (which is also a two part product) in 50/50 proportions. Pour it into the helmet and spin it around to cover the entire inside. After one or two coats, you could probably stand on the helmet without any problem (not that I'm going to try it any time soon). You may have noticed that I didn't mention anything about the eye lenses – they are built the same as the rest of the model (paper, resin, and everything) which could be cut out later. The great thing about the model now is that you can use sandpaper and a Dremel tool to cut out the lenses and smooth out the surface.

At this point the helmet is strong but still has the polygonal surface of the paper model, so you need to prepare automotive body filler, apply it to the surface, and sand it smooth. As previously mentioned, if you made a more simplified model then you are going to be using a ton of body filler. I probably could have spent more time on this step, but in my goal to get the helmet done for IRS (and the Toronto Comic-Con, March 8 to 10) I sacrificed a bit on the finishing process after noticing some basic model assembly problems that no amount of smoothing would be able to fix.

Anyway, you are now onto the painting stage. Apply a layer of sandable primer, followed by basic gloss white automotive paint in multiple thin coats to allow for drying between layers. I used regular acrylic paint for the grey and black trim areas. A gloss clear-coat finishes off the helmet, with some added foam padding on the inside for comfort.

Overall I'm very happy with the result – especially since I had to do most of the resin and paint stuff in the garage in -10ºC weather, which seriously impacted the curing time. I'm thinking my summer project may be a full set of Mandalorian armour, hopefully finished for FanExpo in Toronto, August 22 to 25. If I have sparked your curiosity with home armour construction and you have any questions, feel free to email me jonmartin1138@gmail.com. I can also provide some of the 3D models I have acquired in my searches – including helmets and most of the full body armour for a stormtrooper, scout trooper, Darth Vader, Boba Fett, Iron Man, Daft Punk Tron, deadmau5, and several others including many of those Pokemon models and that Bumblebee one I mentioned. Have fun with your armour manufacturing!

Jon Martin

The Storm Trooper helmet progresses from a resin coated paper shell to a smooth, painted masterpiece

Wooah We're Halfway There

YASSER AL-KHDER
PRESIDENT

To the end of the term that is.

I know I can't believe it as well. Only seven (and a half) weeks left to this term. Since I don't have much to talk about (Hell Week and Reading Week are not as newsworthy as I thought it would be), I just would like to thank some of the people who have made the first half of this term so amazing.

Directors

Nothing makes me happier than seeing an event run really well, and my have there been a lot of those this term! OTs, ski trips, Genius Bowl, Resume Critiques, LAN Party, Therapy Puppies, and the PEO info session. These are just a few of this term's events that were super successful. I like to thank the amazing directors for putting in the time and effort despite having a full engineering course load. It's not easy, you know!

Executives

These guys rock yo! And here's a few example why. Peter drafted one of the best EngSoc budgets I've seen in a while. Catherine built the term's calendar, which was particularly tough this term since this term is one week shorter than other terms, and we had to accommodate to events such as IRS, GradBall, and Orientation Leader Retreat. Megan had to go through like a 30 page report for a meeting regarding the structure of our co-op program. And even though Kristina just got elected for VP External, she's already been busy with attending PEO meetings and coming up with ideas to raise awareness of Women in Engineering.

Communications Commissioner

Did you notice that the weekly events emails look slightly different on your smartphone when compared to checking them on your computer? That's because Alessia, our communications commissioner, took the time to figure out how to make the email appear differently when it's being viewed from a computer or a mobile device. Oh yea, she also came up with the design of the emails and made sure that email is filled with event photos and descriptions every week.

Righteous.

Last Minute Life Savers

Like the Americans in WWII, these guys came in at the last second to save the day. Due to some incidents that I don't want to go through now, we started the term with no Speaker, no VP External, and no WEEF Director, and let's just say it was stressful. We needed to find a speaker before the first council meeting, a CRO and a timeline for the elections, and of course a VP External and a WEEF Director. I want to thank Mina for taking on the responsibilities of speaker a week before the first meeting, Brian for taking the role of CRO, Brock and Laurin for taking over WEEF Director duties for the term, even though they both finished their terms as WEEF Direcrtors, and Kristina for taking on the role of VP External, even though she's technically not until the Spring Term.

And of course, I want to thank you. I know I know it's too cliché. But seriously, if you took the time to read through this whole article, then I can rest assured that people care about and appreciate what we do.

Cheers,
Yasser.

Midterm, Exam Bank, and Jobmine? Oh, my!

ORYSIA SOROKA & MEGAN MCNEIL
VPS EDUCATION

Hope everyone had a relaxing reading week and is getting back into the swing of things again.

Midterm season is upon us! Congratulations to those of you who have completed your hell week already and good luck to everyone who has midterms to write in the upcoming weeks. All in all, midterm season is always a stressful time in the school term, but they will be over soon! The one thing midterms are good for is to serve as a check point in the term. Did well on your midterms? Keep up the good work! Those midterms turn out to be less than satisfactory? It might be time to review those "study habits". Before trying something different try the most revolutionary idea of all: pay attention in class. It's very easy to zone out in class, work on your respective phone or computer or not show up to class at all. The easiest way to keep up to date with a course is to regularly attend class; after all, it is your professor who ultimately creates the exam you will be writing this April. Otherwise, you can try a few of the proven study habits of reading over notes after class, creating summary notes or a cheat sheet before an exam, or doing weekly assignments.

As you are getting your midterms back from your professors, consider submitting them to the EngSoc Exam Bank. The Exam Bank is a service offered by EngSoc with past exams and midterms from various engineering courses submitted by students over the years. Help us keep the Exam Bank current by submitting midterms and earn P**5 points in the process. Don't worry, the Exam Bank is anonymous and we black out any names or identifying content. The Exam Bank is only useful if the content is current, so submit those midterms already!

For those of you in JobMine, remember that the first interview cycle ranking will close at 4:00 PM on March 1. At this time you will see an Offer or a Rank with a number drop down beside it. Remember to fill in and save this drop down with your preference from 1 to 9. If you didn't get ranked or an offer, don't worry! There is still the continuous round to go! To those of you going on your very first work term and don't have a job after continuous, it's important not to freak out at this point. Even though it may seem like most of your classmates have jobs, most of them are in the same boat as you. Didn't get an interview in the first round? Consider taking another look at your resume or adding a cover letter. Got an interview but didn't get ranked? Practice your interview skills by answering some mock questions. Feel like you're not getting a job no matter how hard you try? Consider booking an appointment with career advisor (uwaterloo.ca/career-action/student-appointment-procedure).

Fun Fact for the week: A Lion's rawr can be heard from five miles away. RAWWWR!

Keep Smiling,
Megan

An Open Letter to Waterloo Engineering Students

GORDON STUBLEY
ASSOCIATE DEAN, TEACHING

Next week, willing volunteers (namely your Course Critiques director and whomever else she is able to recruit) will meet to prepare the course evaluation packages – around 300 of them, containing an average of 72 questionnaires each. The packages will be sent to professors and instructors, who will bring them to class from March 11 to 22, 2013. Student representatives will be called upon to distribute the questionnaires to every student in the class, collect them when they are completed, and deliver them to the EngSoc office. Later, more student volunteers will meet to prepare the packages for computerized scanning; removing the extra golf pencils and blank questionnaires, making sure all the sheets face the same direction, and getting all the packages over to the scanner in MC.

It's a process that has been repeated every semester for over 40 years. And yes, it's quite a big undertaking, but it's one we believe is well worth it.

After the packages have been scanned (but only after course grades have been posted in Quest), the data will be used to prepare reports for department chairs, and the original completed questionnaires will be distributed to the corresponding instructors so that they can review the comments you write on the back. The electronic data will be uploaded into a database that the Associate Dean, Teaching uses to inform course improvement efforts. The data will also be uploaded to the online Course Critiques site (https://www.eng.uwaterloo.ca/critiques/) so that you and future students may review the results.

Your thoughtful and candid responses to course evaluation survey questions have a big impact. Your instructors rely on your feedback to improve their teaching. Your faculty and department use your feedback to make tenure and promotion decisions. And the Associate Dean, Teaching will use your feedback to help gauge how effectively our teaching supports our students.

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

Sincerely,
Gordon Stubley
Associate Dean, Teaching
Shari King

Upcoming Events Calendar

Wednesday February 27 EngSoc Meeting #4 5:30 PM CPH 3607	**Thursday February 28** B**5 7:00 PM Waterloo Lanes	**Friday March 1** Pubcrawl #4	**Saturday March 2** 2014 Year Spirit Event Student vs. Faculty Ice Hockey 10:00 AM CIF	**Sunday March 3**	**Monday March 4**	**Tuesday March 5** Iron Warrior Meeting 6:30 PM E2 2349A	**Check out up-to-the-day event postings on the EngSoc website at engsoc.uwaterloo.ca**
Wednesday March 6 Charity Pancakes 8:30 AM CPH Foyer Engineering Research Symposium 6:00 PM E5 Design Centre	**Thursday March 7** Engineering Research Symposium 6:00 PM E5 Design Centre	**Friday March 8** Semi Formal 8:00 PM	**Saturday March 9** CANstruction Conestoga Mall	**Sunday March 10**	**Monday March 11** EngSoc Hockey 6:00 PM CIF	**Tuesday March 12** Iron Warrior Meeting 6:30 PM E2 2349A	

Got the Midterm Blues? Apply for Sponsorship!

PETER ROBERTSON
VP FINANCE

I don't have too much to talk about this week, what with Hell Week and then Reading Week. If you find yourself with nothing to do or want to have nothing to do, you should apply for EngSoc Sponsorship! Any group or team interested in receiving EngSoc sponsorship is invited to put together a proposal/presentation and submit it by Friday March 1, at 11:59:59 PM. Any and all University of Waterloo student teams or groups are eligible for an EngSoc sponsorship. If your presentation contains all of the information you want to submit, feel free to submit that as your proposal. Proposals should contain the details listed below, however please be aware that you are not required to disclose this information if you don't wish to. Just know that the more information you can provide to us on why you need our sponsorship, the better chance you have to receive it. Suggested details are, but are not limited to:

- the team/group name
- contact information (including an email)
- a detailed price breakdown of what the Sponsorship, if given, will be spent on
- a summary of no more than 1000 words explaining how your team/group benefits Engineering students and why you deserve EngSoc sponsorship
- the length of your current project cycle, if applicable
- the average operating budget of a project cycle (if not applicable, then of the last year/three terms of operation)
- the number of other sponsors normally obtained in a project cycle (or one year) and the percentage of your operating budget that these sponsors provide
- are you applying for other sponsorships this term, and from who (eg. WEEF, SLEF, etc.)

You will be expected to make a short presentation at the Sponsorship meeting with your proposal details and answer any questions the Committee may have for you. This term's Sponsorship meeting has been set for Sunday, March 3, at 11:00 AM, room TBD. Once the room is booked it will be added to the EngSoc calendar, I'll include it in the subsequent IW issue, and I'll email any teams/groups that have already submitted a proposal. We look forward to hearing from you!

I'd also like to take the opportunity to congratulate the class of 2013 on getting their Iron Rings a couple weeks ago. By the time the next IW issue comes out I expect all of you to be able to http://alturl.com/3qv8z

Also keep your eyes open for new items in Novelties this term. Mina Labib and I have been working hard to give Novelties a facelift and we will hopefully have lots of new things for sale soon. If you have any ideas for EngSoc Swag, tshirt designs, or just something really cool you think people would buy, send me an email at vpfinance.b@engsoc.uwaterloo.ca

Ain't No Party Like a NEM Party

KRISTINA LEE
VP EXTERNAL

Hey hey hey!

I hope you all had a fantabulous Reading Week! There are a few announcements that I would like to share with y'all.

ESSCO Annual General Meeting (AGM) applications are open! This conference is a great way to develop your leadership skills, network your buns off, and will be tons of fun! It's being hosted here in Waterloo and it is a fantastic opportunity to meet students from across Ontario. Applications can be filled out at engsoc.uwaterloo.ca/node/6263 and will be open until March 17.

National Engineering Month (NEM) is just around the corner! There are lots of events happening during NEM that will showcase engineering to the community. We're going to start the month off with a Rube Goldberg Machine that will light up the CN Tower in purple. Waterloo's Rube Goldberg Machine is only small fraction of a much larger machine that Ontario engineering schools are helping build to complete this feat.

CANstruction will be taking place on March 9 at Conestoga Mall. Waterloo plans to build a... I'm not going to tell you! Drop by Conestoga Mall and check out what the team decides to build by March 17. For those of you that don't know, CANstruction is an international event where communities compete to build the coolest structures out of food items that are later donated to the community.

Women in Engineering is hosting a Girl Guide Badge Day on March 23! Girl Guides from the Waterloo area will be coming to Waterloo to earn their Engineering Badge. The girls will be doing hands-on engineering activities, touring labs, and interacting with female engineers.

Also on the March 23 weekend the PEO is hosting a K'NEX event at The Museum, in Kitchener. The K'NEX event gives children the opportunity to complete a challenge using K'NEX. Last year the children built bridges and had them tested to see which were the strongest!

Who doesn't love puppies and pancakes!?! Keep your eyes open for Charity Pancakes in the CPH foyer the rest of the term. All the proceeds are going to National Service Dogs, and if we raise $1000, we will be able to sponsor one of their puppies for a year!

Last but not least, the March Break Open House is almost upon us! On March 13, Engineering will be showcasing itself to high school students. These students will have the opportunity to meet, staff, faculty, and students!

If you're interested in helping out at any of the events I've listed feel free to email vpexternal.b@engsoc.uwaterloo.ca or keep an eye on the EngSoc mailing list and website.

Cheers!

The New and Improved Policy Manual

CATHERINE DECLARO
VP INTERNAL

Hello lovely people and welcome back to Waterloo!

Many of you know that the Engineering Society provides events, services, and representation for all undergraduate students, but not many of you may be familiar with our governing documents. Currently the official documents are the constitution and the bylaws. The general idea of the constitution is that it defines our society, our goals, and the structure (i.e. who is in it, who governs it, etc.). The bylaws are more detailed because they dictate how our society runs. This includes membership, council structure, how meetings are run, the jobs of the executives, and how elections are run.

Recently we (the B Society executives) have been working with the off-stream executives to re-add the policy manual. It was taken out during the last rewrite of the society documents due to time constraints, but the idea of the policy manual is that it goes into more detail about some other key operations of the society and holds the executives accountable to their jobs. In particular, the policy manual outlines the society's financial policies (such as signing authority, budgeting, sponsorship, etc), elections and referenda policies, and council meetings. The policy manual we plan to bring to council at meeting #5 can be found on the EngSoc website. If you have any questions or concerns, feel free to approach any of the executives and we'll be happy to talk to you.

Stay snazzy, Waterloo!

Michael Seliske

EngSoc competes in 2012 CANstruction with a fishy design

OUSA General Assembly Applications and Off-Campus Housing Focus Group

ANDREW FISHER
FEDS COUNCILLOR

OUSA General Assembly Applications Open

The Federation of Students (Feds) is currently a paying member of the Ontario Undergraduate Student Alliance (OUSA). OUSA is a provincial lobby organization which represents all Ontario member Universities to the Ontario government. This is a crucial organization as the provincial government has the most say on what initiatives, fee structures, and policies get implemented at the post secondary education level. For perspective, Engineering Societies Student Council of Ontario (ESSCO) is to the Engineering Society as OUSA is to Feds.

Twice per year, students from member schools convene at the General Assembly to discuss post-secondary education and advocacy priorities. Politicians, sector partners, university administrators, and student leaders all interact to continue towards an accessible, accountable, affordable, and quality post-secondary education system. This year's OUSA General Assembly will be held at Brock University from March 15 to 17.

At the meeting, three policy papers will be up for approval: Public-Private Partnerships, Online Learning, and Student Employment.

If you are interested in attending the General Assembly (GA), Feds will be holding an OUSA GA Delegate Selection meeting on March 9 from 12:30 to 4:00 PM in SLC 2143. In order to be selected for OUSA GA you must be available for March 9 as well as every date of the conference (March 15 to 17). At this Delegate Selection, the selection committee will go over the policy papers and gather feedback and suggestions for improvement. Based on your contributions to the discussion, final invitations will be made.

All expenses are paid to attend General Assembly including hotel, transportation, and meals.

Please RSVP to Luke McIntosh at lmmcinto@uwaterloo.ca so information packages can be sent to you prior to the Delegate Selection meeting.

"Living Off Campus" Focus Group

On Wednesday, February 28, from 5:00 to 6:30 PM there will be a focus group discussing "living off campus," being held by Off-Campus Housing. It will be held in SLC 2105B. The focus group is set out to explore what the quality of life is like for students living off-campus. It will help the University and Feds understand what constitutes "quality" off-campus housing, what we consider community, and gather feedback on the overall experience we have while living off-campus. If you are interested in participating in these sessions, please contact Ryan King, Off-Campus Housing, at ryan.king@uwaterloo.ca.

By hosting consultation groups, Off-Campus Housing will begin to develop initiatives like "landlord of the year," redefine how Off-Campus Housing serves students, and collect valuable first-hand information.

Newly Acclaimed Councillors

At this time I would also like to congratulate the newly acclaimed councillors David Birnbaum and Chanakya Ramdev. They will begin their terms in May; representing the Engineering student body to Feds.

National Engineering Month: Creating Global Engineers

FILZAH NASIR
STRATEGY TEAM

March marks the arrival of National Engineering Month for Ontario and EWB is excited to have several events planned for the month. The main focus of NEM this year is changing the perception of engineering within society and how to create socially conscious global engineers.

EWB was founded on the principle that engineers could contribute more to society and that engineering skills could be applied to solve larger problems. Global engineering is the practice of seeking out and developing awareness and understanding of the greater consequences of design. The key attributes of global engineering include curiosity, empathy and responsibility.

Global engineering should not be considered a separate branch or division of engineering. The challenge is to transform the practice of engineering so that the concept of engineering is equated with the definition of global engineering. Doing this requires transforming engineering education so that engineers are taught to be globally conscious citizens who can use their skills to improve society, and changing the perception of engineering to show that engineers possess a unique set of skills and knowledge that can and should be utilized when trying to solve society's biggest problems.

The need to transform engineering education comes with the recognition that our education currently focuses on teaching us skills such as calculus and coding and the ability to solve technical problems but there is no focus on using those skills to solve the greater problems faced by society. Waterloo has recently gotten a lot of positive attention for our innovative approach to education using the co-op system. And while co-op is an important factor in why many of us chose to study engineering at Waterloo it cannot replace the education that must take place within the classroom. We cannot continue to leave it up to co-op employers to teach us "soft skills" while engineering classrooms remain in a time warp. As is frequently pointed out, there is no correlation between how much engineering practice has changed in the last fifty years and how much engineering education has changed. If we want engineering to remain relevant in a rapidly changing society facing a unique set of twenty-first century problems we must adapt engineering education to enable us to solve those problems. EWB is working with faculty and staff at Waterloo to enhance engineering curriculum but we need student support. Engineering students need to decide if we want more from our education than six different courses that teach us how to apply mathematical formulas and theoretical problems.

Changing the perception of engineering is the first step to changing how we practice engineering in society. From the day prospective engineers arrive on the Waterloo campus, it's instilled in us that only half of our education will actually take place on campus. The other half will take place during co-op applying engineering principles in the workplace. But what are we applying engineering principles to? If co-op is meant to be a representation of what we might do post-graduation then we should be exposed to as vast a variety of possibilities as possible. We should not allow co-op to limit the possibilities of what we can do with our education. Sure, we can work with other professional engineers and test programs, design bridges or write reports. And while this is a big part of what engineering is, it's not all it can be. We need to realize the full potential of what engineering can accomplish.

Realizing the full potential of engineering is only half the equation in changing how engineering is practiced. The other half is in realizing the complacency of engineering in causing some of the challenges faced by society. If we as engineers are using our skills to work for defence contractors, extractive industries or other corporations that are profiting through unsustainable means of development then we are complicit in the harm that these practices cause. While it may be possible to work with these companies and improve their practices, we won't accomplish anything by closing our eyes and blinding ourselves to the effects of their actions on society as a whole. We have to acknowledge that mineral extraction is a huge source of conflict in sub-Saharan Africa, that expansion of the oil sands in Alberta marginalizes First Nations communities and that defence contractors profit from war. And realizing the significant role that engineers plays in each of these industries is important if we want to change how engineering is practiced.

Global engineering principles realize the significant role engineers and the industries with which we associate have a huge impact on many of the issues faced by our society today. As the current engineering undergraduates at Waterloo represent a significant portion of the future engineers in Canada, we can have a huge influence on the future of engineering in Canada as well. We can refuse to accept the definition of engineering that has been handed to us and choose to redefine engineering and revolutionize the role that engineers serve in society.

Forward on Climate: No to Keystone XL

FILZAH NASIR
STRATEGY TEAM

The largest climate rally in the history of the United States took place on February 17, 2013. Tens of thousands of protestors from all over the U.S. and Canada gathered in Washington D.C. in a rally organized by some of the largest environmental organizations including The Sierra Club, the Natural Resources Defence Council and 350.org. Although the rally was titled Forward on Climate and the mission was to call attention to climate change, the main focus was to pressure President Obama in the final weeks before he makes his decision on the Keystone XL pipeline. The TransCanada pipeline is expected to carry Canadian tar sands oil from Alberta to Texas is expected to create billions of dollars of revenue for the Albertan oil sands and the Canadian economy.

President Obama had originally rejected the pipeline's initial design in the midst of re-election. But the final decision has not yet been reached and rests solely in Obama's hands. Keystone XL has become the centre point of the battle between environmentalists and oil companies. Obama's decision will decide the future for energy in the U.S. but will have huge impacts for Alberta's oil sands and Canada as well.

Environmentalists aren't the only ones pressuring Obama. Earlier this month TransCanada President, Russ Girling personally travelled to D.C. to lobby for Obama's approval of the project. Clearly, the stakes in this decision are high for everyone. The Canadian government is attempting damage control as they realize just how severely they miscalculated the pressure from the environmental movement. The morning after the rally, John Baird, Canada's foreign affairs minister took the time to take a few jabs at the Obama administration and claim that Canada is well on its way to its emission reduction targets. Of course the statement is laughable coming from the only country that was called out during the Rio+20 summit for their absolute refusal to act on climate change. Canada consistently places in the bottom for rankings on their climate action plans and let's not forget that the Harper government pulled out of the Kyoto Protocol less than a year ago. Baird's statement was based less on facts and was more of a reactionary recourse to detract attention away from Canada's "dirty" oil.

While Obama can still choose which side he wants to take in this issue, the Canadian government has already made their decision clear. Their ultimate goal is improving Canada's short-term economic growth through increasing investment in Alberta's oil sands regardless of the long-term impacts of these decisions. For the environmental movement the Harper government has represented an immoveable blockade and any attempts to petition them will merely result in being labelled as "foreign radical groups."

But the same cannot be said of the Obama administration. During the election Obama won brownie points over opponent Mitt Romney by merely naming climate change as an issue he wanted to tackle. Such is the world we live in. But post-election many of the environmentalists who helped elect Obama are now pushing to hold him to his inaugural promise to act on climate change. Obama has been paying lip service to the environmental movement for a while now but his actions have yet to live up to his words. The Keystone XL decision is a major one not just for the future of the environmental movement or the oil companies but for Obama's legacy as well. No longer needing to worry about re-election, Obama's biggest excuses from his first term of office are now invalid. Approving the pipeline would be an easy decision as the resulting jobs and short-term economic growth in the U.S. would allow Obama to ride out at least the first-half of his second term. But the resulting environmental impacts, not just from the pipeline but from the continual expansion of the oil sands, and the inaction on climate change will leave a stain on Obama's legacy that will become hard for him to erase. In the end, his decision will speak volumes for whose interests Obama's truly represents: the average middle-class American citizen whose support brought him to power or the corporations or lobbyists who have millions of dollars at their beck and call to influence his decision.

Vancouver Observer, Lauri Gorham

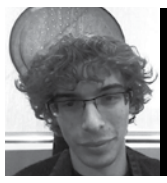
Protesters carry a mock pipeline in a demonstration opposing the Keystone XL Project

Environmentalists have coined what they now refer to as the 'Keystone Principle.' Although Keystone is just one pipeline, and its resulting effects may not have a huge impact on climate change, approving the pipeline would represent a huge investment into the continued expansion of the oil sands and a reaffirmation that the U.S. government plans to continue to rely on fossil fuels as the main source of energy moving forward. But environmentalists, scientists, and a significant proportion of the general public agree that climate change is too serious of an issue to ignore. If we are serious about exploring alternative sources of energy and working towards a future where we don't rely on fossil fuels then we cannot make billion dollar investments in pipelines that will carry oil. This of course is a fact that fossil fuel companies want to keep under the radar.

350.org, one of the groups organizing the rally have done the climate math and come out with 3 crucial numbers for the future of the planet. 2° Celsius is the maximum amount that scientists believe we can raise the temperature of the earth without causing irreparable damage. So far we are at 0.8 degrees. The second number is 565 gigatons. That's how many more gigatons of CO_2 we can burn and release into the atmosphere while hoping to keep temperatures beneath the 2° mark. If we continue to burn CO_2 at current rates, we will reach that limit within 16 years. And the final number: 2795 gigatons. That's the amount of CO_2 contained in our existing, proven fossil fuel reserves. That's the amount of CO_2 we would release if fossil fuel companies burned through all the coal, oil and gas they have. That's almost 5 times higher than the limit scientists have placed. Needless to say, if we burned through all of that, and for fossil fuel companies that is the plan, we would be well beyond the 2° mark. In case I haven't made it clear yet, this puts fossil fuel companies at cross purposes with anyone interested in the planet's future. And that is why we must say to billion dollar investments in the fossil fuel companies. We need to send fossil fuel companies a message: our planet's future is more important than their bottom line.

Obama's decision is expected in a few weeks time and in the meanwhile, environmentalists, the oil industry and possibly Stephen Harper himself are waiting with bated breath. As my sister put it, this may represent the ultimate battle between the environmentalists and the oil lobbyists or to put it more succinctly, between good and evil.

House Hunting Tips and Tricks



JOSHUA KALPIN
2N SOFTWARE

It's the middle of winter, it's cold, everyone is tired, and most first years are living in cosy residence rooms. However, we are halfway through the term and almost everyone will be working somewhere besides Waterloo for co-op. Hence, it is important to figure out where to live next term while you are still in the city.

The two most common options for student housing are residence and renting a house or apartment with a group of friends. Additionally, there is the other option of someone's parents buying a house and then renting it out, but realistically most people can't afford to do this.

The first option, residence, is the safest, but also the most expensive option. There are two major things to consider before choosing to live in residence as an upper year. First, you will be paying a large premium over other housing in the fall, while the winter and spring terms are more in line with other housing costs. Second, you need to follow all the residence rules that are set by the school. If you don't like quiet hours and paying up to 800 dollars a month in the fall term, residence may not be the best option. However, if you happen to like enforced quiet time, the best internet in the city and only want a four month commitment (applies only to winter and spring terms), you may want to apply. Applications for residence at uWaterloo are currently open.

The other option, renting a house or apartment off-campus, is a little bit more complicated. There are two ways to go about this, the simplest being subletting someone's room. The key things to think about are roommates, location, and what is included, for examples, utilities, laundry, and internet. Ideally, you want to be living with at least one person who you can trust in case you get sick, are in trouble or leave something in the house on your way to campus. You will also want to be relatively close to campus or a bus route that goes straight to campus. Just think about the dreaded 8:30 morning class. It is important to know what furniture you need to bring into a place. The best case scenario is that you will get a bed, desk and dresser. The worst case scenario is an empty room. Think carefully before committing to anything.

Now, subletting is not for everyone, especially if you want to live with a specific group of friends. Before you start house hunting there are two things that must absolutely be figure out: price range and number of people. You need to set an upper limit on how much you and your friends are willing to spend and stick to it. If someone can't afford what the rest want, it may be in that person's best interest to look elsewhere for roommates. Furthermore, this will finalize the number of rooms you will be looking for, which can drastically affect price and availability.

Once you have price and the people you want to live with finalized, it is time to start actually looking for houses. Your best resource for finding rentals is the Off-Campus Housing site for the school (https://uwaterloo.ca/off-campus-housing/). This website has a ton of resources for anyone that is looking to find housing. Especially of note is the house listing board that has houses both inside and outside the Waterloo region. Key things to look for here include location (as mentioned before), utilities, and other amenities that the house has, such as parking, laundry and backyard. From there you should go see a number of places before deciding whether you want to attempt to sign a lease.

While on the topic of visiting houses there are a couple of things to keep in mind. First, basement apartments get extremely noisy from above. Second, this is a good time to judge whether your landlord cares about the welfare of the inhabitants or not. Look at the state of the property and the house to see if it is well maintained. Third, make sure there are adjustable thermostats for the rooms.

Once you've decided to go after a house, it is important to read your lease. Then, read your lease. Did you remember to read your lease? This is THE most important thing to do before fully signing off on a house. Can you sublet your room? Is the house non-smoking? What are the rules about noise? Who is responsible for fixing broken appliances? These and many others are questions you should consider while reading the lease. You can also have your lease reviewed for free by the Off-Campus Housing Office in the Student Life Centre. If there is something that you want in the lease and it isn't there, you should bring it up immediately with the landlord.

To wrap things up, housing is one of those horrible but exciting things that almost every student has to deal with. The best way to find the house that is right for you is to be patient. There are a lot of houses out there and you want to be somewhere that feels comfortable and safe. If you do have questions, always remember that the university has resources to help students with off-campus housing.

Profitable (but Unusual) Business Practices

KRISHNA IYER &
FARZI YUSUFALI
3T NANOTECHNOLOGY

In 1889, George Eastman founded the Eastman Kodak Company based on his patent for the next generation of cameras. The camera consisted of a roll that was housed in the back face of the camera and was a consumable. Kodak started following the razor blade strategy popularized by Gillette in which the constant (the camera body) was priced for a fairly small profit margin and a bulk of the profits came from the film which cost little to manufacture. This business strategy was followed right up to their sad bankruptcy in 2012. They got displaced into oblivion despite being the inventors of the disruptive technology of digital cameras because they were hesitant to endanger their profits. Their hesitation to change their business model served a death blow.

With the changing consumer perception nowadays, it is necessary to be open to change. If you have seen any television in the past couple months, you must have seen Gillette's advertisement in which they send a man across the globe who then proclaims "the only things that didn't change was my razor". This statement is very bold considering that never before has Gillette ever claimed how long their razor lasted. This ad bites into their theoretical profits by proclaiming that their razor can be reused for a long period of time. However, with brand loyalty and market dominance being endangered, they recognized the need for such action.

Similarly, in 2011, Valve released their critically acclaimed FPS Team Fortress 2 to anybody who wanted to play. They made the game free to play after 4 years of its existence. This drew a large number of people to the game and increased the popularity of the "microtransaction" economy for gaming in which everybody has access to the games but if you want special hats or weapons, you need to pay for them. This was a relatively new phenomenon which really caught on and is now a popular form of video game economy.

In late 2011, when AMD laid off over 10% of its workers, ARM Holdings was celebrating a 22% increase in total revenue for that quarter compared to the previous year. ARM was founded as a joint venture between VLSI, Apple, and Acorn Computers in 1990. Unlike traditional semiconductor companies, ARM does not manufacture anything; instead, it deals exclusively with intellectual property. ARM licenses circuits and layouts for processors to big manufacturing companies such as NVIDIA, Texas Instruments, STMicroelectronics, etc. Despite their lack of manufacturing capabilities, they have enjoyed a healthy profit for several years as smartphones and tablets have emerged on the market. Their novel business model is indicative of ongoing trends in dealing with IP exclusively as a commodity.

Such examples clearly show the importance of the fairly plastic force of the market. Often, a large corporation tends to stagnate and this serves as the death blow to many of them. It is imperative that when the profits of a business are being endangered by an external factor, it be addressed with an open mind. In Kodak's case, it was the disruptive technology of digital cameras; in Gillette's case, it was brand competition, and in Valve's case, it was piracy. Business models are designed to be optimal at the particular point in time for that particular mood and that particular society. Any of these perturbing factors can cause a massive disturbance in the profits of a company and it is essential (especially in the rapidly evolving economy of the 21st century) that a company revise their business plan as and when necessary.

Student Unions Around the World

CAITLIN MCLAREN
1B CHEMICAL

At most educational institutions, student unions are pretty much like Feds, representing student interests, managing funds, all the rest. Also at most educational institutions, probably pretty much nobody cares about them too. However, that isn't always the case. Around the world there are some students who just need to be different. Students can do some pretty weird things when they put their minds to it. Hint, hint, Feds.

Plantation High, Florida

Here, you don't have to be elected to be part of the school council- anyone can join. As a result, hundreds of students gather together at meetings to argue and sing. I'm not sure why they sing: possibly because they're in high school and don't know any better. Still, wouldn't Feds be better if they formed a 200-strong choir? Think about it. It may become an election issue if enough demand it.

Eisenhower Elementary School, Indiana

These are just elementary school kids- they can barely tie their own shoelaces without tripping over their own lisps. Still, they managed to be 127% cooler than Feds when they adopted a zoo. I'm not talking about an extra class pet or two: the kids "adopted" snakes, baboons, wolves, lizards- the works. Also their owners. You see, the reason these animals needed help was that their handler had cancer and, because of the costs of treatments, could not afford to feed all of the animals. Little kids to the rescue! Eat it, Feds.

Golan Heights, Israel

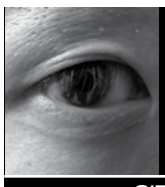
Democracy is a good thing. Everybody loves a little democracy. What if you could vote for things that actually have any effect on your daily lives? What if you could elect your profs? Because students at Golan Heights- and a number of schools like it- can elect their teachers. That means, every year, teachers must campaign. Imagine that! Rule of thumb: If their election speech is in some incomprehensible accent, don't vote for them. Passing rates would rise within one electoral term.

Various Universities, Lucknow

Need a little excitement in your life? What if Feds turned into the Mafia? In India, student elections can get hardcore. Student leaders can extort money from local businesses and the universities, and demand protection money from government workers. Some union leaders began to hire gunmen to intimidate other students and university officials. How often does Feds prance about with guns? Or "subject the city to their violent and clamorous will?" Sadly, the government had a problem for some reason and banned these practices. Feds, take up the torch. Everyone needs a little gang warfare in their lives.

So when the time comes to vote for Feds, remember that life on campus could be so much more exciting. Demand an end to all those boring budget and event issues! Tigers, gangsters, and student power are what we need! It's been done before. Take it as a challenge.

Modern Marvel: Tokyo, Japan



ALEXANDER LEE
1B NANOTECHNOLOGY

CITY SHOWCASE

The last two cities I highlighted were both in Europe, so this time around, let's take a trip to the other end of the world, to Asia. Tokyo, Japan has time on its side, and has stood in a position of grandeur long enough to match any city. Originally named Edo, the town was the home of the Tokugawa clan, fated to rise to become the last Shogunate dynasy of Japan. The dynasy ruled for almost 300 years, and during that time, they made Edo the political and economic capital of Japan, shifting away from the ancestral Imperial Capitol of Kyoto. After the imperial restoration, the city was renamed to its current name, Tokyo.

After World War 2, Japan became a leading economic, cultural, and technological powerhouse. It became the beacon of democracy and capitalism in the Orient. Tokyo underwent rapid modernization and its population ballooned to an immense 35 million today, making it the world's largest metropolitan area. Tokyo is so large that the government has split it up into over 30 districts, each considered a city in its own right. However, they have also managed to preserve their cultural heritage, and there are many places in the city where you can see the traditional buildings and landmarks of feudal Edo. This makes Tokyo a bridge between the Edo of the past and the Tokyo of the present. Essential landmarks of Tokyo are:

The Tokyo Imperial Palace

This palace is the seat of the Emperor of Japan. It was moved from Kyoto to Tokyo after the Meiji Restoration and the resultant strife. The emperor is essentially a figurehead, and has been for a millennia and a half. However, that does not mean the palace is anything to laugh at. It covers an expansive 3.41 square kilometres, and was valued at more than all the real estate in California at its peak. The palace serves as a picturesque representation of feudal Japanese architecture, as well as a look into Japanese gardening practices. They design their gardens in ways quite different from the European gardens we're used to seeing. As the former administrative center of Japan from the Victorian era through to World War 2, the imperial palace is a top tourist destination.

The Sony Building

The Sony building is located in the heavily developed Ginza commercial district, which has the third highest rent in the world. Opened in 1966, the building is a prime example of postmodern architecture and design, and has not required external renovation or restoration in the fifty years since it was built. However, as nice as the exterior is, it's the interior where all the cool toys are. The building's bottom floors are designed as showrooms for the latest in Sony's technology. From things as mundane as the latest Playstation, to truly innovative things such as televisions that can be viewed from any angle, the Sony building's wonders show just how far we've come technologically…and how much further we can still go.

Miraikan

The National Museum of Emerging Science and Innovation is also known as Miraikan in Tokyo

The National Museum of Emerging Science and Innovation

Located in Odaiba district, this museum is directly run by Japan's Science and Technology agency. It is the home of Asimo, that robot in the Honda commercials, and also features a model maglev train, the levitating, 200 mph trains of the future. For those interested in science and technology, this place should definitely be on their list.

The Tokyo Skytree

There are two main towers in Tokyo: The Tokyo Tower, and the Tokyo Skytree. The Tokyo Tower is basically a replica of the Eiffel Tower, and Paris does it better, so let's focus on the Skytree. The Skytree was publicly opened in May 2012, thus making it one of Tokyo's newest landmarks. The tower stretches a massive 634 meters, making it the tallest tower in the world, and the second tallest building in the world. The base of the tower is like a tripod, then fuses into a cylinder around halfway up. The tower is also seismic shock-resistant, including a central reinforced concrete shaft. When lit up at night, the tower looks particularly beautiful, and the tower offers the best view of Tokyo anywhere.

Tokyo is one of the largest urban centers in the world, and if you like to look at new architecture mixed with old traditions, Tokyo is the place for you.

Exchange or Not Exchange, That is the Question

PETER ROE
DIRECTOR OF INTERNATIONAL EXCHANGE PROGRAMS

Just before Reading Week, I had the pleasure of conducting pre-acceptance interviews with a dozen members of the 2B Architecture class. Between them, they are going on exchange to five different universities in Europe and Asia. For these people, and for all the others who have gone or are going on exchange, it is an opportunity that cannot be missed. Exchange is a world-wide system for a global education with broad cultural implications. You can enrich your program by studying at top-rated universities and thereby enhancing your career prospects.

If you are in 1B, 2A or 2B this term, it's time for you to be preparing for your exchange adventure. It's more important than ever that you get started, because, with revisions in application requirements, the process may take more time. On the other hand, it will entail slightly less paper-work to fill in. But still, the best thing to do is to get started as soon as possible. How to do this?

- Go to the Engineering Exchange website (for our list of current exchange partners).
- Look at the universities' websites in Europe, the Pacific Rim, Australia and the Americas where we have exchange agreements.
- Contact the Faculty Exchange office and find out where opportunities are available.
- Download the UW application forms
- Make an appointment with your department's Exchange Advisor or Undergraduate Associate Chair to present your proposed study plan.
- Get approval from Coop.
- Make an appointment for an exchange pre-acceptance interview.
- Have the interview.
- Now your application is ready for final approval by the Associate Dean, Undergraduate.
- You're on the way – You are ready to complete the exchange partner's formalities, get a study visa for the exchange country, buy an airline ticket and fly away to a real adventure!

The above ten steps may look long and difficult, but they're not, really. Cindy Howe and I in the Engineering Exchange Office are here to help you, as is Michelle Coulombe in CECA and your undergraduate department exchange advisor. So long as you show that you will meet the criteria, and maintain good standing, you will find that international exchange is easy to apply for. And when you go you'll join the hundreds of students who have had the time of their lives all the while becoming Canadian citizens of the world.

PRODUCT MANAGER

EXTERNAL COMMUNICATIONS MANAGER

ADVERTISING ACCOUNT EXECUTIVE

SOCIAL MEDIA MARKETING MANAGER

WEB ANALYTICS MANAGER

MARKET RESEARCH ANALYST

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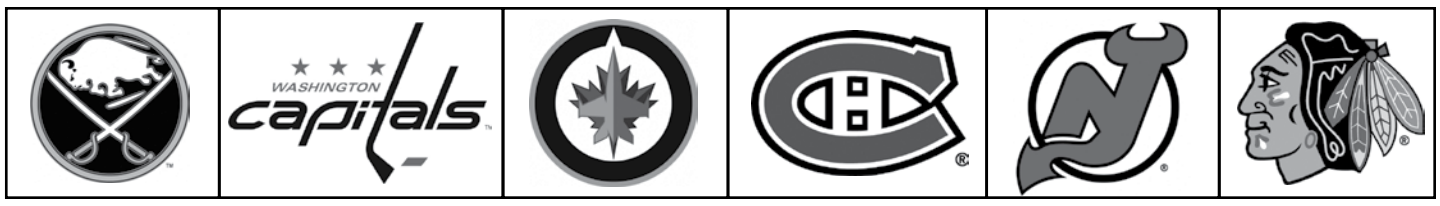
No "I" in "Team": Surprises Top the Standings

ELIZABETH SALSBERG
1A NANOTECHNOLOGY

THE (NHL) BENCHWARMER REPORT



Photos from SPORTSLOGOS. All rights belong to respective teams.

The hockey season thus far has certainly had some interesting twists and turns. As always, some teams get off to a running start while others sort of slump out of the gate. Perhaps the offseason was too lengthy or maybe training camp was too short, but whatever the cause, the standings at this point are not entirely what we might have expected.

Now, of course we do have some consistency in teams with experienced depth such as Boston, Pittsburgh or Vancouver, but the reality is these types of lineups are rare given the new salary cap limit. This seems to have created many hockey clubs that follow one of these schemes:

"Star Shooters": These teams typically have a small group of power players who anchor the team. The idea is that average or sub-par players who get to play with the "stars" will play better. This is true for some teams, however it is often not enough to centre the team around four to five players—the warm bodies around them often don't contribute enough to put the team in playoffs. The best examples are Buffalo and Washington, both are at the bottom of the Eastern Conference and yet have several strong players.

"Beehives": Also known as 'a lot of nobody,' it is interesting that these teams have somehow found a way to win. Joking aside, any group of players that has some talent, decent coaching and a will to win has potential to perform. This structure works primarily because of chemistry within the team. These are often the biggest surprises come playoff time, given that they often don't have a whole heap of scoring talent or breadth and depth at every position. My favourite example from last year's playoff race would have to be the Winnipeg Jets. Though they did not make the playoffs, the string of wins they put together near the end of the season was impressive for a brand new (and clearly highly motivated) team. Surprises in the standings this year include the Montreal Canadiens and Toronto Maple Leafs, though only time will tell if they are for real this time around.

Fortunately, we can't possibly classify every surprising team into one of the above categories. The most exciting teams are fully loaded, containing a potent mix of talent and beehive work ethic and teamwork. As of now, New Jersey leads the way in the East and Chicago is at the top of the West. Why? This is because both teams have several talented and experienced players along with great coaching.

Chicago has several very talented players in Jonathan Teows, Patrick Kane, Patrick Sharp, and Duncan Keith. After a disappointing showing in last year's playoffs, the Hawks look determined not to make the same mistakes this season. They are not much of a surprise.

New Jersey, on the other hand, is quite a different story. One would not have expected them to be strong contenders given that Martin Brodeur (aka The Ageless Wonder) was on the brink of retirement and the departure of high-flying scorer Zac Parise. However, it looks as though Ilya Kovalchuk has finally emerged this season and David Clarkson has found his game. Brodeur has been stellar in net and so has backup Jonas Enroth. The team looks great overall in spite of not necessarily showcasing the talent and experience that other top tier teams offer.

At the end of the day, it is far more interesting to watch playoff teams that we wouldn't normally expect to be in the playoffs. The shortened season certainly has facilitated this, and every point matters since there will not be as much crunch time at the end to 'make up' a bad start. Let's see who can pull it together and more importantly, keep it together!

2014 Winter Olympics: Team Canada Revised

JOSH BELL
1N MECHATRONICS

It is under a year to the 2014 Winter Olympics in Sochi, Russia, and the hype train for Olympic hockey has already left the station (albeit a bit prematurely, seeing as there's no deal in place yet for NHL players to attend, but nevertheless, it has left). Expectations for this particular iteration of Team Canada are, well, about the same as they always are - gold or bust. Already, predictions for who will make what team are abound on the internet. But these predictions you're reading are different: they're in newsprint, which means they are infinitely better. So without further ado, I present to you the compilation of Canadians that will indisputably take home the gold.

The Forwards

Line 1: Stamkos - Crosby - Giroux

This is the big show, the line that's going to generate more offensive power than a nuclear powerplant and most definitely about as terrifying a top three as one could hope for.

Steven Stamkos - The king of the one timer (and goal scoring in general) gets shifted to the wing and gets one of the best setup men in the NHL in Crosby. Oh Doctor, he could be good.

Sidney Crosby - Because, obviously. Next.

Claude Giroux - His point totals have increased dramatically over the last four years, and although not having Jagr around is hurting his production a bit this season, the poster boy of NHL '13 is still an elite talent. Also, he's played right wing in the past, something that Canada desperately needs.

Line 2: Tavares - Staal - Eberle

One knock against this line? None of these players are particularly amazing at playing defense, not that it's going to matter when they spend all their time in the offensive zone.

John Tavares - Arguably singlehandedly carrying the New York Islanders into relevancy, this kid's year over year points total is skyrocketing. He's dominated for Canada at the World Juniors and I shudder at the thought of what he can do with wing-mates slightly more skilled than Matt Molson and Brad Boyes.

Eric Staal - One of the most consistent players over the last few years, despite having nobody to play with until this season. Reason Staal gets the center position over Tavares? Slightly better face-off man and a much better passer.

Jordan Eberle - Probably the most clutch scorer in the history of clutch scorers, not only has Eberle given TSN's most overplayed sound bit of all time (CAN. YOU. BELIEVE. IT.), he only gets better as the stage gets bigger. Eberle is the miracle man; if Canada needs a goal he will deliver.

Line 3: Nash - Toews - Perry

Remember when I called the first line about as terrifying as you can get? I lied. It's this one. This line could make so many lives miserable, while tearing up the score sheet in the process.

Rick Nash - He hits. He scores. He's six foot four. He's a complete package and the fact that Columbus traded him away for what was essentially a bag of pucks is criminal. A mainstay on Canada's world championship teams (once again, Columbus), Nash can play on both ends of the ice.

Jonathon Towes - The most complete player in the NHL. There I said it. Also, one of the best faceoff men in the NHL. Captain Serious (his glare is terrifying) was named the best forward in the 2010 Olympics and honestly, I wouldn't be surprised if he was again.

Corey Perry - He won the 2010-2011 Hart and Rocket Richard Trophies (MVP and Most Goals), the last Canadian to win the Hart since Crosby in 2007. He had an off season last year, but he is, alongside the rest of Anaheim, going to bounce back and will be ready to go come 2014.

Line 4: Lucic - Bergeron - Iginla

A line that can play defense, as well as grind it out in the other teams end, if Canada is up by one with one minute left in the third, these are the people I want on the ice (well, maybe not Lucic...).

Milan Lucic - I hate Lucic. So much. He's a pest, gets under his opponent's skin, crashes the net with a passion and is a goon to the upmost degree. So naturally, I wish this kind of misery upon the rest of the world. I don't want him to play pretty, I want him to wreak havoc against Russia.

Patrice Bergeron - Unlike his Boston wing mate, I like Bergeron. He's the best defensive forward out there, has had good chemistry with Crosby in the past (should a line shuffle be needed) and if for some odd reason Towes is tired, Bergeron will win any faceoff thrown his way.

Jarome Iginla - This will be Iggy's fourth (!) Olympics, and he'll be the exact same age as Canada's last three captains (36). Just sayin'. Finally he was born on July 1, how can you not have him on the team?

Extras: Patrick Sharp, Ryan Getzlaf.

The Defence

Line 1: Doughty - Weber

Drew Doughty - Doughty was Canada's best defenseman in the 2010 tournament. Although his NHL numbers have dipped a bit since then, he can still move the puck and more importantly, play solid defence.

Shea Weber - Weber is off to an awful start this year (undoubtedly heartbroken over the loss of Ryan Suter), but don't expect that to last long. This is Canada's best answer to Zdeno Chara, and frankly, you need the guy who can blast the puck through the net.

Line 2: Keith - Seabrook

The Chicago pairing will make a return from the 2010 team. Duncan Keith and Brent Seabrook come as a package deal. Both can pass the puck and hit fantastically well. Expect this line to be depended on early as the others take time to develop chemistry (ala Thorton-Marleau-Heatley from 2010).

Line 3: Pietrangelo - Staal

Alex Pietrangelo - This kid could very well be to Canada in 2014 what Doughty was in 2010, a young defensemen playing out of his mind. He was named the top defensemen in the 2010 World Juniors and the 2011 World Championships. Expect big things from him.

Marc Staal - The prototypical shutdown defender. Marc Staal gobbles up minutes for the New York Rangers. He won't exactly have to do that here, but when it's time to kill a penalty, he should be first on the ice.

Extras: Kris Letang, Dan Girardi.

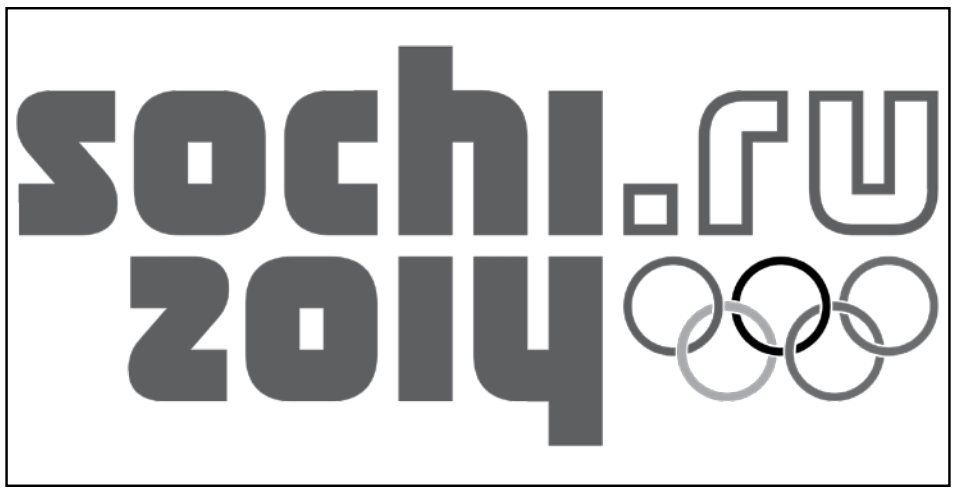
The Goaltenders

Starting: Luongo, Backup: Fleury

Roberto Luongo - As far as I can tell, there is no reason not to start Luongo, sure he couldn't play in Boston to save his life in 2011, but the defense in front of him with Canada will be exponentially better than those in Vancouver. An elite goaltender the last few years, he can make the big save when it counts.

Marc Andre Fleury - Fleury has won a Stanley Cup, and in this season (and the last two years), his save percentage and goals against average have been a very tidy .915 and 2.35 respectively.

Extra: Carey Price



Cycling: A Product of Your Environment

KEVIN LIANG
3B CHEMICAL

BOTTOM BRACKET

There is this imaginary torus around campus where cycling makes sense. Within the inner radius, walking is the easiest way to get on campus. At the outer edge, biking is no longer an efficient commuting option and thus public transportation or driving would yield the quickest route. Between these two boundaries, there lies a region where cycling provides the best mechanism of transport.

It should come to no surprise that I reside within this magical doughnut zone. Bus stops are far. I can cycle to school in the same amount of time it takes me to walk to the nearest bus stop. For this reason bus schedules are like foreign languages: I can say simple words but I'm totally hopeless holding a conversation. I need to look up bus timings and I often confuse bus routes. Cycling, even in the winter, is simply the best solution.

For weeks I was slowly pushed further and further to the right hand lane as snow accumulated in the bike lane. Like Death lurking in the shadows, the day I'd been dreading the all winter finally came. February 8th. Bike lanes were reduced to snow banks. I was forced to take the bus. I was forced onto *their* schedule. Predictably, the buses were late. I missed riding my bicycle. I no longer held freedom. I thought I could make it through the winter. But this precipitation made it downright impossible to ride. And yes, I tried.

I shouldn't complain too much though. A good winter storm might inhibit riding for a few days at most. Compared to other sports, such as snowboarding, cyclists have it pretty good. Ski hills are typically open less than six months a year. Snowboarders are limited in their location. Whether you live 20 minutes or 5 hours from the mountain, snowboarders have to pack up in vehicle. Heading to the mountain is a trek of its own, and an entire day, if not more, must be devoted to the sport. This leaves shred sessions few and far between. Urban riding has lag time too: jumps have to be built. Cycling is just a leg swing away. You don't need a mountain to ride on. If there is a road, you can ride.

If I didn't live inside the cycling torus I would probably have a different view on these things. I probably wouldn't have developed my passion for cycling. I would probably have a better understanding of the GRT. But we are a product of our environment. There's no denying it. I started cycling out of necessity. This matured into a blind passion for a sport that is my hobby and my transport, my exercise and my viewpoint.

To See Through the Eyes of Another

MEAGAN CARDNO
1B NANOTECHNOLOGY

THE FINER POINTS OF FINE ARTS

Of all the fine arts, there is one media with which most students have an unfortunate relationship. With its mandatory courses in all elementary and secondary school systems, it often becomes the nightmare that keeps students awake at night, the experience turning nigh on traumatic for many, and after graduating most never wish to take a look at this fantastic form of art again. Yet the world of the written arts holds such wonder and potential that I find this sad state of affairs to be truly tragic.

Years of 'analyzing' the famous written works of our adolescence, from *The Lord of the Flies* to *Romeo and Juliet* has left a foul taste in almost everyone's mouth– and understandably, as it is often reduced to the hoop-jumping you are asked to do in order to pass. The restrictions that come from the limited works that are chosen does not help either, for everyone's taste in literature is just as broad as their personalities, and fortunately the media caters to each and everyone's needs.

One of the things that, from my perspective, sets the art of words apart from the other arts is the intimacy that it bears. There's an exclusivity that comes between the one-on-one nature between reader and writer that cannot be achieved in the other mediums, which are enjoyed in both group and individual settings. Writing provides an opportunity for authors to share their ideas and dreams to an unlimited number of people, even those who did not exist until after they died, and speak to them directly in a manner that will ensure that they have their undivided attention. Few other mediums have as great of a potential in terms of impacting the audience directly. Readers invest their time when reading, and– consciously or unconsciously – choose to consider and contemplate the thoughts and words of a completely foreign mind. It is truly one of the greatest marvels of human consciousness.

Perhaps the most familiar in the realm of written works is the comforting prose of novels and short stories. Depending on the nature of the story, the reader can find themselves in a world quite like their own, or drawn into an entirely different realm, fabricated entirely by the author, sometimes in staggering depth, and available for public consumption. The depth of Tolkien's creation, for example, is simply mind-boggling in terms of the details and history that he put into adding extra dimensions to his universe, even inventing entirely new languages for his works.

The primary goal of all writing is to stimulate some level of empathy in the reader towards the characters, or at the very least to stimulate more complex thoughts to something that may have once seemed plain and clean-cut. Often, this is done via a layer of development that most people can relate to– be it the internal struggles a character has to face, or the external obstacles that causes them. Without this element of understanding, it is often hard for a reader to sympathize with the character, and will many times be the deciding factor if the reader enjoys the story.

Of course, the writing itself is hugely significant, just at the journey often plays a larger role than the destination. The author has many tools and methods that they can use to try and connect with the reader on a second level, that surpasses the first obvious layer. This is where all of the words that high school analyses taught us come into play – metaphor, symbolism, allegory, motifs, chiasmus, juxtapositions, foreshadowing, irony, archetypes, allusions… all are components of the author's rhetoric, or his attempt to persuade the audience to one end or another. Normally, it is with these tools that the author conveys their 'true' intentions– the theme or lesson that they hope to convey. One might not even recognize the process, but the subtle implications that come through word choice can nudge someone's opinion into a direction of the author's choosing– a simple example being foreshadowing a surprisingly sincere ulterior motive in what appeared to be a selfish character.

But there is a lighter side to writing as well, without the morals or philosophy aspects. There is a tasteful beauty to all forms of writing, sometimes song-like in the fact that it can have rhythmic and tonic elements, even outside of poetry. One of my personal favourite novels illustrates this perfectly – *Shoeless Joe*, by W.P. Kinsella. Despite an exterior appearance of being a baseball novel, I found the lyrical nature of the prose the true gift of the novel. It was not a fast, plot-driven work, which made reading less about getting to the next event and more about enjoying each paragraph and description that the author so clearly poured his heart into perfecting. It is almost a direct view into the mind of the author, giving a window into the eyes of a fan of the purest essence of baseball– someone who was truly in love with the game. Its story was not about baseball, but about the love of baseball, and how much such a love can help guide people through difficult times, speaking about forgiveness and childhood dreams.

The world of literature is incredibly vast, and thus trying to name a few of the greatest writers or novels becomes simply a matter of personal preference. Yet we must appreciate the dedication and hard work that authors have put into writing for our own enjoyment, and our incredible privilege of being capable of reading and interpreting them – two things that we may far too often take for granted.

Cutting the Crap: A New Way to Watch Star Wars

MEAGAN CARDNO
1B NANOTECHNOLOGY

Many hardcore (and some casual) Star Wars fans find the prequels a very touchy subject. And by 'touchy' I mean to say you're going to see some very angry nerds faster than you can say 'midichlorians'. But the prequels did create a curious dilemma— what is the 'proper' way to watch the saga? Two options became obvious: the release format (IV V VI I II III) and the chronological format (I II III IV V VI), but each comes with its own flaws, mainly in the way that each ruins the enjoyment of the other in some way. These drawbacks just didn't sit right with many people, and so new watching orders were developed. Some very opinionated fans argue that the prequels should just be ignored entirely, but to that I politely disagree, as there are some very important and effective sequences in the prequels that make the original trilogy even more meaningful.

After some snooping around about the subject, I stumbled across what appears to have been the metaphorical gold mine, dubbed by the creator as the "Machete Order". It proposes to watch the films in the order IV V II III VI. If your math skills are up to speed, you will notice that *Episode I* is gone, and perhaps the picture is starting to come into focus.

This sequence works for two reasons: first, it removes the confusing, contradictory and lacklustre mess that was *The Phantom Menace*. Secondly, it emphasizes the entire point of the prequels— to draw important parallels between Anakin and Luke, thus increasing the tension that builds up to the grand finale of *Episode VI*.

There are hour long rants of people pointing out just how bad *The Phantom Menace* was (Red Letter Media has a very... thorough breakdown of it) but suffice it to say it was bad even from a purely cinematic viewpoint. When it comes down to the plot of the saga, the film did nothing but unnecessarily complicate things, bore us with trade disputes and democracy, and give us many things that we would rather forget (re: Jar Jar Binks). The only moments of the film that even came close to acceptable were sub-par, such as the long-winded pod race and the emotionless duel with Darth Maul (mainly due to his and Qui-Gon's lack of character depth). It also eliminates the obvious awkward age gap that Anakin had with Padmé and Obi-Wan-- skipping directly to him well in his teens makes the relationships they develop little easier to believe without images of his happy child-self still in your brain.

However, what really sells many on the new order is how much the two halves begin to compliment each other. It establishes the universe in the ways audiences first saw it in *A New Hope* and builds up to the immense climax that was the end of *The Empire Strikes Back*, watching the development of Luke from a young, emotional farm boy to someone of great importance. When we go to *Attack of the Clones* and *Revenge of the Sith*, we see Anakin, also under Obi-Wan's tutelage, take a similar path, and the audience obviously makes the connection between the two. The tension rises when *Revenge of the Sith* has Anakin exceed the parallel development with Luke, including his passage to the Dark Side and the resulting terror he instilled upon the galaxy.

This intense foreshadowing coupled with the unresolved tension from *Episode V* makes *The Return of the Jedi* — often considered the weakest of the original trilogy— wrought with anxiety and tension, as the obvious similarities between Anakin and Luke only leads to the logical progression that Luke might be fated to follow in his father's steps. Luke mimics both his father's manners and image throughout the film, and in the climax he is faced with the same decision his father had to make. If someone watched this encounter after only *Episodes IV* and *V*, this threat is very unconvincing, as Luke has been established as a skilled, hot-headed and courageous young protagonist, and thus unlikely to do anything of the sort. But after seeing his father, the emotional and brash child prodigy, do the exact same thing, the threat becomes more serious.

While the system has a few minor issues, as a few things are mentioned in *Episode II* and *III* that directly reference the omitted episode, the overall impact seems phenomenal- almost Star Wars as it was intended to be seen. Now we only have to wait for the newest Disney films to shatter our system, not unlike the Death Star and Alderaan.

techedon.com

The 'Machete Order' watches the Star Wars films in the order IV V II III VI

The Devil is in the Details

NANCY HUI
3A CIVIL

TAKE FIVE

Suspension of disbelief is a phrase used by Samuel Coleridge in 1817 to describe the willingness of a consumer of a fictional narrative to accept said inherent implausibility of the narrative. The film industry puts a lot of time and effort into ensuring that viewers accept the unfolding narratives before them, but sometimes they trip up over a detail – things like glaring lack of chemistry between leads, slipping accents, and a low special effects budget can really strain a viewer's abilities of self-immersion, though they're likely to just laugh and forget about it later.

The heroes and villains within a story, however, are much less accepting of a little glitch in the matrix. Here are five in-universe examples illustrating how inattention to detail can ruin a complex series of machinations and lead to violence, trauma, and death.

Side Effects (2013)

Emily Taylor (Rooney Mara) begins taking the antidepressant Ablixa after her husband (Channing Tatum) returns home from prison. She suffers sleepwalking as a side effect of Ablixa, culminating in stabbing her husband with a kitchen knife. Her prescribing psychiatrist (Jude Law) struggles with his unravelling public image in the aftermath of the case, and finds that there's more than meets the eye to the young widow's parasomnia.

Stephen Soderbergh's final movie before his hiatus is a well-crafted mystery, but with some conspicuous rough edges. Two key romantic leads have absolutely zero chemistry with each other. Soderbergh orchestrates his reveal with a tell-not-show approach that compromises the elegance and simplicity of his accompanying montage. Catherine Zeta-Jones' makeup artists have saddled her with particularly severe eyebrow plucking and evil-coloured lipstick.

Nonetheless, *Side Effects* remains a surprisingly effective, if slightly amateurish, psychological thriller.

Inception (2010)

Dom Cobb (Leonardo di Caprio) leads a team of well-dressed professionals to implant an idea inside a sleeping businessman's dream to dissolve his dead father's company. Unfortunately the deeper Cobb delves into his target's daddy issues, the more of his own tragic past he encounters, in the form of his deceased wife, Mal (Marion Cotillard).

It's not entirely clear how the process of inception works, but Cobb repeatedly emphasizes the importance of attention to detail in the convincingness of a dreamscape, down to the weave of the carpets. One misplaced thread is all it takes to activate their targets' subconscious defence system, as the businessman Saito tells us in the prologue.

And indeed, director Christopher Nolan doesn't skimp on detail. He had a $160 million budget. He used *Memento* (2000) and *The Dark Knight* (2008) as practice for directing Inception. But so dazzled was I that the first three-quarters of *Inception* seems nothing more than an exercise in the extraordinary. By the time we reach Cobb's final confrontation with his wife it feels of no more importance than a fuzzy photograph in a forgotten dream.

Paycheck (2003)

Michael Jennings (Ben Affleck) does lucrative but somewhat unethical contract work for large engineering firms. Upon the conclusion of his contracts, he has his memory wiped, and huge sums of money transferred to his bank account for his trouble. After one such contract, he receives an envelope of knickknacks instead of some very profitable stock options. This upsets him very much, but no more than the armed thugs who are now chasing him about the research he doesn't remember doing. How sad.

The joke is that Ben Affleck directed *Argo* (2012) so that everyone would finally forget about 2003, in which *Paycheck*, *Daredevil*, and *Gigli* hit theatres. Well, *Paycheck* really isn't so bad. I thought it was at least as entertaining as National Treasure, if a good deal less chaotic. I'm totally willing to overlook its checklist-like approach to plot devices. Hairspray as flamethrower? Check. Single ominous bullet? Check. Attempted seduction failed by slipping contact lens and inadequate knowledge of baseball? Check.

Die Hard with a Vengeance (1995)

Hans Gruber from the original *Die Hard* (1988) has a brother (Jeremy Irons) who calls himself "Simon" and wreaks revenge on John McClane (Bruce Willis) by sending him all over Manhattan to solve logic puzzles with Samuel L. Jackson.

Die Hard 3 is actually my personal favourite of the whole franchise because of the inherent absurdity of the tasks set upon McClane by a man who takes inspiration from children's rhymes. Watching him traverse the city in a combination of wifebeater, sandwichboard, and frazzled nerves as he comes to the conclusion that he's got to accept that he's a walking weirdness magnet. How is it any more unusual from locking a man in a building full of terrorists, or allowing him to single-handedly restore an airport to order?

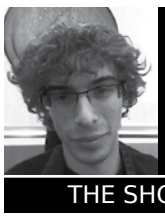
"Simon" and his small private army simply can't keep up with the resilience that McClane's built up over the years. Referring to the weather as raining "dogs and cats" and handing over a pill bottle with the approximate location of Simon's hideout shows that he needs more practice.

Inglourious Basterds (2009)

Colonel Hans Landa (Christopher Waltz) is a Nazi officer in World War II. His mission is to hunt Jews. Across the Atlantic, Lieutenant Aldo Raine (Brad Pitt) assembles a team of eight Jewish-American soldiers. Their mission is to scalp Nazis. In Paris, Shoshanna (Melanie Laurent) operates a cinema, and plans to burn down the building with Nazis inside at the premiere of a propaganda film. As tends to happen in films like this, their three missions collide .

Supposedly Quentin Tarantino's self-appointed masterpiece, *Inglourious Basterds* is bold and beautiful. Why do I even try to describe it? The film goes from contemplation to detonation in seconds. Covers are blown over the wrong finger gesture for the number three. A key character's heroic sacrifice turns out to have been for naught. I would be angry at this movie if I didn't have so much fun watching it. As it is, I'm just frustrated at how I couldn't track down the shade of eyeshadow Melanie Laurent used as Shoshanna.

The Longest Daycare



JOSHUA KALPIN
2N SOFTWARE

THE SHORT SHORT REVIEW

Hello readers and welcome to another edition of The Short Short Review. Just as a reminder, in this column I attempt to review a short film or story in a really short number of words. This week I'll be reviewing the Academy Award nominated, Simpsons short film, *The Longest Daycare* in 452 words because the film, with credits, is 4 minutes and 52 seconds long.

Before getting to actually reviewing the film a bit of background on what the film is about and where it was released is needed. For those that don't know, the Simpsons, which the film is about, is one of the longest running cartoons on television and is about a dysfunctional family of five people. The film was originally played before *Ice Age: Continental Drift* and is about the Simpsons' youngest daughter Maggie's day at daycare.

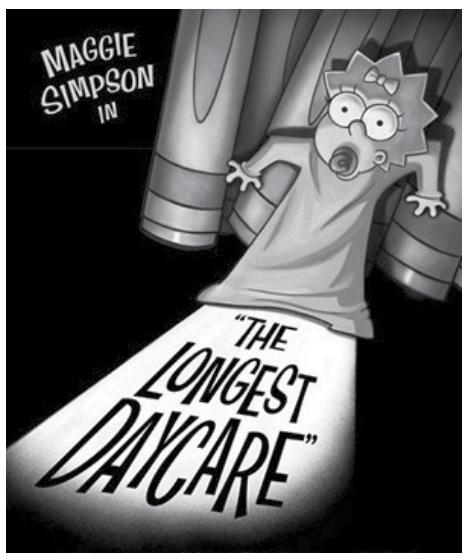
The premise of the film may seem a bit hokey, but the story absolutely hits the mark. There is not a single line of dialog throughout the narrative but this reflects Maggie very well. In the television show, Maggie never speaks and expresses herself through evocation facial expressions and hand motions. This quality perfectly lends itself to a film about her because well, she is a baby and the film is about babies.

Besides the fact there is no dialog, the story is funny, witty and is reminiscent of The Simpsons' glory years. There is a dastardly villain, bumper babies and a glue eater that all contribute to the gags. I don't want to spoil the ending but there are even a few plot twists throughout that keep the viewer on edge.

A good film without dialog requires a fantastic soundtrack and sound effects (see my previous film reviews for evidence of this). *The Longest Daycare* definitely delivers on this part. The soundtrack is reminiscent of The Simpsons television episodes (AKA really good) and the sound effects evoke the right emotions at the right time throughout the film.

Moving away from the sounds towards the looks and *The Longest Daycare* still stands out. There is a certain quality that we've come to expect from animated films, and especially 2D ones, and no doubt *The Longest Daycare* raises the bar. The animation is crisp and stands out in comparison to the television series. Additionally, the colours pop and just overall look stunning.

To wrap things up for the week, *The Longest Daycare* is an adorable short film that is deserving of its Academy Award nomination. Even if you are not a fan of The Simpsons, you'll find definitely enjoy watching it. As a result, *The Longest Daycare* gets 4.5 pacifiers out of 5. Stay tuned for next time where I'll review something weird!



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Thriftin' the Night Away

MOMMAKNOWS-BEST
3A MECHANICAL
3B SYSTEMS DESIGN
2A ENVIRONMENTAL

Momma gunna pop some tags, she only got twenty dollars in her pocket! #mommaknowsbest is back with some thrift shop tips. Macklemore ain't the only who can rock your grandpa's style - you can too, and possibly even get it for ninety-nine cents.

Thrift Shop Rulez:

- Coppin' it, washin' it, 'bout to go and get some compliments
- But seriously, wash before wearing. You just bought a piece from a thrift shop, you have no clue where it's been or who its last owner was. This step is simple: Buy, wash, and reel in the compliments. POP POP.
- Passin' up on those moccasins someone else's been walkin' in
- Fact: Feet are nasty, let alone someone else's feet. Follow the no socks, no buy mantra.
- I could take some Pro Wings, make them cool, sell those
- Take it from Macklemore, thrift shopping is not only a way to save money, but a way to earn some mad chedda too! If you see something that you think could look better, pick it up, make those adjustments, and try to turn some profit!
- I'm digging, I'm digging, I'm searching right though that luggage
- Thrift shopping ain't easy or else everyone would do it. There tons of items in a thrift shop, you are often looking for a needle in a haystack. The trick is to keep looking! The piece you are looking for is there it's just hidden by the sweater that looks like your grandmothers couch or the pants that could fit three of you.
- One man's trash, that's another man's come-up
- Just because you don't like a piece doesn't mean that it isn't exactly what the next person is looking for. Keep an open mind while thrifting and respect other patrons.
- That shirt's hella dough, and having the same one as six other people in the club is a hella don't.
- Of course, one of the best things about thrifting is having unique pieces that set you apart. You never wanna be caught in a "hella don't" situation.
- Saving my money and I'm hella happy, that's a bargain b**ch
- The best part of thrifting the money you will save! Not only will you feel like the most badass baller in the bar but you will have some extra cash in your wallet. WIN WIN.

Peace out
#mommaknowsbest

A Highly Variable Cheesecake Recipe

CAITLIN MCLAREN
1B CHEMICAL

A HIGHLY VARIABLE X RECIPE

You love cheesecake. Don't lie. I know you do. After exams, don't you think you deserve some? But wait! You cry. You are tired! You just finished several dozen exams!

I don't care. Cheesecake is life. It is a drug, and misery loves company. I insist that you make yourself some as soon as possible. Furthermore, it is as easy as pie. In fact, it is a good deal easier.

The following recipe is for a normal, round, cake-sized cake. If you want to make a bigger one, use your own judgement- I don't blame you. Everyone wants a bigger cheesecake.

First of all, you need some graham cracker crumbs- about one and a half cups. Mix them with about 1/3 of a cup of brown sugar and the same amount of butter; cover the bottom of your pan with the mixture. This is all you need- but here is a secret: You know those Skor bars? Those crunchy sweet butter toffee things. You can get bags full of little pieces like chocolate chips. You should mix them in with your graham cracker crumbs. I also highly advise spices.

For the cheesy part: Mix up two packages of cream cheese and two spoonfuls of lemon juice. Add a container of heavy whipping cream and beat with an electric mixer- if you don't have one, just use elbow grease. Add 1/3 cup of white sugar, and put it in the crust. Chill for way too long, preferably overnight.

That is the cheesy bit. There is also flavouring. To flavour the cheesecake, you can do two things- mix the flavour in with the cheesy bit, or put it on as topping, or both. There are numerous potential flavourings.

- Chocolate. You can mix chocolate chips in with the cheesy stuff, and you can also drizzle it on top of the finished cheesecake. The word "Nutella" also comes to mind.
- Cherries. Because that is the stereotype. You can put cherry pie filling on top, which tastes like glue and drips everywhere. Thanks, New York. I hope you're happy. If you have a soul, you will use actual cherries.
- Strawberries. Strawberries are awesome with everything, and are very decorative. If you want a pretty cake, go for these seedy fellows.
- Pulled Pork. Sorry, no. Unless you're into that-we don't judge.
- Maple Syrup. You can mix it into the cheesy bit, but be careful- you might make it too thin. Pouring it on top is much safer, eh?
- Mango. Slice it up and put it on top. Trust me, this is good.
- Coffee. Do NOT pour coffee on top, and definitely don't go about mixing coffee into the cheesy bit. That would be a disaster. Use a coffee-flavoured liqueur to do either of those things.

Now that you are finished, both you and the cheesecake will have to chill some more, possibly overnight. Have patience- good things come to those who wait.

The "Aberdeen Hi-flier"

LUKE VAN OORT
3B MECHANICAL
PARTH DAVE
4B MECHATRONICS

MODERNIST MIXOLOGY

The Aberdeen Hi-flier

100g basil vodka
50g club soda
15g simple syrup
Juice of a quarter of a lemon
Pinch of salt
Top with mint foam
Garnish with seared fennel, watermelon, cucumber, and (optionally) lemon zest

Basil Vodka

Bunch of basil
500mL vodka
2 N20 Chargers

Mint foam

500mL mint-water
2 egg whites

Simple syrup

2 cups water
2 cups sugar

The Aberdeen Hi-flier is an original creation that we will use to illustrate a culinary concept popularized by Chef Grant Achatz of Alinea called "flavour bouncing." This cocktail was originally inspired by the flavour of seared fennel. To create it, we asked ourselves "what flavours go with seared fennel" to which we answered "basil." The process is then repeated recursively for each added ingredient while making sure the new ingredient doesn't introduce any flavour conflicts. After several recursions, we arrived at the final flavour composition of candied fennel, basil, mint, lemon, watermelon, and cucumber. At this stage, the concept could easily be turned into an amuse bouche, starter, or dessert were one preparing a meal; however, as this is a mixology column, we examined how each flavour could be presented in a drink, and decided upon basil infusing vodka, mint foam, lemon juice, and a garnish of the other three ingredients.

One cannot procure basil-flavoured vodka at the LCBO, but even if it were procurable we would still suggest creating it at home as many flavoured vodkas are artificially-created chemical swill. Usually, an infused liquor takes at least a month to prepare (the banal concoction 'Skittle vodka' being an exception), but we are making use of a special flash infusing technique to cut this time down to a few minutes. The liquor and basil are placed in a whipped cream maker (often called an iSi), and pressurized with two nitrous cartridges. After steeping for a few minutes shaking occasionally, the nitrous is purged and the resultant flavoured liquor strained into a container.

Mint foam can be created with either an iSi, whisk, or immersion blender (slightly different recipes are often needed for each). We chose to create our foam with a whisk as our agitator since our choice of foam stabilizer, egg whites, can clog an iSi. The water and mint are combined in a saucepan and heated, then reduced. The more extensively the mint 'tea' is reduced, the better; if you don't reduce enough, the foam will have an imperceptibly light flavour. The egg whites are then added and the mixture whisked until a stiff foam forms on top.

Parth Dave

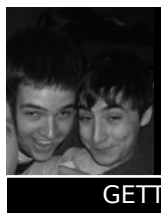
The Aberdeen Hi-flier was originally inspired by the flavour of seared fennel.

Simple syrup is an easily prepared ingredient of many cocktails. It is also sold at grocery stores, but the prices are often absurd and many strange additional ingredients are included (PC simple syrup can contain fish for instance, which is genuinely puzzling). Equal parts sugar and water are brought to a boil while stirring, then cooled. Very simple to make, hence the name.

To candy fennel, cut fennel into desired shapes, and place in a frying pan with simple syrup on a medium heat. After a while, the simple syrup will become a caramel at which point the fennel can be allowed to cool. The watermelon and cucumber require no special processing, however the optional lemon zest is deceptively easy to prepare incorrectly. Examining a lemon (or lime, orange, etc) peel, one can see that it is comprised of two parts - a white flesh called pith, and the coloured flesh that is packed with flavourful oils (the zest). The pith lacks any notable pleasant flavour, so the goal is to remove the pith from the peel and only use the outer, flavourful, layer in garnishing the drink.

Once all ingredients are prepared, stir together the vodka, club soda, and lemon juice liquor with ice (shaking dilutes the drink) and pour into a chilled glass with garnishes. Make sure to remove the garnish from the spike and drop into the drink prior to imbibing - it plays a role in balancing the flavours.

Pothole Filler Imperial Stout



GRAEME SCOTT
3T CHEMICAL
ERIC EVENCHICK
3T ELECTRICAL

GETTING GOOD HEAD

Well hello there readers and adoring fans (I assume we have at least 2), this is Graeme reporting in with Getting Good Head. Sorry if you missed last issue's article, it was written in invisible ink and only the cleverest of you read it. Email us the secret code to win a fantastic prize!

Well, now that we're back to printing in black and white, I suppose it's time to get to some beer reviewing. This week I will be examining, nay, studying...nay imbibing a lovely concoction from Howe Sound Brewery in BC; Pothole Filler Imperial Stout.

This beer immediately caught my eye the first time I saw it at the LCBO due to its large bottle (1 metric litre), strength (9% alcohol content), as well as its "clever" name, implying that it is both dark and not for sissies. I will note as an initial disclaimer that drinking the whole bottle at once, though it may seem like a bad idea, is definitely a bad idea. It is, however, a good beer to drink over a long period of time, or to share with friends (or enemies depending on how much iocane powder you have put in it).

Those with a sharp eye will find a Princess Bride reference in that last paragraph. Have you found it? If not, please watch the movie and try again, this is very important. I'll wait here while you do.

Ah you're back! I suppose we should be getting along then. Pothole Filler Imperial Stout is described by Howe Sound Brewery as "a strong, inky dark ale, brewed with 6 malts and blackstrap molasses. It is a thick beer, with an intense roasted barley flavour, with notes of chocolate and licorice" and boy oh boy is it ever!

On pouring, the beer is very dark, with a hint of brown around the edges with a nice light head. Without even a taste, the coffee and chocolate odours are very apparent, but not overwhelming. You can immediately get the sense that this will be an enjoyable drink, and boy oh boy is it ever!

The flavour again isn't overwhelming, but is very rich in sweetness and chocolately flavours. The beer is a bit bitter, which matches nicely with the coffee flavours, and finishes very smooth. There is very little alcoholic taste to the porter, however the 9% alcohol content does become evident upon a second tasting.

The beer is fairly thick (you may have guessed this based on the name), with a nice creamy texture and a small amount of carbonation. Also of note, the bottle comes with an attached "pot-stopper", a resealable cap, which can be used in the case that one sitting is not enough to finish the whole bottle. Because of this, I give a bonus of .3 Surly Bartenders.

Having had two bottles of this lovely BEvERage, once all at once, and once over two sittings, in attempt to take in and remember the details a bit better, I can say this is one of the better beers I have had, and definitely ranks in my top 3 porters. Overall I give it 4.5 Surly Bartenders out of 5 Surly Bartenders, and with my completely un-arbitrary bonus points comes to a whoppering 4.8 Surly Bartenders out of 5 Surly Bartenders.

Join me again next week where I will be discussing the current economic situation of the Conch Republic.

Top Ways to Escape the Friendzone

WADE WILSON & EDWARD BLAKE
3Z HANDSOMENESS
TOPZ (WITH A Z)

The Oxford English Dictionary defines the friendzone as "No exact results found for friendzone in the dictionaries." More deadly than the dangerzone, more colourful than the Twilight Zone, less P.J. Phil and Sugar Baby than on The Zone, the friendzone is no laughing matter. Of course, the inevitable question whenever one talks about the dreaded friendzone is, "What colour shoes is Cat (which rhymes with fat!) wearing?" The answer is black. The implied follow-up question is, of course, "How can one get out of the friendzone?" This is not an easy problem, but we at Topz (With a Z) have been conducting extensive research on the topic. It wasn't easy getting in the friendzone: when you're this handsome, we can only assume that pepper-spray and restraining orders are the way that these nymphets play hard-to-get. But, with the miracle of science (3,4-methylenedioxy-N-methamphetamine), we managed to find our way! So without further ado, here is our list of the top ways to escape the friendzone.

Never Tell Them How You Feel:

Papa don't preach, you're so old that you sign off on your Facebook posts. The first rule of zoning out is to keep that deep dark secret (of love, not the one making its way through your ileum) to yourself (actually, keep both to yourself, unless you're in Arts). If you tell them how you feel, it will only result in more heartache than when we discovered butter sandwiches (the bread is Krispy Kreams), or getting impaled through chest. No, by suppressing your emotions you become a stronghold of love, waiting until you are conquered by the beautiful legs, luscious lips, curvaceous hips, firm buttocks, ample bosom, and elegant fallopian tubes of the woman of your dreams (or man). This way, you set yourself up for that storybook romantic ending when they see that you're the one who understands them.

Always Forgive:

Echo this advice wherever you go: don't do drugs. It is also important to always forgive and forget (drugs will help with the latter). Whatever their indiscretions may be, only by constantly letting said indiscretions slide will the object of your eye start to respect you. We're talking about Patty Mayonnaise here, Rachel Green, Teenage Clone Abe Lincoln, Cat Declaro (also possibly a clone)! Surely your love is enough to warrant overlooking such trivialities as borrowing things and not returning them, constantly asking for rides, never inviting you to parties, sleeping with your best-friend, showing you their homemade short-films, and sodomizing your dog. Only by putting them on a pedestal and ceasing to treat them as a human being will your love be reciprocated.

Do Everything that They Want:

November is a good time to get started on Christmas shopping … unless you're trying to escape the friendzone: then every month is a good time to buy them things. You've heard them complain time after time about how inconsiderate their boyfriends or girlfriends have been, so now is your chance to prove your merit. It won't take long for them to realize that all along you have been the perfect person: you pick up their laundry, you listen to their problems about significant others, you drive them everywhere, you help them with homework, et cetera, et cetera. You'll know that it's working when they start to expect it from you (like you're they're boyfriend or girlfriend minus the intimacy and commitment!) and refer to you as their "best friend" or "great friend" or "stop following me". Even better is when they start saying that you're "like a brother/sister": this means that they see you as family (like a husband/wife/hillbilly)! Just remember to always ask yourself if Carl would do it for Ellie, nothing is too far: this includes even seemingly absurd things like editing their résumé.

Make Them Jealous:

India has a serious social problem of sham weddings being used to steal the dowry of unsuspecting young girls. While sham marriages for dowries are despicable, sham relationships for emotional manipulation are a lucrative and advisable practice. Think about how jealous you get when you see your special someone in the arms of another (unless they're into amputees). Surely they would feel the same way if they saw you without someone else. Problem: you only want to be with them. Solution: just take advantage of someone even more cripplingly lonely than you are (unless you are Cat Declaro, in which case you've hit rock bottom and we advise for you to ask out Ben and Jerry). Yes, just take your beard (or, in the case that you chose someone of your sexual preference, your "unibrow") around the town: uptown, downtown, midtown, Lazy Town, O-Town, Townsville, Toonsville, Toon University, University of Waterloo, Uptown Waterloo, downtown, midtown, and Lazy Town. This will make your target jealous and we assume will have no negative side-effects on the person you are deceiving and using as a means to your ends. The closer this person is to the one you truly desire, the more effective this will be.

Seek the Permission of their Parent:

"Sierra" sounds like the word for "car" in Arabic. Have sexual intercourse with their mother and/or father.

By this point, your mark will definitely want your D (or V or Q (if you have to ask, you can't afford it)). By being in the friendzone, you are already halfway there: they trust you, they are comfortable around you, and you are an important part of their life. Surprising them with the news that you actually are interested in them for entirely different reasons and everything that you have been doing for them is motivated by romantic and sexual desire will be very well received. Nothing gets people wetter better than someone who is a doormat that has been dishonest about their intentions and has been obsessing over you in a completely non-mutual infatuation. Yeah, they totally want the D.

What Iron Rings are (Not) Really Meant For

GRADCOMM CO-CHAIRS
4B WHO GIVES A F**K

Now that us fourth years have received our Iron Rings, we felt it was important to highlight some of the do's and don'ts around these fine hoops of stainless steel. It is important to note that these are only recommendations, and Gradcomm does not take any responsibility for your own stupidity.

The Do's

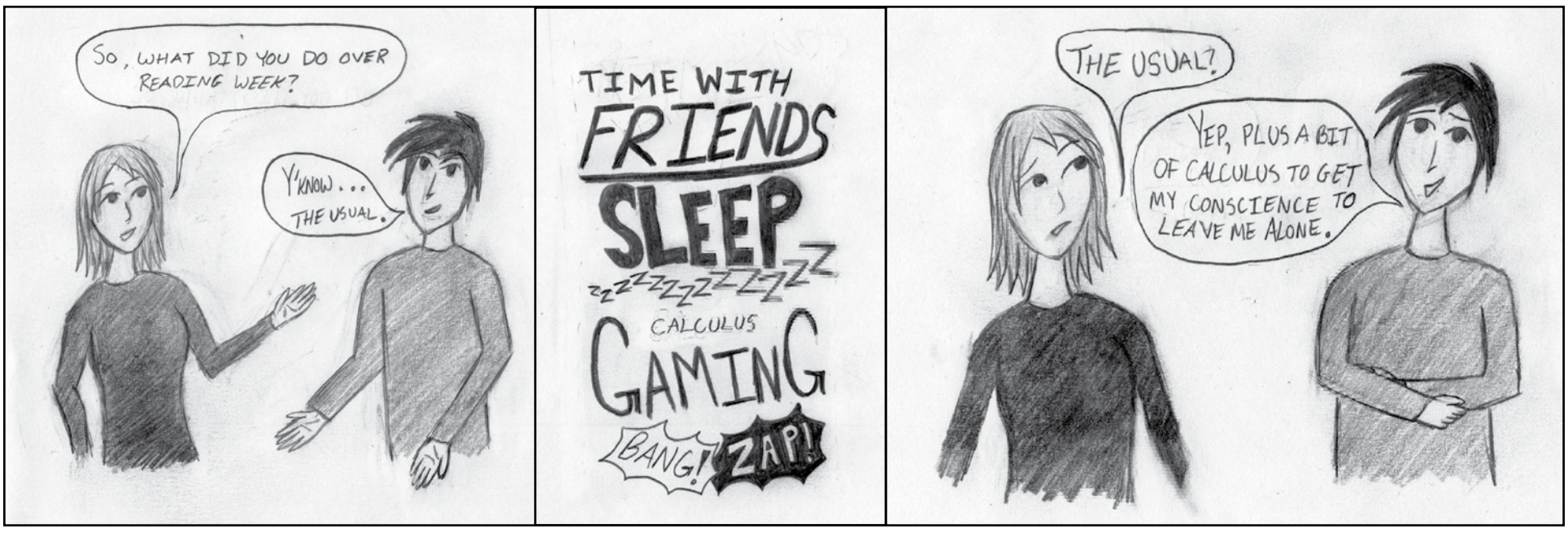
1. When at a get together, and BEvERages are being served, why not show off your ring in a feat of strength? Hold your ringed hand against the side of an unopened bottle, palm in, fingers pointing down. With one sharp movement, bring your hand upward, allowing your ring to catch the underside of the bottle cap. If all goes well, the cap will pop off. It may take multiple attempts depending on the type of cap as well as your hand-eye coordination.
2. Your ring is a symbol of the knowledge you have gained. Most of this knowledge, however, is not useful for everyday work. Therefore, lessen the load on your brain and transfer that knowledge to someone else. The best method is to tap your ring against someone's forehead. Dents speed up the transfer process.
3. Most touch device owners have their own stylus, but who are we kidding, those get lost almost immediately. Save some cash and use your ring as a replacement.
4. Getting diagnosed with itchy nose syndrome only shows that you spend too much time showing off your ring. Keep up the good work!
5. How big is yours? In life, everything is a size contest. Asking whose is bigger only firmly solidifies this mentality.
6. Weddings are a perfect time to take advantage of your pinkie's mobility. Clink on that glass and make the couple kiss. Do it more than once just to draw attention to your ring.
7. What the hell, clink on glasses all the time because you are on obnoxious fourth year!

The Don'ts

1. Don't get it too tight! A trip to the hospital to cut it off only proves you weren't worthy of the ring. True engineers would use floss to take it off.
2. Don't get it too loose! You may become that person who lost the ring between IRC and IRS.
3. The ring is not a tool (other than what was described in Do.1) Yes, steel is strong, but why tempt fait trying to bend it?
4. Don't ever use it as a ring on ... other parts of your body. Do we need to elaborate?
5. Totems can be cool. But your ring is not one. We assure you, this world is real and you will just end up losing your ring.

What we have provided you is a starting point. These are guidelines to help you develop a strong relationship with your ring. It is up to you to develop your own personalized list to ensure you and your ring are happy together for many years to come.

Too Geeky for Humour

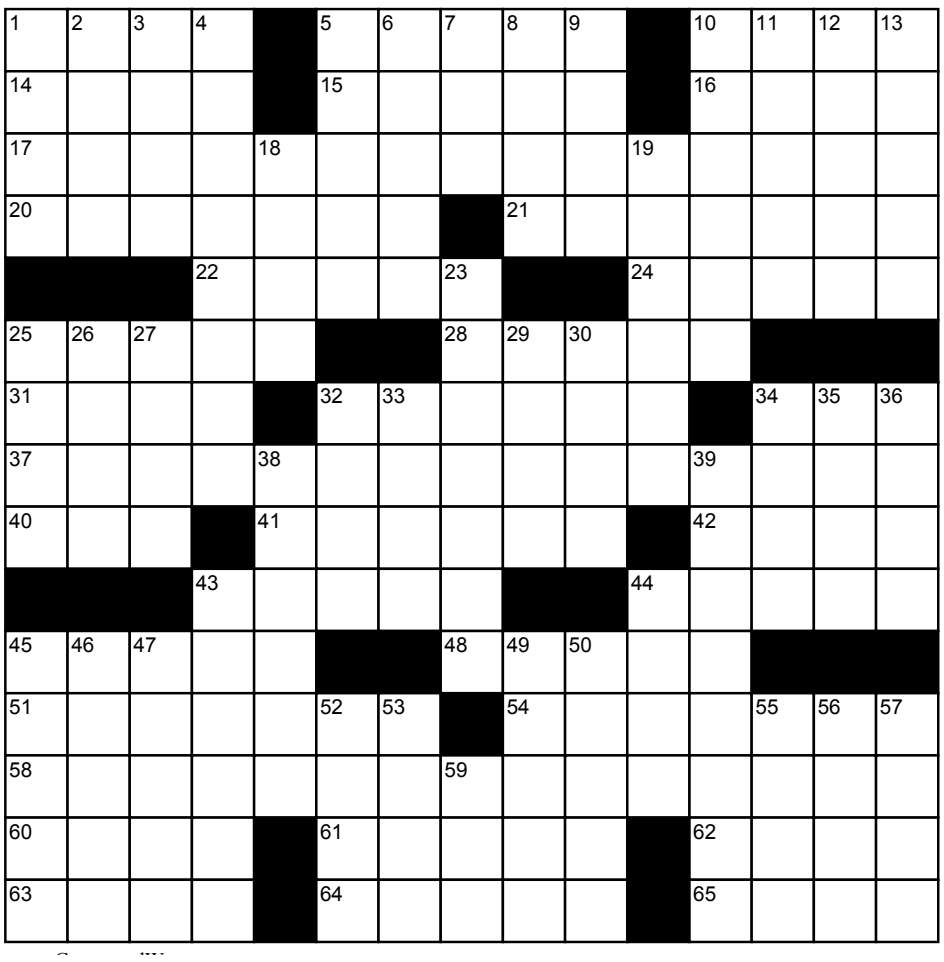


Kyla Rodgers, 1B Civil

The Iron Crossword

Ess-tended Phrases

STUART LINLEY
3T NANOTECHNOLOGY



ACROSS

1 Lowest dose causing effect, in toxicolgy
5 Personal collection
10 Wing or life go-with
14 Opinion
15 Glue, to Pierre
16 1052, to Cato
17 Marc Antony's request for a department store?
20 Talk show host with a thing for cars
21 Alters the angle
22 Adore
24 Sat up
25 Portion out
28 Mediocre camping vans
31 Instead (with in)
32 Introduce Oxygen
34 Irish folk dance
37 Choosing R or C, for example?
40 Not offs
41 Marks
42 Shakespeare's river
43 Secr.'s forte
44 Idiotic
45 Pike
48 Wanderer
51 Correction by erasing
54 Like hair or eye colour
58 Fit another patient in, as a dentist?
60 Burn soother
61 Rode in
62 Place __ __ the dropbox
63 Ott. hockey team
64 On _ ____ of the dice
65 Layer

DOWN

1 "Shots" artist, abbr.
2 Greek amphitheatre
3 Tiny
4 Serve, as in soup kitchen
5 Aroma
6 That's *Mister* Potato Head __ ___!
7 When repeated three times, a copper's greeting
8 Speak incoherently
9 Batman or The Green Lantern
10 Streaks with grease
11 Socrates' student
12 Buenos ____
13 Danish fairy
18 Chicken, beef, pork, mmm!
19 Wizard's implements
23 Divide into amounts
25 In addition
26 Property right
27 Rents
29 German footballer Oliver
30 Hwys.
32 Add to the pot
33 Former archbishop of New York
34 Joe
35 Symbol
36 Hereditary unit
38 Visual basic operator
39 Global health issue
43 Girl guide badge holders
44 Flemming and McKellan
45 Sonic consoles
46 Plebeian
47 ____ Center (Toronto mall)
49 Shrek and the like
50 Alcoholic honey beverages
52 Singer McEntire
53 Type of wound
55 Older Jackson
56 Small intestines
57 Maple leaf coin
59 Boxing victory

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

Sudoku

#2013-03

ANDREW FISHER
4B CIVIL

Easy

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

Medium

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

Hard

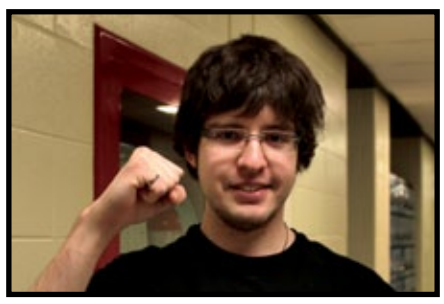
8			2		1	4		5
		2			5	1		
				3		8	9	
	1	9				2		3
				8				
5		8				6	4	
	4	7		1				
		6	4			9		
9		5	6		8			4

Issue #4 Deadline:
Friday, March 8 at 5:00 PM
Send your submissions to:
iwarrior@uwaterloo.ca

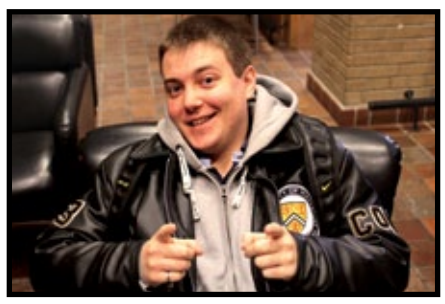
THE IRON INQUISITION
Kevin Veloso, 4C Software
Yola Harsono, 1N Mechatronics

"What is your size?"

"1.5."
Ashley Goddard, 4B Geological



"5.5."
Doug Sherk, 4B Mechatronics



"Wouldn't you like to know?"
Mark Khaitman, 4B Computer

"60 inches, triple chromed!"
Erin Matheson, 4B Chemical

"Bigger than Sean Walsh's...we compared."
Alroy Almeida, 4B Mechatronics

"6.5...around."
Zack MacLennan, 4B Computer