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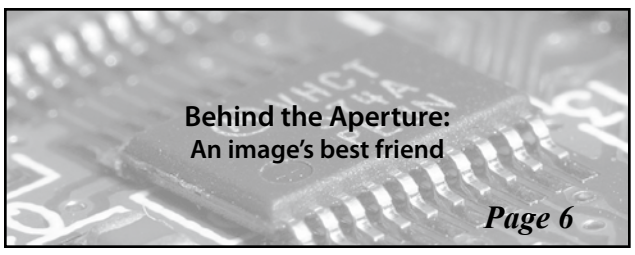
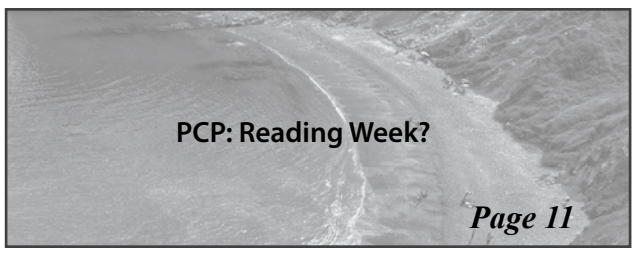
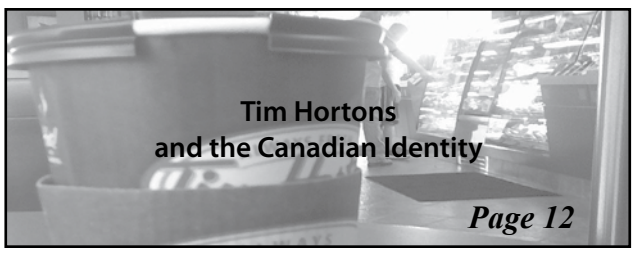
THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY VOLUME 33 ISSUE 3 | WEDNESDAY, FEBRUARY 15, 2012







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Waterloo Dominates at the Ontario Engineering Competition

SD cinematography

Waterloo's OEC delegation posing with their awards post awards banquet. Waterloo won 5 out of the 12 CEC qualifying spots.

ANGELO ALAIMO
4B ELECTRICAL

The annual Ontario Engineering Competition (OEC) took place from February 3rd to 5th at the University of Toronto. The competition pits engineering students from across Ontario against each other in six categories of competitions ranging from team design to debate. Over 250 students competed in the event, with Waterloo's delegation consisting of 40 individuals representing nearly all disciplines.

The competitions began on Friday night and continued well into Saturday. The University of Toronto's Bahen Centre was abuzz with activity as several hundred competitors, judges, and industry partners filled the building for the competitions.

After all the presentations and demonstrations wound to a close on Saturday afternoon, the judges deliberated, after which there was nothing one could do to change the outcome of the competition. The whole OEC delegation headed to the Atlantic Pavilion at Ontario Place for the awards banquet where the final debate between the top two teams took place on the resolution that the Iron Ring is more important than the wedding ring.

Dinner was served, and after everyone was satiated, the awards presentation began. First, the awards for consulting engineering were announced with teams from Guelph, Windsor, and McMaster taking 1st, 2nd, and 3rd places respectively. Teams in Consulting Engineering were tasked with responding to a Request for Proposal from the City of Toronto to implement a congestion pricing system within the Greater Toronto Area.

Team Waterloo picked up their first award of the night when Erin Matheson finished second place in Engineering Communications for her presentation, "Developing Techniques for Surgical Treatment of Brain Aneurysm." The other awards in engineering communication went to Carleton for first place and Toronto for third place.

Awards in Innovative Design proceeded after Engineering Communications which, at this point in the night, it became clear that Waterloo was going to have its strongest OEC showing in many years. In Innovative Design, teams present innovative solutions to problems. However, not only are teams required to explain their project's engineering aspects, they must also discuss its economic feasibility and present a preliminary business plan. Waterloo not only took second place in this category, but took first place as well. Congratulations to the first place team of Dhananja Jayalath, Neil Olij, Chris Wiebe and Ryan Mann for their "Muscle Activation Detection Suit" project. The second place team of Ilia Baranov and Melvin Ng will join the first place team at the Canadian Engineering Competition this March in Vancouver.

Waterloo's dominance did not stop there: 1st place in Junior design was awarded to a Waterloo team consisiting of Kumar Singh, Drupadh Manjunath, Ayush Kapur and Dhrumhill Parikh. Teams in Junior Design had to develop a solution to remove spilled toxic waste and prevent spillage in the future from a hillside beside the Pickering Nuclear Generating Station. This team of four Waterloo engineers were the only group within their presentation room to have a fully functional prototype.

Teams in Senior Design had to design an automatic trash collection machine that would be implemented in a residential setting. The machine had to automatically detect and pick up trash, detect objects on a road, and automatically dump the trash in a designated receptacle. Teams were given Lego Mindstorm sets and had to completely build, program, and test their robots in 8 hours of build time. The Waterloo Team consisting of Nevin McCallum, Cody Prodaniuk, Jeff McClure and Maple Leung had a nearly flawless demonstration which won them 2nd place in this category,

In all, Waterloo had at least one team place in the top two in four out of the six categories of competition. Waterloo competitors took home over $10,000 in prize money and one of two special awards for Technical Excellence which was awarded to the 1st place Innovative Design team. This is the second year in a row the technical excellence award has been won by Waterloo competitors.

Congratulations to all Team Waterloo winners at OEC who will be travelling to Vancouver for the Canadian Engineering Competition in March of 2012!

Letter From the Editor:

It Can Be a Long Road

CHRIS LETNICK
EDITOR IN CHIEF

Welcome lovely people.

This is a message to all those who might be feeling down, who might be feeling it's rough, and who might be feeling it's tough.

It's that time of the year. Stress is about as high as it gets. Midterms have started. Projects are almost due. Courses are reaching that point where we stop understanding what's going on. And, we are making those social sacrifices to keep our busy lives afloat. If you are like me, you also have those people in your life who don't understand how busy engineering at Waterloo can be. They just keep nagging you to give them more time even though you have none. In the end, this is compounded by the fact that we are stuck inside for most of the light hours.

It sounds pretty bad. Many people question why we put ourselves through this. Some do it for the money. Some do it to learn. Some do it for themselves. Some do it because their parents tell them to. And, some do it because they thought it might be a challenge. Whatever the reason, we are here; we all share the goal of making it to the end. We all want to be one of the crazy fourth years running around campus and banging our rings on every shiny object we can find. None of us want to fail a course, not to mention a semester. And, most of us have never failed in anything academic in our lives before making it to Waterloo.

But, what we want can't always be reached. Waterloo accepts the top talent from around Canada. That's right, all those people in your class did remarkably well before coming here as well. The university needs to be able to distinguish between the different top students. The better we do, the harder it will get. This means that some people will fail tests. Some people will fail courses. And some people going into university with a 90%+ average will be forced to repeat terms and consider alternate programs. Most of us will reach breaking points: where our lives and school collide in a way that can't simply be rearranged and solved.

I know of these things first hand. I was one of those students in high school that didn't understand the meaning of anything less than 85%. I came to university excited and naive: I thought my program would be fun and full of people as eccentric as me. I was proven wrong. I got here and found that math is very different in Ontario than it is in British Columbia. I was overwhelmed by linear algebra and the time requirements of a university program. I found the people in my class weren't quite as weird and interesting as I had hoped. Through this, I have been plagued by having to deal with my parent's divorce; nonetheless, I passed 1A and went on to 1B.

However, I let my personal life get the best of me over 1B. I failed a course with below 30%, and was forced to repeat the term. This is somebody who has never failed a course. The hardest thing I have ever done is explain to people that I failed something. I had to explain to people that invincible Chris, the person who is known for being able to do it all without faulting, has had a year of his life taken away by a simple grade. Certain people were considerably not impressed. My dad was emailing the undergraduate chair of my department to try and convince him something must have been done wrong on their part. Times can get tough, and I have certainly seen it in many ways.

You say, "Why are you telling me about this?" I want to make sure you understand that the experience we are going through can be hard. We can all fail. But more importantly, we can all recover. After my failures, I reconnected with my friends back in BC and relied on them for support. I came back to 1B and passed. I am now in 3B, and am on track to graduate in 2013. Once I had accepted the failure, it was easier to make adjustments to my lifestyle to fix it. The truth is, there are many resources at the university to help you get on track academically. Attending TA office hours, actually doing the non-required homework, and getting your classmates to explain things to you are all options for academic help. If you don't want to work that hard, then there are other programs. Consider switching to a different engineering, into pre-med, or even into pre-law.

You can be the smartest person in the world, but you likely won't succeed unless stay emotionally healthy. The statistics are not consistent, but somewhere between one in five and one in ten people suffer from depression. Chances are, there is a person sitting in the same row as you in class that knows more than they would like about this topic. I will draw on personal experience here again and inform you that I personally know depression far too well. I had to deal with it for a large amount in high school, and for a bit in my 2A term. Being depressed can be really difficult to get out by one's own ability; especially when you have completely legitimate reasons to be depressed. I escaped it the first time by keeping friends around me that I actually enjoyed for their company and by reminding myself that if the world is so bad, then I'm going to try and fix it. I brought myself back up in 2A by becoming more physically active.

You say, "Chris, why are you talking so much about yourself? Why are you talking about how hard life gets? Where are you going with this?" I want to make sure that everybody out there knows they are not alone. We are in a hard program and life can be tough. But, you are not alone. Whether you find yourself struggling or you find yourself sad; you are not alone. I think the two-week wait for a personal councillor in the engineering undergraduate office is a clear enough statement about how many of the people in this faculty have concerns in their personal life. So many of us, especially here, know what you are feeling. And, there are many places to get help.

The best place to find help is in a friend. But, we are not all lucky enough to have somebody close enough that we would trust to talk with about these sorts of things. In that case, don't worry about them being your friend. Most of us know how hard things get and the people around you will be willing to talk to you if you need somebody. If talking to a peer doesn't work for you, then there are other people to talk to. If you can't wait the two weeks for an engineering councillor, there are more in Needles Hall.

If talking to people doesn't work for you, there are some good ways to improve your satisfaction with your life. For one, try getting outside more. Reading outside in the daytime is a good way to do this while being physically active. This can be going to the gym or some outdoor sport. This is best if you can find somebody to join you. Also, stay in areas with lots of people; Humans are social animals, so seeing other people (to an extent) can help improve our mood. You can accomplish this by doing your studying more often in common space or by joining a club.

If you know you need help, but you feel the resources at the university are inadequate, The Univeristy services can point you in the direction of comunity services. If that fails to be sufficient, I encourage you to join a church. No, I am not saying you need to go believe in a god. I am not religious. Most churches value the well-being of all people. They often have people that care and the resources to provide a supportive environment for you.

If you feel that all my suggestions so far won't help you and there is nobody close to you who cares, come find me because I do care. I would fail out of my program if it meant was ensuring you got the help you needed.

Re: The USA: The Last Pillar of Freedom

CHRIS LETNICK
EDITOR IN CHIEF

As Editor-in-Chief, it is my final say as to what content is and what content is not published. As a newspaper that is mandated to both present a forum for discussion and represent the opinion of the Engineering Society, it can be difficult to draw the line between the opinion of a student and the opinion of the newspaper. The article from Volume 33 Issue 2, entitled *The USA: The Last Pillar of Freedom* stepped over this line. Although the article was based on factual information, it presented the information in an unfair and biased way. It is of the opinion of *The Iron Warrior* that all countries mentioned in the article have had both highs and lows, and that no country mentioned is specifically better than the others.

THE IRON WARRIOR

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

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Future Flows: Opportunities in the Water Industry

ANDREW MCMAHON
2A ENVIRONMENTAL

On January 27th, the Ontario Water Works Association Student Chapter at the University of Waterloo hosted a semi-formal event at the Embassy Bar and Grill, right here in Uptown Waterloo. Guests at the event included students from the University in a variety of programs, students from other Universities across Ontario, Industry Professionals, as well as Professors and Grad Students from UW. The event was a showcase of the magnitude of involvement that our Region has in Ontario's Water Industry, and focussed on the importance of networking among various groups.

To start off the evening, there was an ice-breaker activity prior to the keynote presentation made by Nancy Kodousek, Director of Water Services at the Regional Municipality of Waterloo. During her talk she gave some examples of the large-scale projects that have been completed and that are ongoing in the Region. She also described the working environment in the water industry: It is a fairly close-knit community that has a lot of pressure to get results.

There was then a quick break with more opportunities to network with others who are passionate about water. One of the focuses of the evening was the importance of taking advantage of networking opportunities, and this break along with the reception at the conclusion of the evening were great examples.

There was then a Question and Answer discussion panel. Panellists included Dr. Bill Cairns, Chief Scientist at Trojan UV Technologies; Dr. Monica Emelko, Associate Professor here at UW' Lee Anne E. Jones, President of the Ontario Water Works Association; and Leigh McDermott, a Practice Leader in the Water Division of Stantec.

One of the ongoing jokes of the evening was highlighted when the event coordinator Alex Chik, currently pursuing his Master of Environmental Studies in Planning at UW, posed his first question to the panel: "How did you first get wet? How did you come to be involved in the water industry?" The panel also fielded questions about the role of education in their career development, major events that have occurred while they were working in the industry (for example the Walkerton tragedy), and how they plan to address current issues regarding drinking water quality. During the first break and after the end of the panel discussion, there was free food (which was above and beyond the slice of greasy slice of pizza that usually accompanies the promise of free snacks).

I would recommend that anyone interested in working in the water industry for the Regional Municipality of Waterloo, or anywhere in Canada, go out to one of these events.

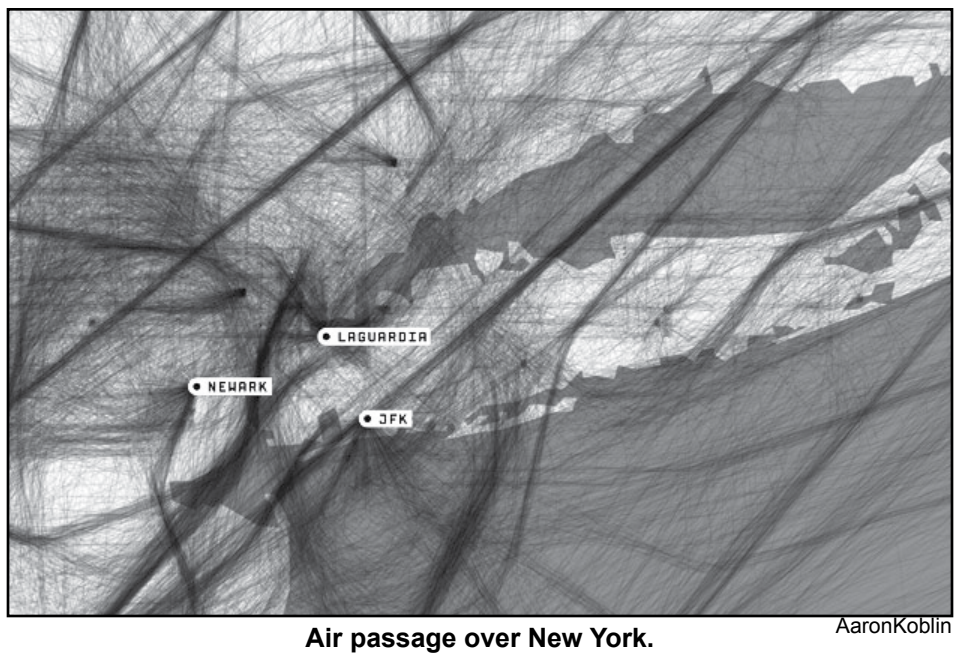
New York Clears the Airways

JON MARTIN
3T CIVIL

The airways over New York are about to get much more crowded, but in a good way. An upcoming overhaul of the way air traffic is controlled in and out of one of the busiest cities in the world will see its first major change in approximately ninety years. Changes include increased flight paths as well as the realization that planes can fly at different altitudes.

Some transportation authorities have made the claim that approximately 75% of all air traffic delay worldwide can be attributed to New York City, with hold-ups there cascading outward in a kind of compounding wave of delay. The root of this problem lies in that the state has severely limited flight paths that were originally based around the needs of small planes delivering mail in the 1920s. Since then, air traffic has increased astronomically. Also, flight paths across the state have been added, which has led to increasing inefficiency. The new plan, known as the New York/New Jersey/Philadelphia Metropolitan Area Airspace Redesign, throws out the existing map and starts anew; it is adding additional laneways to spread airplanes out while also integrating other airspace areas under a single jurisdiction.

The biggest change to the current system is the ability to have multiple planes using the same pathways; this was achieved thanks to the brilliant realization that planes fly and, therefore, can be separated by height in addition to horizontal planar distances. Of course, this is a great oversimplification of the entire decade-long development of the new plan. If you are interested, check out the official report on the Federal Aviation Administration website (*faa.gov*) or check out this article from Wired: *http://www.wired.com/cars/futuretransport/magazine/17-03/ff_airspace?currentPage=all*



AaronKoblin

Air passage over New York.

Google – Doing No Evil?

NACHIKET SHERLEKAR
1B NANOTECHNOLOGY

If you've paid attention while visiting a Google website in the recent past, you would have noticed that there's a small text box advertising that the company is coming out with a new privacy policy, effective from March 1st, 2012. So what is this going to mean for you, every time you use a Google service?

The major change this new policy has to offer is that information they obtain when you use one Google service can be combined with information they gain when you use other services. This, they claim, will result in a 'simpler, more intuitive Google experience'. A lot of people, however, are crying foul and justifiably saying that since one cannot opt out of this new privacy policy unless one leaves the Google network, it is unfair. An opt out is not even available for users of Android products.

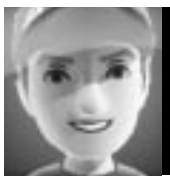
So why *would* you want to opt out of this privacy policy? Wouldn't it be nice to have Google store your preferences and use them the next time you search for something, so that the results they show are more tailored for you? Some people think otherwise, and say that Google is bordering on the 'creepy' line. I personally find it quite unnerving every time I receive a search result or am shown an advertisement vaguely linked to something I've searched for before. Google argues their case by using this example: "When someone is searching for the word 'jaguar,' Google would have a better idea of whether the person was interested in the animal or the car". Well, what if someone was interested in both, or the one they were not interested in before? Clearly this has not been very well thought out by Google, and this 'Google experience' may at times prove to be more of a hindrance than a help.

Also keep in mind that Google is primarily an advertising company. Advertisers have, for years, been utilizing the information you've provided while using a Google service to target you with specific ads. Many people have commented that *you*, the user, are the product they're selling to advertisers.

So, is there any way out of this? Yes, but the options are limited and unsatisfactory. One simple option is to opt out of using all Google products and services. Many are understandably reluctant to do so, because of the comfort they've gained after using these services for so long; after all, Google does have a pretty darn good search engine. The other option would be to have multiple user accounts and use one for each service, but this would be painful and irritating, to say the least. One just has to wait and see if enough uproar is created so as to make Google roll back this policy, as this seems to be the only decent solution.

Future of Gaming

Cross Platform Gaming – Is it Possible? Why Bother?



JON MARTIN
OBI JON1138

This article is a continuation of last issue's, discussing the future of gaming systems, memory, and media. Gaming changes so often with each generation of system that you really can't make predictions about what the next generation will bring until they announce it – but let's try that anyway.

In my last article I talked about the hope for a universal gaming media, a single disc that would be able to play on any system – console or PC. If that actually came about it raises a very interesting problem for the industry, how do you differentiate your system from the competitor's? Currently the biggest difference between systems is in the online experience and exclusive games. Microsoft has all the big name games, plus exclusives like Halo, Fable, Crackdown, and others. Sony also has the big name games, plus exclusives like Killzone, Resistance, Motorstorm, and others. Nintendo has Mario, Zelda, and, well that's about it. Just kidding, Nintendo has dumbed down versions of a number of the big name games.

With the ability to release a single game that would play on every system, a publisher would be crazy to try and introduce some kind of code to limit the disc to only play on a single system. I'm sure this would be possible to implement, probably using the same kind of technologies as with DRM, but it would lead to a lot of public outcry against a company. Currently, a company can make an excuse that they developed the game for a specific system architecture, or that it cannot be ported to another system without losing quality. However, if all systems used the same programming methods and a universal media type, then the only reason for a game to be an exclusive is if the company was bribed into doing it. I really can't see a company doing this – it just doesn't make sense to me – but then it has happened in the past. When Halo was first being developed, it was going to be released for Mac, but then Microsoft saw how much opportunity there was in the game so they bought the studio and suddenly Halo became an exclusive for Microsoft's new Xbox console system. Of course, this is a case where the company really doesn't need to bribe the developer, as they already own them. This is the only situation where console exclusives could continue to exist in the future if a universal media was introduced.

Maybe it is more realistic to abandon hope on a game media that would be cross platform compatible with all major consoles, but it could already be underway for integration between the Xbox 360 and PC. As I discussed last issue, Microsoft has mentioned the possibility of playing Xbox 360 discs on a Windows 8 PC, but here they have the advantage of developing the operating systems for both platforms. There is nothing special about the DVD drive in the Xbox 360, or the DVDs themselves – the difference is in the way they are encoded and whether the platform you read them on can actually access the program. If Microsoft made this kind of integration between their two platforms possible I think they would have an incredible advantage in the gaming marketplace, both from a manufacturing and attachment rate standpoint. I'm sure any tech company would jump at the ability to cut their production costs in half (well, not in half exactly, but significantly), and having a single disc run on two different systems would be a great way of doing that. Instead of producing millions of Xbox 360 disks in one factory and millions of PC disks in another they would be able to produce a single disc, and with that, only one set of packaging and other included things. I have previously mentioned attachment rates, but that was a few years ago, so here's a basic explanation. Most companies price their consoles so that they are taking an initial loss on every unit sold. As manufacturing prices come down, the companies can eventually reach a point where they are making a profit on the actual system, even with discounting over its lifetime. In the early years of a console's lifespan, companies mostly count on peripherals and game sales to make back the money they lose on the consoles. The controllers we buy for $60 don't cost that much to make, so there's some profit, and every single game disc costs a few cents to produce, but we pay another $60. True, that $60 is split up into cuts to the developer, the publisher, manufacturing, advertising and stuff like that – but a portion goes to licensing the use of the Xbox 360 system, so Microsoft gets a cut for every single disk sold. All of these little items can lead to a company making a profit even when they lose on the console itself, so companies will often discuss both the number of consoles sold as well as the attachment rate per console – the average number of games and accessories sold per console.

Here is where the benefits of a multi-platform disc could really benefit the industry, selling games and peripherals for a console without actually selling the console itself, or selling duplicate accessories (a Kinect for your Xbox and your computer). Think of all the people who might want to buy a game but don't want to pay the money for a console just for that one game they want to play. That would normally be a lost sale, but not if the person can still buy the game and play it on their PC, then play it on an Xbox if they eventually do buy one. No more problem with losing individual sales, less manufacturing costs, and all while making the consumers happy – now that is a great business move.

Let's quickly get back to the universal multi-platform disc I was talking about at the beginning, the one that could work across Xbox and PS3 platforms in addition to PC, is that really possible? I am not about to try and make guesses on a possible co-operative development between Microsoft and Sony on the gaming front as they have been rivals for a very long time, but it would definitely be interesting. As for PS3 games working on a PC that would first of all require a Blu-ray drive, not a barrier really to new computers but it could be an issue for any computer more than a few years old. Second, Sony would need to create some kind of emulation software to allow the games to play. This is most likely how the Xbox 360 system would work to, but there Microsoft has the advantage of complete control over both operating systems – the emulator can just be built into the Windows 8 operating system. Sony would either need to release an emulator program that would be able to install on a Windows operating system, or they could go the physical emulation route. Physical emulation works by actually having the hardware onboard to play a game, this is how the early PS3's offered backwards compatibility until the feature was discontinued. If Sony went the physical emulation route they would really only be able to implement it in Sony manufactured computers, which severely limits their potential market. So maybe it really isn't worth Sony looking into their own system, they may have to work with Microsoft if they really want to compete with Microsoft's system.

I really don't know how the next generation of gaming systems will evolve, and this idea of cross platform functionality is really just a dream for now. But you never know what the future might bring, so in the meantime, Keep on Gaming!

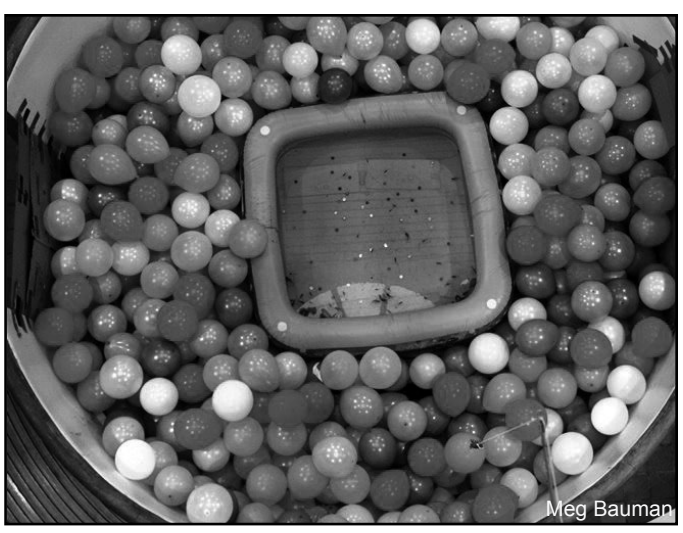
Congratulations to the Graduating Class of 2012 and Here's to Your Shenanigans

Meg Bauman


Tilo Mitra

Meg Bauman


Meg Bauman


Meg Bauman

Defying Gravity: So How Do We Get There?

GRIFF FERGUSON
4B CIVIL
MIKAYLA MICOMONACO
4B ELECTRICAL

"Made the Kessel Run in Less than 12 Parsecs."

Sound familiar? It should, although, technically, it is nonsense. A parsec is a distance, not a speed or time. Given the speed of the Millennium Falcon - making 0.5 past light speed - the imagined magnitude of this feat seems reasonable. Being able to travel 18 parsecs, about 60 light-years or 555 trillion kilometers in a time that isn't greater than the age of the Earth, would make our foray into space much easier. Since there are no Millennium Falcons at our disposal, we must wait and further develop our technology.

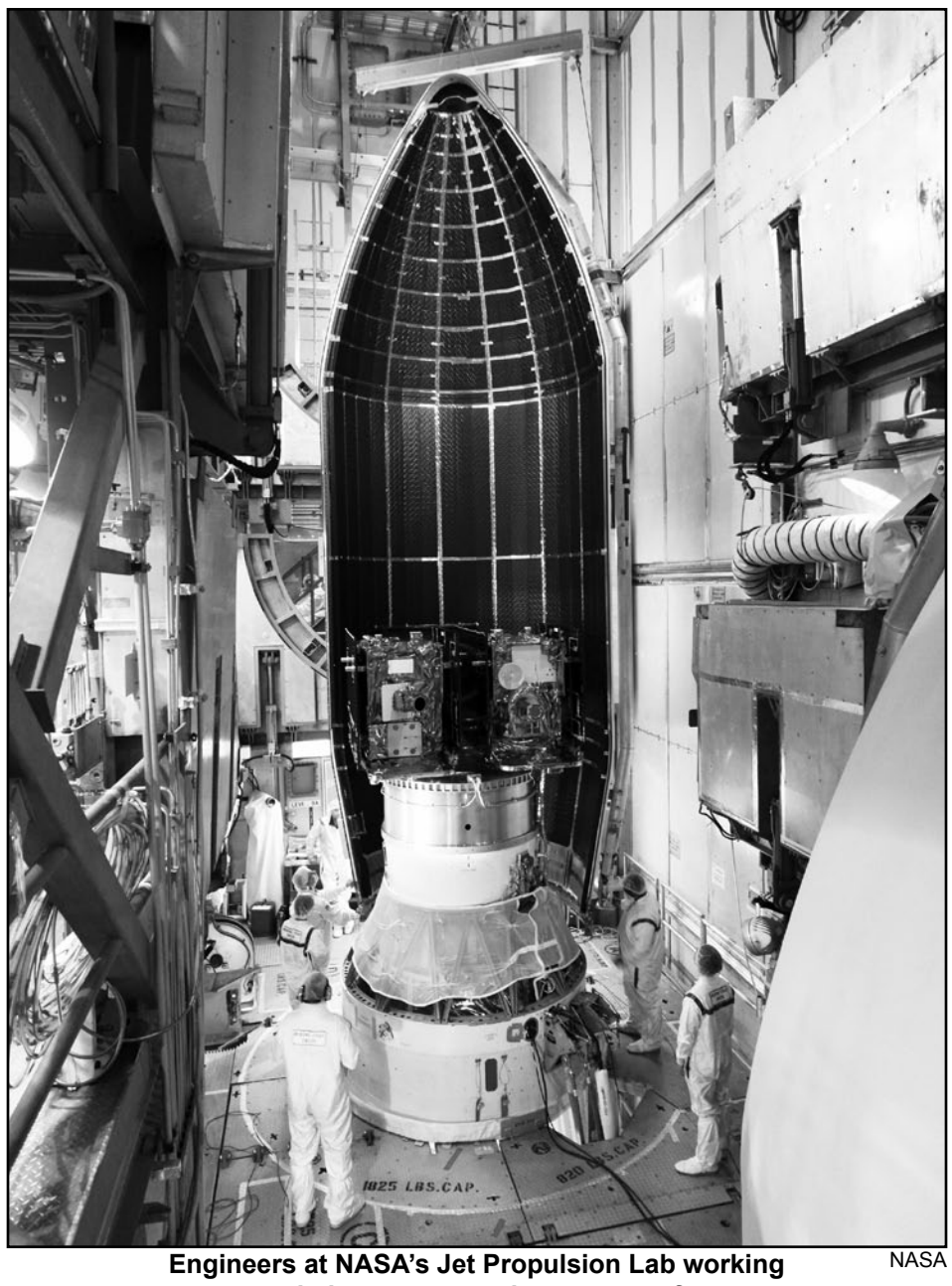
One of the constraints on space travel is the time that astronauts have to spend exposed to all the nasty stuff in space. This includes debris, interstellar gas, cosmic radiation, and a whole host of other hazards. It would be really beneficial, to the astronauts and humanity as a whole, to be able to travel to our nearest planetary neighbours or distant stars, for that matter, in a reasonable amount of time. What is a reasonable amount of time, you ask? Well, how about 40 years? Imagine you're in your 1970s space minivan for four decades with the kids, and then their kids are asking you "Are we there yet?"

So, why would it be beneficial? What do we have to gain by moving quickly through space? The thrill of adventure and the unknown - going boldly where no one has gone before - is an alluring prospect for travel in deep space. But this justification, by itself, is not a sufficient reason. Additional reasons include Earth's growing industrial economies which will require new supplies of minerals and energy to sustain their growth. The solar system is full of resources, including metals and solar energy that can be used to power factories, offices, and homes. Efficient delivery of raw materials to factories on Earth requires that ships carrying this cargo can travel quickly to be able to keep up with increasing demand to sustain Earth's growing population. Furthermore, colonies on other planets would also relieve the burden on Earth's resources to sustain a huge population. This would help solve the problem of over-population, which is a real threat to the social order, sustainable growth, and environmental protection in some countries today.

Many theoretical methods of space propulsion take advantage of crazy space-bending equations to accelerate ships to near the speed of light. Better yet, the idea of wormholes would allow ships to instantaneously travel to any point in the universe, or any time. The requirements for these propulsion systems? Massive amounts of energy - the total solar output to date would not be enough - or "negative" energy, which has yet to be proven to exist.

But let's be more practical here. What could we achieve? The propulsion systems currently available can be divided into passive and active systems. Passive systems include using either gravity or the solar wind to propel the craft out of the solar system. Active systems include using on-board fuel and rocket systems to propel the craft.

Active systems must carry their own weight, plus the weight of fuel, which, depending on the type of system employed, could add significant weight to the craft and reduce the thrust-to-weight ratio. However, these systems generally are more powerful (provide more instantaneous thrust to the vehicles themselves) and have much greater acceleration. This would make reaching the next star a less time-consuming journey. Conventional chemical rockets are probably the cheapest and least complicated system to build - just lots of fuel and go boom. However, there's not much bang for your buck there, meaning that, even though alternative systems may be more complicated and expensive, they could potentially deliver more power for a longer period of time instead of just one big push. Also, rockets would be hard to refuel. There are no refueling stations on the way, so you would have to conserve your fuel and use it only when you need it. Systems such as ion or plasma propulsion make use of ionized or hot gases expelled at high speeds behind the ship. Even though the mass of fuel is small, conservation of momentum means that forces is directly delivered to a ship and can be sustained over a long period of time. However, these engines are currently small scale and only produce about 1/1000 of a Newton of thrust. For large ships travelling long distances, the thrust will have to be increased by several orders of magnitude before it could be installed.



Engineers at NASA's Jet Propulsion Lab working on their next generation spacecrafts

NASA

Some passive systems rely on a slow steady push from a stream of charged particles from the sun, or the solar wind. The push doesn't amount to much but, over time, the push results in the craft achieving a significant speed. It would be like blowing breaths at a sailboat on the other side of the lake and expecting it to move. In the absence of other forces it would move, but very slowly at first and then gradually build up speed over time. Other passive systems include rocketing the craft on a trajectory towards Jupiter or Saturn. The craft would enter into a hyperbolic orbit around the planet and then be ejected into interstellar space at velocities greater than the escape velocity of the sun. The Voyager probes, now 17 billion kilometers out, used this method to reach the outer solar system. Although the probes have been travelling for 40 years, they are still only about 1/4000th the distance to the nearest extra-solar star, Proxima Centauri. Still, these systems will take a longer time to achieve their maximum velocity and that will inevitably add time to the journey.

One practical system was called the "Orion" project by NASA. This project basically called for a spacecraft that could be scaled from something about the size of DWE, to something else about the size of campus. It relies on the detonation of nuclear devices behind the craft. The blast directed towards a steel pusher plate that transfers force, acts to ease the impulse to prevent injury to the crew, and limits the amount of radiation exposure to the rest of the ship. The predicted speeds approach 0.1 c, about 30,000 km/s. With these kinds of speeds it would be possible to reach the nearest star in 44 years. However, to reach the next cluster of stars with potentially habitable planets (found by the Kepler telescope to be about 100-1000 light-years from Earth) it still might take on the order of 1,000 to 10,000 years. This is still significant in terms of time and is an unrealistic scale to justify sending a ship into interstellar space.

It will be exciting to see what else engineers come up with in the next couple of years. Inevitably, our future is in space, and it will require propulsion systems better than we currently have. This is an exciting opportunity to advance scientific knowledge and apply it to a field of engineering that lies outside most of the public view. It is also an opportunity to fulfill the hopes of people on Earth of a better future by providing more resources to our economies, more living space, and, hopefully, a higher standard of living for everyone. The challenge of taking on this project and succeeding will also fulfill the dreams of people since the start of the space race, and inspire future generations of explorers to keep pushing the boundaries of human exploration.

Behind The Aperture:

The Image Signal Processor - An Image's Best Friend

ANGELO ALAIMO
4B ELECTRICAL
MICHAEL SELISKE
3B COMPUTER

Last issue, we talked about image sensors and the role they play in creating digital images. This issue, we'll be discussing the next block in the imaging system which immediately follows the image sensor and is arguably the most important part of the overall camera system. That very important part called the image signal processor (ISP). An ISP can be thought of as the brains of the imaging system in a camera as it's in charge of controlling many of the individual parts of a camera that work together in order to produce a usable image.

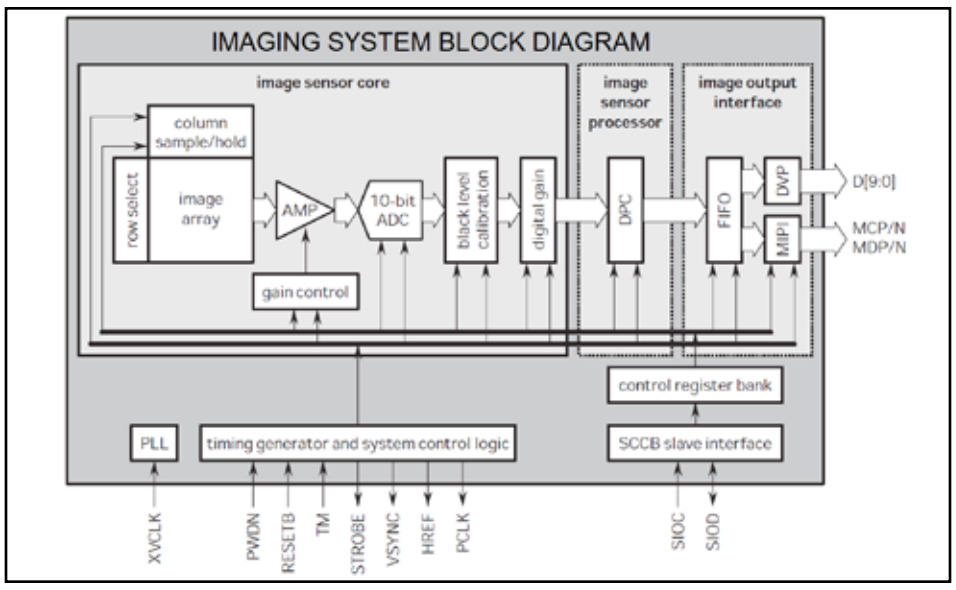
Within this ISP, there are hundreds of embedded algorithms and features, but the main three that have the largest effect on image quality are known as the three A's: auto focus (AF), auto exposure (AE), and auto white balance (AWB).

Auto Focus

Depending on the camera type and auto focus system employed, the details of the specific algorithm will be different, but the overall idea is the same. Without getting into specifics about optics, many of you are probably aware that a camera cannot keep all depths of a scene in focus at the same time, especially when taking a close-up photo of an object. In order to remedy this problem, auto focus was created to change the focus point of an image by moving the lens element closer or further away from the sensor. This seems pretty easy until you remember that the ISP needs to guess what aspect of the scene you want to focus on, figure out how it moves the lens to properly focus on that area, and how to make this process as smooth and transparent as possible. In common imaging systems, the ISP may complete the following to find proper focus: The ISP will send commands to the lens actuator to shift the lens in uniform steps as it measures the contrast of a scene. After measuring the contrast, it will find the maximum value of this contrast and set the lens to that position to achieve focus lock.

Auto Exposure

This function of the ISP also varies based on the type of camera used, but the general principle applied in order to control exposure is constant across all camera platforms. Auto exposure is basically the ISP changing settings within the camera in order to control the amount of light which will eventually be collected by the sensor. Some main ways of accomplishing this is to adjust the aperture (size of the opening which allows the light through) of the lens, changing the shutter speed or changing the gain applied to the signal (also referred to as ISO). Changing various components of the camera have various effects on the resultant image and therefore, the ISP must first determine the proper exposure to set and then decide the trade-offs required when selecting the camera settings to use. The ISP is designed to detect the current shooting conditions and make a smart trade-off based on the settings.



Block diagram representation of an imaging system

Auto White Balance

The spectral power distribution of light is very different depending on the source from which it is produced, causing the colour of the light to vary. You may notice that light from candles or incandescent bulbs produce a "warm" or yellow light while fluorescent bulbs and daylight are more "cool" or blue. This colour is measured as a correlated colour temperature (CCT) which is based on the light emitted by a black body at a certain temperature and is therefore measured as a colour temperature with the unit of Kelvin. This little bit of background knowledge is necessary to understand why AWB is necessary in a camera system and why it is an integral part of the overall image quality. The ISP needs to establish the CCT of the light illuminating the specific scene and then apply an adjustment in order for it to look as though our eyes see it. Our eyes are capable of making this adjustment on their own, which is why we normally don't notice how orange or blue light is in many cases. An incorrect white balance setting can typically be seen when a resultant image is very blue or very orange in hue.

This is a very high level overview of some of the main aspects of the ISP which occur prior to taking an image. Once the image has been captured, the image will travel through what is normally called the "ISP pipeline." The image will first be converted from the Bayer pattern discussed in our last article to an image that resembles something we would expect out of a camera. After that, the exact steps are variable but the most common steps deal with applying dead pixel correction, noise reduction, saturation, contrast, and any other adjustments that a manufacturer would like to include in their pipeline.

The biggest thing that people don't realize when thinking about a camera is that every sensor and every ISP is slightly different and therefore must be "tuned" in order for them to work together. The development process on tuning an ISP and sensor combination is very involved and requires a great deal of decision-making and troubleshooting in order to give the customer the best image possible. The biggest problem with this is that everyone has a different opinion on aspects of image quality: While some may like saturated and vibrant colours that are not very close to real life, others would prefer to see the same colour as real life despite it not being as vibrant and saturated.

These decisions require trade-offs to be made which, in turn, shapes the look and feel of a specific camera. This is the main reason why images from various cameras can look so different from each other despite having very similar hardware specifications. A quick tip when buying a camera is to find some sample images online before buying in order to see if you like the tuning set for that camera.

The last thing we'll touch on in regards to the ISP is the wide range of extra capabilities that are being included in modern ISPs in order to make processing more accurate, faster and of better quality. These features include video image stabilization which use other components like a gyro in order to stabilize video (can be seen in the iPhone 4S), high dynamic range photos, the ability to detect a scene and then apply trade-offs specific to that setting, as well as many more that are constantly being added.

The image signal processor is the brain of any imaging operation and is an essential part in telling the rest of the camera system what to do, as well as providing a final image that is of higher image quality then what would come out of a raw sensor. I hope this taught you a little about the intricacies of an imaging system and I would encourage you to read more about any specific topic in this article as we have just given you a very, very high-level explanation.

Programming for N00bz: C

JOSHUA KALPIN
1B SOFTWARE

Hello readers! I'm back for the second edition of Programming For N00bz. Before I begin with this week's topic, I have two minor corrections from the last edition. The first is that you can add Civil, Environmental and Geological Engineers to the list that use MATLAB and the second is that, as a result of that, this week's column is on C instead of C++.

C is one of the oldest programming languages that is still in use at the University of Waterloo and in industry as it is essential for all computer-related engineering disciplines. The knowledge of C is required for many courses taken by Mechatronics, Computer and Software Engineers. Moreover, outside of engineering, students in computer science and related disciplines use C in many of their courses.

So now the question arises: what is the importance of C? Well, to be brief, C is the backbone of every computing device that anyone has and/or is currently using.

Before going in depth, I need to cover some history first. In 1969, a team of programmers at AT&T Bell Labs created one of the first operating systems UNIX. Denis Ritchie, a member of this team proceeded to develop the C programming language to use with this new operating system. Fast-forwarding in time, UNIX has become the basis of almost every single operating system since its conception. OSX (Mac operating system), iOS, Android, Linux, etc. all involve code bases programmed partially or all in C.

C is unique in many ways because it is still widely used today even though it is almost 40 years old. This is the case because C uses very little memory, has a very efficient operating speed, and is usable on pretty much every single type of computer or mobile device in operation today. C allows the user to have an extremely hands-on and in-depth approach to handling what goes on in a computer while, at the same time, providing the ability to create games and other diverse and cool programs.

Learning C is similar to how linguists and translators learn Latin to better understand the origin and form of other languages based off of it. C syntax (how the language is written) is used as the basis for many modern programming languages that are more widely used by engineers such as C++, MATLAB, C# and Java. This has also allowed these newer programming languages to improve on some of the more obtuse, complicated and obfuscating qualities of the syntax.

For example, C is one of only two programming languages (the other being PERL) that has an annual competition for who can write the most obfuscating, unreadable code to perform a simple task. For example, one of the winners in 1987 managed to create a program that converted decimal numbers to roman numerals in a frightening block of code.

So to conclude, C is one of the oldest and most important languages in the world of computing today. It is used in almost every computing device that we use in our lives and is the basis for more modern programming languages that build many of our favourite applications. While its use to the non-computer related engineering disciplines may not be as obvious, it is still one of the most important languages to know if you have any interest in programming.

Next week's column will be on C++, the "next-generation" version of C.

```
#define iυ 4
#define υ ;(void
#define XI(xi)int xi[iυ×'U'];
#define L(c,l,i)c(){d(l);m(i);}
#include <stdio.h>
int×cc,c,i,ix='\t',exit(),X='\n'×"\d";XI(UI)XI(xi)extern(×υi[])(),(×
signal())();char×U,cm,D['x'],M='\n',I,×gets();L(MU,U,(c+='d',ix))m(x){υ)
signal(X/'I',υi[x]);}d(x)char×x;{υ)write(i,x,i);}L(MC,U,M+I)xυ(){c>=i?m(
c/M/M+M):(d(&M),m(cm));}L(mi,U+cm,M)L(md,U,M)MM(){c=c×M%X;U-=cm;m(ix);}
LXX(){gets(D)||(υi[iυ])();c=atoi(D);while(c>=X){c-=X;d("m");}U="iυxlcdm"
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"%d"),l(i,"+%d")):l(i,"(%d")):(c&&l(M,")"),l(×D,"%c")),c=i;c&&l(X,")"),l
(-i,"%c");m(iυ-!(i&I));}L(ml,U,'\f')li(){m(cm+!isatty(i=I));}ii(){m(c=cm
= ++I)υ)pipe(UI);cc=xi+cm++;for(U="jWYmDEnX";×U;U++)xi[×U^' ']=c,xi[×U++]
=c,c×=M,xi[×U^' ']=xi[×U]=c>>I;cc[-I]-=ix υ)close(×UI);cc[M]-=M;}main(){
(×υi)();for(;υ)write(UI[I],U,M)};}l(xl,lx)char×lx;{υ)printf(lx,xl)υ)
fflush(stdout);}L(xx,U+I,(c-=X/cm,ix))int(×υi[])()={ii,li,LXX,LU,exit,l,
d,l,d,xυ,MM,md,MC,ml,MU,xx,xx,xx,xx,MU,mi};
```
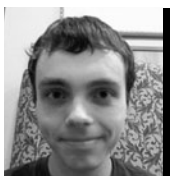

Joshua Kaplin

Some Crazy Code

T Cubed: One Text, One Call, When it's One Number in Your Phone



JACOB TERRY
2N NANOTECHNOLOGY

Say you need to talk to your friend, who's either somewhere else in Waterloo or somewhere around the world. You'll usually either send them a Facebook message, an email, a BBM/iMessage or (if they're in the country) a text. If you want to talk to them you have the option of calling them, but increasingly more of us prefer using Internet services such as Skype or, to a lesser extent, FaceTime or Google Voice. For wireless providers, the end result is that your social interactions are less under their control, which means they have less ways to offer you add-ons and extra services.

Rogers has announced a Rogers One Number service as a way of competing with the growing threat of independent Internet video and chat services. While AT&T apparently has had a similar system to this for a few months, this is both something I hadn't heard a network operator trying before and the first time I've heard of such a service in Canada. The service, in addition to attaching texts and calls to your phone number as it does currently, allows you operate these from your computer and mobile devices. You have the option to connect your Gmail or Yahoo! Mail accounts to the service so you can read them next to your texts. Phone calls can be made from the web interface for free to any Canadian number, and video calls can be made to other Rogers One Number users. In addition, you can convert calls from mobile calls to web calls to video calls. The service is free for all Rogers Wireless subscribers.

However, as is typical for Canadian wireless providers, it's not entirely clear how much of this is truly free, and what the hidden costs might be. It was hard for me to tell from their website when a call uses up your minutes or when it's free. I don't have a Rogers phone, so I wasn't able to try it out, but I'm curious as to how many people would actually use this. People already seem to avoid attaching too much to providers. How many people you know today actually have a Rogers or Sympatico email that they use? There has been a wide shift to provider-independent services like Gmail where you can still use the service even if you get a new Internet service provider. Even BBM and iMessage, for those who can use them, are favoured over texts because of the extra features they have and because they don't count against any limit. If anything, it comes across like more of a novelty for between Rogers' customers.

Another company making a move to compete with Skype is Vonage, that landline VoIP calling service that I only ever heard of from American TV commercials on TBS. Apparently, they're still around, and they've launched Vonage Mobile, an app for iOS and Android that lets users make free high-def calls and texts to other Vonage Mobile users and cheap pay-per-minute calls to users who don't use Vonage.

The service is a lot like Skype, but claims to make international calls at a rate that's 70% cheaper than big mobile carriers and 30% cheaper than Skype. They also claim to have a much better call quality than you can get on Skype with only a 64kbps connection. Viber is visually similar to Vonage Mobile, but that service only works between Viber users. The main drawback, which goes for Skype and other Internet-based services, is that they can feed off your data plan when you're not on a Wi-Fi network. The ability to use the services over Wi-Fi arguably negates this issue since most of the time people are on Wi-Fi anyway.

Neither of these services will likely replace Skype for most people, but they do offer a more competitive offering than most services that are out so far. More importantly, they offer an improvement over the current carrier-based methods we use today. It's not hard to believe that in 10 or 15 years, voice plans will be an increasingly rare, if not obsolete, part of the wireless package. Without getting too much into specifics, some carriers are working to bring IP-based voice to their networks, which would mean you may not necessarily need to use a voice plan anymore, depending on how it's implemented. The increase in services that compete with traditional voice plans is good for everyone, as it will force traditional carriers to rethink their plans (as evinced by Rogers' aforementioned attempts) and in the end, find you a better way to talk to your friends and family.

The Evolution of Notes in the Digital Age

JOSHUA KALPIN
1B SOFTWARE

Since the creation of written language, humans have been recording information in the form of notes. In our society, the standard method of accomplishing this is handled with a pen or pencil and a notebook. However, with the widespread availability of laptops and other portable computing devices, the way we take notes has begun to evolve in many different directions. In this article I am going to try to showcase a few of these different methods and how they compare to our beloved pen and paper.

Before I delve into detail about specific pieces of software or devices to take notes, I'd like to categorize them into two categories: pen and paper replacement and word processing.

The first category, pen and paper replacements, come in a few standard forms but probably the most well-known devices are the iPad and other similar tablets of which I'm going to focus on the former and the Asus Transformer Prime, an Android tablet.

Both the iPad and the Transformer Prime are fairly large tablets that both offer note taking software either in the App Store (iPad) or included (Transformer Prime).

On the iPad some popular apps for taking notes are Notes Plus ($7.99) and Note Taker HD ($4.99) and the Transformer Prime includes Super Note for free. To effectively take notes on these apps, the purchase of a capacitive stylus is pretty much required. Along with support for multiple colours, both apps feature the ability to embed images, graphs and diagrams into your notes, a huge bonus for those of us (including myself) that can never seem to draw diagrams properly. However, possibly the most impressive feature is the ability to organize and save your notes as PDF files so you can post them online or share them with your friends.

This option may seem like the best way to replace your notebook, but there are a few downsides. The first major one is cost. A tablet can cost upwards of 500 dollars before tax and adding apps, a stylus, and a case as separate purchases, it can push closer to the 700-800 dollar range with tax. The other downside is that the tablets can run out of batteries and if you don't have your charger on you it's back to pen and paper.

The second type of pen and paper replacement is a drawing tablet for your computer. These are a little less common because they are mainly used for artists to do drawing and 3D modeling but nevertheless, they are an effective way to take notes. These tablets usually hook up to a computer via a USB connection and come with a stylus that is compatible with the tablet. An advantage over the "touch" style tablets is that these are relatively inexpensive ranging anywhere from 50 to 100 dollars for a lower-end model.

However, as with the touch style tablets, drawing tablets have a few drawbacks. The first is that these tablets require a laptop to actually take notes, or more specifically, software to take the notes on. The second is that most tablets are not wireless and must be attached to your computer to work. This can be a hassle when you don't want to carry your laptop around with you but need to take notes.

The second category of alternate note-taking mediums is word processors. When someone thinks of word processors, the first one that usually comes to mind is Microsoft Word. Word and other similar word processors are excellent for taking notes in plain English with many formatting options and the ability to save the notes in many file formats. However, when it comes to taking notes for math, science or computer courses, standard word processors just don't cut it and this is where note taking software steps in.

Digital pen interface at its best Wacom

There are two main programs that I've encountered that can be called note taking software: Zim and Microsoft OneNote.

Zim is a dynamic note organizer that allows you to organize notes into sections and subsections. It also features the ability to embed images, code and LaTeX equations into your notes. For those that don't known what LaTeX is, think of it as a programming language that is used to write technical papers with a lot of equations in them. This feature removes the key problem with standard word processing software and allows notes to dynamically change based on what is required in them. Another major advantage of Zim is the fact that it is open-source and completely free to use.

The other note organizer, Microsoft OneNote has many of the same features Zim has but has managed to integrate it with the Microsoft Office suite and with drawing tablets. This integration makes it a more user-friendly option to those who are not as proficient with computers and as well, equations can be entered into notes with a simple equation wizard instead of having to learn LaTeX to exploit the feature. The main downside to OneNote is that it isn't free. For students, the cheapest way to acquire OneNote is to purchase the Microsoft Office Student edition for $129 making it a more expensive option than even the drawing tablets.

With the evolution of technology the way we take notes will continue to evolve. I hope that by reading this article you now have been enlightened to many of the different options that are available for note taking.

FedS Elections, Shiny POETs things, LCD Screens & More

LEAH ALLEN
PRESIDENT

Hey Engineers,

How are those midterms treating you? Are you procrastinating by reading my article? Well then, welcome! I have a couple new updates for you regarding presidential things.

NEW FURNITURE IN POETS

So the Class of 2011 gave a grad gift of new furniture in POETS. We will be getting "coffee shop" style tables and chairs for the upstairs of POETS (the area overlooking the main part of POETS). The tables and chairs will be a mahogany colour wood and the chairs will be upholstered with red fabric. The furniture will be moveable so that they can be configured however needed, but will remain in "coffee shop" style for regular day-to-day operations.

Colour Me Educated

Colour Me Educated is a charity initiative run by FedS to raise money for Pathways to Education (Kitchener Branch) which helps fund education efforts in the KW region. The Colour Me Educated Campaign kick-off event was around two weeks ago. Society representatives from each faculty ended up raising over $1000 in just a couple hours. The campaign will be ongoing until April to see which faculty can raise the most money.

LCD Screens

The Engineering Society Executive have been working to get LCD screens put up in the Engineering buildings to advertise events and volunteer opportunities. Long-term, these LCD screens would act as a digital advertisement medium and replace most of the poster boards in the Engineering buildings. Last term, a proposal was submitted to the Dean's Office for approval. Once we hear back from the Deans office we can start moving forward on purchasing and testing software.

FedS Election Voting

Voting for the FedS election is now OPEN! It will be closing tomorrow night (Thursday, February the 16th) at 10:00 PM. Please take the time to get informed on the candidates running at this link: feds.ca/vote/candidates. Once you are ready to vote, you can go to this link to vote online: vote.feds.ca.

As we all know, reading week is coming up (t-minus 3 days!!) and I plan to accomplish more of my long-term goals over reading week. That is all I have for now. Please feel free to contact me about anything at president.a@engsoc.uwaterloo.ca or you can check out my blog for ongoing updates (www.engsoc/blog/presa).

Studying for Success

DEREK THOMPSON
VP EDUCATION

Hello everyone! How is everyone doing this week? I hope you fourth-years can get yourselves back to the books now, eh? I figured that, after the previous week's festivities, now would be a good time to look at great study habits. For those that either have midterms on the horizon or those that are knee deep in what is colloquially known as "Hell Week," you might be able to take something away from this.

1. Where to study. Where you take your problem sets and textbooks can make a sizable impact on what you are able to learn in a given time. A good baseline is somewhere mostly free of distractions. For some, this might be a library study carol, while others might find that they study better in their own place of residence.

2. Make study notes. This is an excellent strategy for those courses with a large amount of theory. While reading your textbooks or course material, make your own point-form notes about the topics. This forces you to break down the information to the most important aspects of each section. The act of writing also assists in the remembering of the material as you have to physically transcribe the information. You can then use your study notes to refresh yourself about the material prior to the test.

3. Take care of yourself. Don't forget to eat or sleep! The action of sleep helps in the retention of learned material. The action of eating gives nutrients and energy. Your brain requires energy to function, just as muscles do. A rested and fed individual will have an easier time focusing on their studies than one who is half asleep and hungry!

4. Create an attainable study schedule. Have a few days until your next set of exams? Create a schedule that shows which courses you will study on each day, and stick to it. All of your courses are important, yet some concepts may require more time on your part than others. Take this into account when designing your own personal schedule.

5. Take breaks! Most of you reading are engineering students and, in general, love approximations! A good one to follow here is about 5 to 10 minutes for every hour spent studying. Burnout sucks, especially during a series of tough exams. Taking these short breaks every hour should allow you to keep studying over a longer period of time without losing focus.

These tips are not one-size-fits-all. Ultimately, you will have to find out what works best for yourself. Counselling Services offers study skills workshops and a study guide if you are still finding yourself unable to study effectively. You can find these services at *http://counsellingservices.uwaterloo.ca/*. Have a good reading week everyone!

Where to Get Cash Monies

ANGELA STEWART
VP OPERATIONS

Let's talk about cash money: what to do with it and how to get more of it.

Are you an excellent student, experienced leader, or have a dedicated interest in a particular engineering field? Consider checking out the Engsoc Scholarship bank. With more than $1 million in scholarships, bursaries, and awards there is something for almost everyone. There are also a number of design and technical writing contests, perfect for developing fourth year design projects or earning rewards from your work term reports.

Know about an award not listed on the site? Submit it using the online form and earn 50 points for the p**5 competition per submission. A 5-minute Google search can have a huge payout in the end.

Do you have an idea for a project to improve student life on campus, but lack the funds? Think your study space or lounge could use some new furniture or other capital expenditure? If yes, consider applying for funding from SLEF to make this happen!

The Student Life Endowment Fund doles out $50,000 each Winter term to support a variety of student projects. The council is composed of representatives from across each faculty and college and is chaired by the Feds VP Internal, Luke Burke. Krishna Iyer has been selected to represent Engineering on the SLEF Council. Earlier this month, I went to their first meeting to learn more about it.

The four priorities for disbursement of funds are as follows:

- The improvement of accessibility on campus
- The improvement of safety on campus
- The improvement of existing lounge and study space
- The renovations of student services

In the past, SLEF has contributed funding towards couches and tables in POETS. Approximately 75% of proposed projects get partial or complete funding. Take advantage of those odds and submit your proposals today! A successful proposal from last year included furniture for a fourth year engineering lounge.

If you have an idea as to where this money should be going please visit *http://feds.ca/funding-and-resources/student-life-endowment-fund* for more information. Application deadlines are February 29th, at 4pm. Feel free to send me an email if you have any questions about the application.

The Wacky World of WEEF

BROCK KOPP
WEEF DIRECTOR

Welcome back to another episode of "how to get involved in WEEF". That's right, while you may have elected me to run WEEF day-to-day, I am always in need of a little help. In fact, this time, I'm offering you a chance to be my boss. That's right, I need you to tell me what to do![1] WEEF is overseen by a Board of Directors who essentially assure that WEEF is moving in the right direction. They approve your WEEF reps' funding decisions, ratify new Directors and basically make any huge decisions (think 1 Million Dollars to E5).

So how does this affect you? The board is looking for two new student members to represent A-Soc. These members will be responsible for attending one meeting per term, unless travel is unreasonable in which case you can proxy your vote. For more information, email me at w*eef@uwaterloo.ca*. Any A-Soc engineering student over the age of 18 can be a member of the board!

Wondering what else is happening?

YOU can attend any of these meetings, but if you want to find out more about WEEF, please attend the Annual General Meeting in E5-2004 on March 7th at 4pm.

Feb 17 - WEEF Proposals Due
Feb 28/29 - Funding Presentations
Mar 7 - Annual General Meeting Board of Directors Meeting

As always, if you have any questions or comments feel free to email me at *weef@uwaterloo.ca* or check out our website at *weef.uwaterloo.ca*.

[1] You can only really tell me what I can't do and that's only with a majority decision by the Board of Directors.

FedS Vote and Events

ENGINEERING COUNCILLOR
FEDERATION OF STUDENTS

The best way to know what is happening in Federation of Students is to go to *feds.ca/events*. It has anything and everything related to Federation of Students scheduled on it.

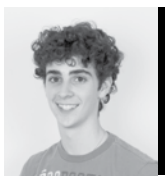
Federation of Students is currently busy with the Election Season. It is the most important event of the year as it will determine what happens in Federation of Students for the coming year(May '12 – April '13). Undergraduate Engineering students have a lot of options to choose the right candidates so as to make sure that the Engineering voice is not undermined. Engineering students can vote for the four Federation of Students executive positions namely the FedS President, FedS VP Education, FedS VP Internal, and FedS VP Administration and Finance. Also the Senate, the highest Academic decision-making body, also has two undergraduate positions available which depend on the Engineering students' vote. They are Senator at Large 2013(one year position) and Senator at Large 2014 (two year position). Lastly, there are three Engineering Councillor positions as well. The polling period is from Feb 14th to Feb 16th. You can vote for EACH of the above mentioned positions. Your vote really matters, so make it count!

One Waterloo is celebrating February as the Black History month. It is part of "One Seed. Many Roots". It is being celebrated both at the University of Waterloo and the Wilfred Laurier University. Events included Rock Your Roots, Discover Your Roots and Showcase Your Roots.

Other events included uWaterloo: Campus Idol and a week-long Queer Relationship Week.

Again, to make sure you don't forget it, polling period is from Feb 14th to Feb 16th. VOTE VOTE VOTE!

Student Team Sponsorships, FIRE SALE, More FUNDING!!!



DAVID BIRNBAUM
VP FINANCE

Hello again, IW readers!

The last little bit has been a bit of a slow patch. Not too much has happened on the finance front. The budget got approved, and is available for viewing on my blog at *http://engsoc.uwaterloo.ca/blog/vpfina*. Some things of note would be that for the first time, we have a committee to decide on our EngSoc Sponsorship, along with some other sponsorship changes. If you are a member of student team or group and did not receive an email from me about the sponsorship, please email me as soon as possible and I will get you the information.

We are changing the way we do the allocation as we are now only giving student teams their cheques with a receipt for what they requested money for, similar to the way we do reimbursements. There are various other changes in what I have asked from the student teams. For more information, check out my blog.

The last couple of weeks' events went well; Genius Bowl, TalEng and the Ski trip were great, as were all the other events. After reading week, we have Engineering Movie Night, a coffee house, the treasure hunt starts, and MOT, which is at Chainsaw! As well, we are hopefully planning a bus trip to Cambridge to visit our friends in Architecture, so stay tuned for that.

Coverall orders have been placed, and they should hopefully get in before reading week, but if not, definitely soon after.

The Tuesday after reading week will be the next FIRE SALE!!! You will be able to purchase lots of awesome stuff for cheap! Our new EngSocks are already available, and on that Tuesday, all shirts will be on sale! You read that correctly: All shirts on sale! Be there, Tuesday February 28th from 11:30 am – 1:30 pm!!!

ECIF!!! Have a great idea of what you want to see in our buildings?! A service you want us to offer!?!?!?! Submit an ECIF application!!! There is nothing over the limit! Visit *http://engsoc.uwaterloo.ca/services/ecif-application*!!!!! Fill it out! We will buy stuff!!! ECIF! ECIF! ECIF!!!

That should be it. If you have any questions, as always just send me an email at *vpfinance.a@engsoc.uwaterloo.ca*.

Awesome, have a great reading week.

djbirnba

NEM, Canstruction, Change 4 Change

MICHAEL SELISKE
LISA BELBECK
VP EXTERNALS

Really? Another two weeks have gone by? A lot has happened in the past two weeks and I am excited to tell you all about it. A very exciting thing to report about is that Waterloo had a VERY strong showing at the Ontario Engineering Competition which took place on the weekend of February 3rd-4th at the University of Toronto. Stealing some numbers that Angelo might have used earlier on in this issue: Out of the 12 teams at OEC that qualified for CEC, 5 are from Waterloo. Waterloo won over $10,000 in prize money last night between all competitions. That's 2.5 times more than the next highest grossing school. Waterloo placed at least one team in the top two in 4 out of the 6 categories. This is the 2nd year in a row Waterloo has won the Technical Excellence award. I would like to thank Angelo Alaimo for running WEC this year and taking care of all of the OEC related logistics, as well as the Dean's office and Meg Bauman for showing such awesome support to our competitors.

National Engineering Month (NEM) saw its first event take place on Saturday, February 4th in the Student Design Centre of E5. We had some stellar volunteers who came out and put hours of work into our machine. Unfortunately, we were unable to complete our ambitious design and are therefore going to continue working on it in order to make it awesome. The second event is coming up on the weekend of March 3rd and 4th where we will be doing a K'Nex building outreach event at THEMUSEUM in Kitchener. We would like to bring some cool demonstrations with us, so if you or someone you know has a cool fourth-year design project that they would like to show off to the community, let me know.

Our Canstruction team has been assembled and they are working hard on making an awesome structure out of cans that will impress and amaze all of the patrons shopping at the Conestoga Mall! We have a solid group of volunteers and I am very excited about the design chosen this year!

The Charities directors are currently in the middle of a Change 4 Change campaign which collects spare change for charity. The premise is that you put pennies in your own year (worth 1 point) and silver coins in other years (-2 points) so that your year ends up with the most points. A member of the Executive have been assigned a year to represent and the winning team will get to tape the losing executive to a chair in the CPH foyer and make a sign for them to hold all day. Drop by the Engineering Society Office to deposit your change! (Pennies in 2012 please!)

There are a few things that I have mentioned in my blog in more detail, so please head on over to *www.engsoc.uwaterloo.ca/blog/vpexa* and see what's up.

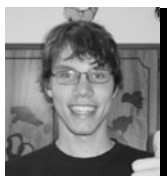
Engineering Society Events
February 12 - March 3

Sun - Feb 12	Mon - Feb 13	Tues - Feb 14	Wed - Feb 15	Thurs - Feb 16	Fri - Feb 17	Sat - Feb 18
	• Enginuity - CPH Foyer - *11:30 a.m. - 1:30 p.m.* • Running Club - CPH Foyer - *5:00 P.M.* • Iron Warrior Meeting - E2-2349A - *5:30 P.M.*	• EngSoc Hockey - CIF - *10-11 P.M.*		• Running Club - CPH Foyer - *5:00 P.M.*		READING WEEK BEGINS FEB 18 - 26
Sun - Feb 26	**Mon - Feb 27**	**Tues - Feb 28**	**Wed - Feb 29**	**Thurs - March 1**	**Fri - March 2**	**Sat - March 3**
READING WEEK ENDS FEB 18 - 26	• Art Contest #4 opens - Pickup in Orifice, CPH 1327. • Enginuity - CPH Foyer - *11:30 a.m. - 1:30 p.m.* • Running Club - CPH Foyer - *5:00 P.M.* • Engineering Movie Night - POETS - *5-10 PM*	• Novelties Fire Sale - CPH Foyer - *11:30 AM* • Coffee House - POETS - *8:30-11:30 PM*	• Engineering Society Meeting - CPH 3607 - 5:30 - 7:00 p.m.	• EngSoc goes to Cambridge - Walshies • Running Club - CPH Foyer - *5:00 P.M.*	• Middle Of Term Party - POETS - *9 - 11 PM*	• Knex Bridge Building Competition - The Museum • Eng Hockey Tournament - McMaster - *tiny.cc/EngHockey*

To see an electronic listing, visit **http://engsoc.uwaterloo.ca/events**
To have your event added, E-mail details to **agoddard@uwaterloo.ca**

Join the Engineering Society Google Group
https://groups.google.com/group/engsoc_a_general

What if the Tax was Flat?



MICHAEL LAANVERE
2A MECHANICAL

A flat tax rate has the potential to be a more efficient and economical system than the current progressive tax system we have in Canada. Right now, Canadians pay taxes at a rate that is increases along with their income. Now this may seem like a reasonable and fair system, but looking a little closer at a flat tax system may cause some doubts. A flat tax system would mean that every Canadian pays the same percentage of their income to the government. Some may find this unfair but the truth is that it's just as fair or maybe even fairer, and more efficient.

Some argue that a flat tax system is unfair because taxing 15% of someone who makes $30,000 impacts them much more than taxing 15% off someone who makes, say, $150,000. That may seem true but if you look at the average tax it balances itself out more. A flat tax system theoretically has no deductions whatsoever but in practicality it can't be entirely free of deductions. There must be some base deduction so that people who make a small amount of money don't have to pay tax. Let's look at the average tax of a flat tax system to see how fair it seems. Say the base deduction per person is $15,000, a deduction for a dependent is $7,000 or so, and the flat tax rate is 15%. After the deduction, a single person making $30,000 would have a taxable income of only $15,000; meaning they would have to pay $2,250 in taxes. That's only 7.5% of their original $30,000 of income. If you look at a person making $150,000, they have a taxable income of $135,000 meaning they would pay $20,250 in tax which is 13.5% of their gross income. That seems fairly reasonable, or at least not as unfair as some would make you think.

The current system we have discourages people from behaviours that help boost the economy. Working hard, investing, and entrepreneurship are discouraged by progressive tax systems.

Under our current tax system, working hard and making more money results in more paperwork, stress, and less gain. Even though someone may work really hard and start making a significant amount more (pre-tax) than they did previously, once they jump up to the next tax bracket the amount of income after tax will not increase at the same rate as before. This goes for businesses too: Small businesses get so many tax breaks and benefits in the current system that it's often not worth the trouble for them to expand and hire more employees which means less jobs are created than if it were a flat tax system.

Many agree that one disadvantage of the current system is its complexity. In fact, the estimated collective cost for Canadians complying and submitting their taxes in 2005 was up to $30 billion. This included the costs of obtaining receipts, filing taxes and hiring accountants and lawyers. A flat tax rate could make filing your taxes as easy as filling out a form the size of a postcard. Essentially, the only thing you would need to fill out is your wages minus your deduction, and then multiply that by the tax rate to get what income taxes you owe. It could be as simple as that. Any sources of income other than wages such as dividends and investments would be sorted out by the businesses on their tax return. This would also eliminate most of the loopholes and tax fraud that occurs which could save the government lots of money.

Obviously there are disadvantage to a system that tries to make everyone's situation fit. If the tax rate is too high, than a flat tax system becomes less feasible because there are no tax deductions or credits. A flat tax system cannot adapt to peoples' specific situations and needs and can result in overburdening certain groups such as the elderly or handicapped if taxes are too high. However, all I'm saying is to consider the possibility of a flat tax system, as most of the former soviet states have adopted flat tax rates, contributing to their rapid economic growth. Some western countries have been considering it, why not Canada?

Engineering and Political Awareness

DAWSON OVERTON
3B SYSTEMS

This is not a new issue by any means, and judging by a quick look at the archives, even its treatment in *The Iron Warrior* is far from novel. However, it is an issue of the type that is impossible to overemphasize its importance. The purpose of this article is a simple reminder to everyone to be as cognizant of the implications of their employment choices, and how they direct their energies, as possible.

As future engineers, you have a responsibility not only to yourself but to your planet and your society to be very critical of the type of work you do and the type of interests you advance. Although a lot of the work done by engineers, especially by co-op students, seems relatively politically neutral, nothing is politically neutral when framed in a broader context. An inadequate attempt to ensure graduating engineers have some semblance of an understanding of this is seen through the mandatory List A elective courses, but even this (depending on your choice) can leave you with a greater understanding of the ontological problems of medical ethics than the workings of the society in which you live.

In my more cynical moments, I wonder if this is not almost by design. It is not a secret that engineering course loads are time-consuming and fairly elective-barren (especially for non-technical electives), and I've found through personal experience (and I doubt I am alone in this) that during school terms, my ability to educate myself politically and keep up with world affairs is certainly diminished. This is obviously not a Waterloo-specific anomaly -- friends in technical programs across Canada and in the US, as well as common sense, lead me to believe that this is basically a reality for engineering (and many science) undergraduates across North America. I'm not arguing that this isn't largely by necessity (it simply takes a lot of time and work to become technically competent), but I would venture to say it is also a convenient reality for the advancement of several morally ambiguous aims.

There are a lot of very difficult practical problems out there in the world waiting to be solved. The importance of the engineer and scientist in solving these problems is paramount - this can be shown by the salaries and the lengths certain companies and governments will go to retain their very best engineers, for they are what allows them to function and remain competitive in some cases. The effect the invention of the atomic bomb has had on the global political landscape can be debated *ad infinitum*, but the fact remains that without scientists and engineers, it could never have become a reality. Most of us will never have to face a moral dilemma on the magnitude of Oppenheimer, but collectively, the choices we make do have an enormous difference.

Do adequate research on prospective employers; some come pre-packaged with pretty obvious moral dilemmas (e.g., the Department of National Defense), but there are many others which may have much less direct or more subtle moral effects and require some digging. Always be wary of concentrations of information and power in relatively few hands, regardless of how noble their intentions seem (I can think of several such companies who actively recruit from Waterloo and I'm sure you can too). Remember that it is never in the interests of corporate power to have you understand what you are doing on a large scale and question the moral validity of it; it is 100% up to you. If anything, you might even expect these corporations to exert whatever pressure they can on our educational institutions to ensure we are LESS aware of these implications, and though my research into the extent this happens (especially in Canada) is admittedly limited and outside the scope of this article, the idea is plausible. Why did PDEng exist (i.e., 'how to be a good worker') on work terms instead of courses on the effects our jobs are having on the global social landscape? Shouldn't we be empowering engineers to take the consequences of their actions into their own hands, instead of turning them into ever-more unquestioning instruments of corporate power? I'm not attempting to pass plausibility and speculation as evidence, but it is prudent to think about examples like these and question who they are really serve.

Ontario Legislative Building
Reinventing Ottawa

The rewards to put on the blinders and take the cushy salary are enticing, but then, they always have been in every sector of society, and engineering is no different. It is easy to feel like an isolated case and feel like you should just ignore these things – after all, you've done the work to get to where you are, you may feel you should take whatever job you can get – and this atomizing effect is precisely how good people make questionable choices. I personally think that engineering is one of the more interesting cases of this phenomenon, as without them, a lot of the actual work doesn't get done. You have more power than you realize.

Remember that technology can be beautiful and can be a great democratizer, but in the wrong hands it can be an instrument of oppression of ever-increasing complexity. Keep this in mind as you apply for co-op jobs, and more importantly as you go through full-time interviews and become more permanently integrated into society's institutions (regardless of what path you take after graduation). As a segment of society with relatively specialized knowledge which can effect real change on the quality of life of people, you are in a unique position to use that knowledge responsibly. I urge every reader of this article to try their best to never let this fact slip into the periphery.

Point Vs. Counterpoint

We Should Have Reading Week

POINT

LEAH KRISTUFEK
1B CHEMICAL

Who could say no to PURE AWESOMENESS?!? If reading week has not yet been defined, pure awesomeness might be a good definition. For one, does sleeping in for nine consecutive days count as awesomeness? How about partying with friends, or even getting all your work done early with no new assignments being piled on? This week of freedom is an oasis of unscheduled time just for you, perfectly positioned in the middle of yet another bustling semester here at UW. You will hear the arguments against reading week. I mean, winning a Nobel Prize or winning the lottery would obviously trump it, but let's keep all of this firmly grounded in reality.

If you are anything like me, you spent winter break wishing for snow and then spent far too little time enjoying it. Being active is important for a healthy body and mind. Breaks keep us pasty creatures full of vitamin D, which boosts our moods and minds. Keeping us sunny despite the dreary mid-winter is the whole purpose of reading week. Those of us who want to play in the snow can do so while less winter-loving people can flee south where snow is just a myth for gullible American tourists looking for the Alps.

We are social creatures (in theory). Due to our full-time pursuit of educational excellence, few of us are home at times when our high school friends are also available. Reading week gives us an opportunity to catch up with old friends and strengthen our networks. Who knows who our next employer might be? In fact, reading week should happen every term: winter, spring, and fall. In addition to social interactions, this is also the time to stock up for the months ahead. Besides seeing relatives and family pets, visiting home might set you up for a month on leftovers and groceries. Not only do you get to sleep in, but you can get free food too! It's not just about the food; home also offers excitements such as comfortable (often very permanent) seating, laundry facilities, old favourite books, and movies to watch in the middle of the day while everyone goes about their daily lives.

Should we have less reading weeks? You only live once and after our educational pursuits, our breaks are far less assured. Why not give us a little time to enjoy ourselves, cultivate new or existing pastimes, interact with the world, and just have fun? Not getting breaks doesn't make us more competitive, just more worn out and tired! Reading week is necessary to our development because of the possibility that we will begin to invest in our social lives, even though in reality, a big part of that time will be spent reading memes on laptops. (Laptop party!)

"Reading week is an opportunity for us to invest a little extra time into the awesome things that don't make it into our schedules."

Not enough can be said for independent projects. Look where that little side-project Facemash got Zuckerberg. Not too shabby! Reading week is an opportunity for us to invest a little extra time into the awesome things that don't make it into our schedules. It's also a time to catch up on the subjects we really wish we weren't studying; calculus, anyone? This ensures that we actually understand the subject matter instead of simply regurgitating it. We are people; there has to be creativity, fun and laughter. Otherwise, we'd be robots and that's not good.

In conclusion, this valuable time in our lives should not be completely squandered on academic things. It's hard to imagine, but there are valuable things to be gained by simply not working. I don't mean through laziness, but by simply not doing anything, we can learn some pretty neat stuff. Sadly, the next reading week for B-Soc is not for another two long years.

COUNTERPOINT

KRISHNA IYER
2T NANOTECHNOLOGY

Next week, most of you will be away enjoying your time back home during what the University calls "reading week." Reading week (known as revision week in some Commonwealth countries) was instituted to give students a break in the middle of their academic year to help ease the academic workload. It is meant to aid with the students' preparation for exams. However, reading week, as implemented in its present form, can be more of a bane than a boon, especially in the Faculty of Engineering.

As it stands, reading week normally follows after a week of midterms. Although it initially started as a week-long break during the term to allow students to prepare for the upcoming midterm exams, it has morphed into a week crammed with homework to compensate for the lack of assignments and classes during what most engineers call "Hell Week." The full week of vacation for reading week was instituted by the Faculty of Engineering in late November 2005. A vast majority of engineering students spend their reading weeks with family. Trying to juggle the workload assigned by professors along with family commitments can be very hard. Unlike most students in other faculties and, for that matter, other universities, most Waterloo engineering students do not fly to warm, exotic places. However, this policy is a little bit flawed owing to the fact that only the winter terms have this period off. Other terms do not have similar periods of rest in the middle of the term, making it unfair to engineers who aren't in school during the winter terms. As a nanotechnology engineer, we only have 2 winter terms as opposed to the obligatory 3. Hence, we don't receive the same period off as the other students in the Faculty of Engineering.

The increased workload can also create problems on the performance of some students. Not all students are very good at managing their free time effectively. As mentioned earlier, reading week is a time in which students are expected to do their own time and work on all the assigned extra homework. Unfortunately, there are many students who think that reading week is a time for a well-deserved break from studying and doing anything that involves school. As a result, these students end up falling behind on their coursework, making the rest of the term much harder as they now have to catch-up on an entire week's worth of assignments and readings on top of whatever gets assigned when school starts up again. Instead of its intended purpose of helping students catch-up with their courses, students instead end up falling behind.

The addition of reading week introduces an unnecessary delay to the end of the term. As a university that boasts its co-op programs, there are many students who have to go to work in the very beginning of May right after exams. This leaves only a week or so of a break after the stressful exams to move out from Waterloo and to move into where their co-op jobs are, leaving little time to spend with family and friends back home or, in my case, just simply unwinding after the exams. If reading week was to be removed, the entire school term's schedule would be shifted back by one week, including the end of the exam period. This would allow for a longer break in between the school and work terms, giving us more time to cool-down after the very stressful exam season.

Editor's Note:
Point Vs. Counterpoint is a feature meant to stimulate discussion on thought-provoking topics. The views and opinions expressed here do not necessarily reflect those of the authors, *The Iron Warrior*, or the Engineering Society.

Engineering and the World: Arts

LEAH KRISTUFEK
1B CHEMICAL

Hello plumbers, engineers and others who just love reading *The Iron Warrior*. Today, we will continue our trek towards understanding the faculties around us. In this issue, we are exploring a faculty which, despite the close physical proximity of their buildings, often seems worlds away. Have you already guessed who I'm talking about? Yes, I refer to the mysterious faculty of Arts.

We often complain about Artsies and their ability to complain about their own faculty. Someone has to get up for an eleven o'clock class? Oh, the horror! But in my research I have discovered that Artsies have been seriously misrepresented. Often we think of Arts as people who are painting or doing dance or theatre. In fact, that is not a huge part of this faculty (cool fact, apparently Arts is the largest faculty at the University of Waterloo). Arts is also about the social sciences, languages, culture and history as it can be applied to the world around us. Oh, they also have accounting, who would have thought?

Bio/ native habitat/ lifestyle: As Artsies have plenty of free time, many of them actually hold down part time jobs! Perhaps that is why we have so little contact with this mysterious faculty. Buildings used by Artsies include the Arts lecture hall, Hagey Hall, DP and other buildings in that area- there are also several affiliated institutions and satellite campuses like the one in Stratford. The corner occupied by Arts buildings rivals MC in its complexity and difficulty to exit, so if you have some time, go check it out! Arts students strive to protect Porcellino, the bronze Boar statue outside of the Modern Languages building. Legend has it that rubbing his nose will give you good luck. Arts students will spend long hours debating the perfect wording on essays and reading endless chapters in their textbooks. At some point they have to make the ever so important decision, what will their major be? But hey, it's free flowing, so you may catch Arts students in the Bomber every once in awhile while they think hard thoughts over a pint or so.

How we interact: Arts, it exists, as a faculty at the UW? Who would have known? As we infiltrate many of their first-year classes as our electives it becomes hard to believe that pure arts students exist. However, in upper years they definitely do, and they even have co-op! Often, one might wonder why they didn't take arts at Laurier. However, having this faculty dramatically increases the number of females on campus which is good for our social lives. It's a good thing Laurier's greatest strength in the Arts is music, as this leaves some space for the study of the humanities and other cool subjects here at UW!

Common areas of interest: Thinking creatively and getting exercise are both places where our faculties overlap. Thinking of the larger picture and communicating it is something both faculties try to do, but in the communication area Arts usually do it better.

Verdict: Arts will surprise us. That person studying languages and cultures might become your child's speech pathologist...We should only tease them so far. Embrace the chaos, you know you want to!

Your Bi-Weekly Challenge: Taxes = Money

KATE HEYMANS
2T CHEMICAL

I know. You have midterms and you really do not have time to be facing one more of my challenges. In fact, you shouldn't even be reading this article. Good thing you can save this challenge for reading week, but make sure you get to doing it.

I'm sure that throughout the first couple months of the year, you've been receiving all those wonderful and official-looking T-slips and other tax documents through the mail. I hope you've kept a hold on those because it's soon going to be time to start using them.

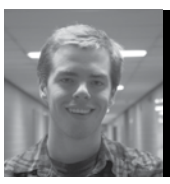
Canada has a wonderful system for taxes called a "progressive" system (if you want more details, look to pg 10) which means that the people who earn more money pay more taxes. Luckily for students, you can claim all sorts of things to get tax credits. These won't reduce your net taxable income, but they will reduce the total income tax that you have to pay. Since you might not be making a lot of money at the moment, some of your tax credits can even be transferred to future years or other people. Savvy?

Tips and Useful Reminders

1. Fill in Schedule 11 of your tax returns. This is the spot where you'll be able to claim stuff like tuition and the education and textbook amounts (for the months you were on-term). These will go into line 323 of your tax returns. Your T2202 (to fill in Schedule 11) can be found on Quest under finance > tax receipts. This sum can then be claimed for yourself, transferred to your parents or transferred to future years.
2. For all of you wonderful people that did not claim your WEEF refunds (remember, WEEF is GOOD), you can claim this amount on line 340 or save the receipts to carry your claim forward to any of the next five years (i.e. when you actually start making a lot of dough).
3. You can also claim your "public transit amount." Go to *http://feds.ca/sites/feds.ca/files/upass-2011.pdf* and you can put this amount in line 364 for each term that you paid your FedS fees. Up to 15% of the cost of your U-Pass will be used for tax credits. Any other public transit fees that you paid can also be claimed (assuming you have proof).
4. Moving credits go on line 219. All of us move a lot for co-op. If you move more than 40km for your co-op job, you can claim expenses such as travel, transportation, storage and the cost of meals and temporary accommodation for up to 15 days. You must have income at the location that you move to in order to claim this amount. You can claim for the move to a co-op location if you're getting paid at that location, but you must have taxable income in Waterloo in order to claim for the move back to school (most scholarships, etc. are non-taxable income). CRA must also be notified of your new address every time you move.
5. For all of you getting close to graduation, once interest starts to accumulate on your government student loans, you can also claim this amount in line 319.

Tax refunds have subtleties and nuances that could not all be covered in this article, but I hope I've at least given you an introduction (and if I've made any mistakes, please let me know). Take the time during reading week to complete them and read up on any additional perks that you may be eligible for. Some of your friends may be good resources too. Also, talk to your parents/relatives to determine if you'll be transferring tax credits to them. Tax refund forms are due on April 30th this year.

Tim Hortons and the Canadian Identity



SPENCER GOOD
2A MECHANICAL

Defining a cultural identity in a country as broad as Canada, in terms of both geography and diversity, is no easy task. Not only is Canada the second largest country in the world, it is also one of the most diverse. Canada has always been an immigrant's nation. It was largely the newly settled British and French who provided the framework for this nation and has seen waves of immigrants throughout its existence coming from all parts of Europe, Asia, Africa, the Middle East, and Latin America. Our tendency to provide a tossed salad approach to immigration, rather than the melting pot concept in the United States, has made Canada a country where newly introduced cultures continue to flourish even as they grow roots in the 'Great White North'. This immigrant-based society has created a level of tolerance seen nowhere else in the world but it also provides us with a somewhat confusing source for national pride. So, on the rare occasion when we Canadians can find a source of unifying national pride, we grab onto it with both hands and refuse to let go (even if the source of national pride is a chain restaurant selling coffee and donuts).

Tim Hortons was founded in Hamilton in 1964 by hockey player Tim Horton which, after Horton's death in a car crash in 1974, was taken over by investor Ron Joyce who oversaw the expansion of Tim Hortons into Canada's largest fast food restaurant chain. There are currently over 3000 locations in Canada with the chain currently controlling 22.6% of all fast food industry revenues in the country. Even more amazingly, Tim Hortons commands 76% of the market for baked goods and 62% of the Canadian coffee market (Starbucks is a distant second, controlling 7% of the market).

However, Tim Hortons is not just the largest restaurant brand in the country. Along with hockey, Tim Hortons remains the only tangible symbol in Canada that is presented nationwide. Every single province and territory has at least one Tim Hortons. Tim Hortons are present in the frozen tundra of the Inuit north, the Quebecois countryside, Toronto's downtown core, small farming towns in the prairies, at the center of mountain peaks in Banff, and in the midst of Pacific air in Victoria. Regardless that Tim Hortons is, without a doubt, a symbol of corporate dominance, Tim Hortons is **our** corporation. We have supported its growth into a mega success of a country and, despite the huge variance in views and cultures across the broad swath of land we call home, Tim Hortons plays a role in all of our lives. The question that remains of course, is it a good thing that our national identity remains so closely tied to a coffee chain?

Most observers would comment that Tim Hortons is a sad thing to have as a unifying symbol. However, Tim Hortons is not so much a symbol of our obsession with coffee as it is how relaxed we Canadians really are. We enjoy freedom, tolerance and peace without rubbing it into the faces of others. We feel no need to define a national symbol to enforce our identity upon others. The only reason Tim Hortons remains so intertwined with the Canadian identity is because for whatever reason people feel the need to tie the Canadian identity to something tangible. I argue that the less tangible nationalism we enforce, the better it is for the nation, because it decreases homogeneity and increases diversity. At the end of the day, Canadians themselves represent Canada by practising tolerance and kindness. Tim Hortons is merely something we like, not something we believe in.

Sleep Deprivation

LEAH KRISTUFEK
1B CHEMICAL

You need sleep. I can tell that you haven't gotten nearly enough sleep lately. You may be thinking, "Wow! Amazing! This paper can read my mind." No, I'm not psychic; it's my simple knowledge of university lifestyles and my friend--common knowledge. Despite my amazing abilities, your lack of sleep is a serious issue; it may be the thing causing you to consider whether this inanimate object can actually read your mind. Skimping on shut-eye can cause many side effects including weight gain, heightened risks of heart disease, and a heightened risk of accidents. (Let's all avoid handling heavy machinery, shall we?)

Sleep is the time when our brains organize the events that have occurred during the day, including those pesky lectures. As we all try to cram the maximum amount of knowledge into our minds in the smallest time possible, the efficiency of the process can be significantly increased by designating a couple of those studying hours to sleeping instead. As engineers, it may often feel like there are never enough hours in a day but the less sleep we get, the more hours it takes our sleep-deprived brains to process and analyse problems that are put in front of us. Getting adequate sleep is critical for regenerating neural connections in our brains, particularly in the temporal lobe of the cerebral cortex which is thought to be responsible for language functions. In one study, where participants were subject to basic verbal tests, it was shown that in a sleep-deprived subject, other, less well-adjusted parts of their brains step in to take over for the temporal lobe, which is left conspicuously inactive. Well, that's all well and good, but what happens if we need to call out a warning and find that we have forgotten the right words? It is a fact that accidents increase significantly after the daylight savings time-change denies us of a full night's sleep.

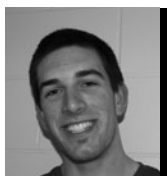
If you can wake up without an alarm clock, you might not need to be reading this article. Congratulations, you are getting enough sleep! For the rest of us, it is a constant struggle. The average adult functions optimally on 7.5 to 9 hours of sleep each night, but everyone is different. The real key is quality over quantity and maintaining consistency. Bad quality sleep, sometimes the result of too much coffee, can leave you waking up feeling worse than when you went to bed, while an erratic sleep schedule leaves your body unsure when you will rest next. If you want to wake up feeling refreshed and ready to face the day, try to go to bed and wake up at a decent hour. Additionally, it would be advisable to keep your sleeping schedule consistent, even on weekends. Our minds and bodies take a long time to adjust to a new sleep schedule; even two days of sleeping in will trick us into thinking that we should still be sleeping in on days thereafter. We follow a biological clock which is usually synched to the sunlight; generally you should feel more awake during times of high light intensity. In fact, during Shakespearean times, people went to bed early with the setting sun, but rose again in the early hours of the morning when the moon was out; the outcome was a very vibrant "night life" that included markets and entertainment. Sleep cycles involving deeper and lighter periods of sleep may have contributed to their ability to maintain this lifestyle. If you want to know how to plan your sleep cycle so that you wake up refreshed and ready to go, check out the sleep calculator at *http://sleepyti.me/*.

Now, I am beginning to yawn and there are exams to be studied for! Here are a coup l e of fast facts from the national Sleep Research Project to interest you in the mysteries of sleep:

- Seventeen hours of sustained wakefulness leads to a decrease in performance equivalent to a blood alcohol-level of 0.05%.
- The 1989 Exxon Valdez oil spill off Alaska, the Challenger space shuttle disaster, and the Chernobyl nuclear accident have all been attributed to human errors in which sleep-deprivation played a role.
- As a group, 18 to 24 year-olds deprived of sleep suffer more from impaired performance than older adults.
- Scientists have not been able to explain a 1998 study, which showed that a bright light shone on the backs of human knees can reset the brain's sleep-wake clock.

Mikayla Micomonaco
An unsuccessful all-nighter

Launch of Angry Birds on Facebook



ANDREW MCMAHON
2A ENVIRONMENTAL

Did you show your true love for Angry Birds yesterday on Valentine's Day? One of the world's most popular games can now be played on the world's largest social network. The Finnish mobile game developer Rovio announced that it would release a version of the game available on Facebook in Jakarta, Indonesia back on January 29th.

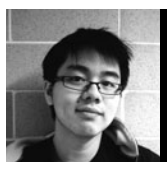
The addition of the popular game may be seen as an attempt by Facebook to stay on top of its competitor Google+ which added the game to its site back in August of 2011. This is by no means Facebook's entrance into the world of online gaming; the site has offered successful games like Farmville, YoVille, and Mafia Wars in the past but none of these compare to the overwhelming popularity of Angry Birds.

For any readers who have never played the game (if there are any left out there), Angry Birds involves slinging birds at pigs hiding in structures. The object of the game is to destroy all pigs in the playing field. It seems like such a simple concept but those are the ones that usually catch the public's attention. A combined 500 million downloads last year across all platforms makes it the most downloadable game in the history of gaming. A little known fact is that when developing the game, and searching for an enemy that the angry wingless birds to fight against, they drew on the "swine flu" epidemic in the news to settle on pigs.

The pairing of games and social networks has proven to be a good strategy for Facebook; they were able to reignite the popularity of the classic game Tetris by introducing apps like Tetris Battle which involves one-on-one play between players and allowing people to boast their high scores and ranking to their friends. This pairing draws in both: players who want to try to beat a game or getting a high score, as well as those who enjoy competing against others.

For those die-hard fans who don't think that yesterday's release is enough for them, they can take a field trip to the unlicensed theme park in China where people can play a life-sized version of the game.

How to Make It Through First Year



LAWRENCE CHOI
1B COMPUTER

Midterms are just around the corner for most of the frosh (in fact, some of you might have had some already). By now, you've probably had a sample of what Engineering is like and what the expectations are. Most of you will also notice that your academic performance has decreased a bit from your high school days. It's not that the material is beyond your ability to comprehend; it's the pacing and demands of Engineering that can cause things to be overwhelming at times. While in high school, you learned everything in class; now you have to deal with class, tutorials, and labs (sometimes, all of them in one day). You may also recall the talks that the Engineering Faculty gave to your class at the beginning of term which carried these common themes: go to class, eat/sleep properly, and do your homework. Some of you will, no doubt, be turned off by the fact that they seem to be rehashing the same things your parents have been telling you for years, but the truth is that they want you to succeed. Of course, those general guidelines often aren't enough. Let me share a few tips that can help you make it through first year, especially if your 1A term wasn't the best.

Make study sheets: At some time every week, summarize the major concepts you learned in class and write down important formulas, variables, and anything you find useful or essential. This saves time when preparing for midterms/finals as you don't need to flip through your notes to find a topic, and it also helps you learn the material at the same time.

Check old midterms: Midterm questions are often a little trickier than your typical assignment questions. Your professor may upload a few midterms from previous years or you can check the Exam Bank on the EngSoc website. They often give you a good idea on what kinds of problems to expect on your midterm.

Use office hours as necessary: Your professors and TAs are (generally) more than happy to help you with any problems that you may have with course material, assignments, and other concerns in the course. If the office hours aren't convenient or if you have a difficult professor, try asking your friends and peers.

Use resources available around campus: If you are having problems that are affecting your academic performance, don't hesitate to seek help. The school is aware that Engineering is very difficult and that is probably the reason why the faculty has its own counselling service. In the first year office, there are two wonderful counsellors who are willing to listen to your concerns in private - nearly everything you say to them remains confidential. Again, don't delay to make an appointment as they are often booked weeks in advance.

Join clubs and pursue activities: Having a very heavy work load does not mean that you have to spend every available minute of your time studying. Find activities on campus that you might be interested in. Also, try to incorporate physical exercise somewhere into your week; you'll be amazed at how much stress it relieves. A few hours a week is not a heavy investment so you will still have plenty of time for work.

Don't (just) study in your room: While being in your room makes it convenient to eat, shower, or even nap, the convenience factor can also make studying difficult by producing an environment that is too relaxed. Consequently many people (myself included) don't work well in our rooms. Try to mix up the environment by going to the library, computer labs, and even empty classrooms.

Finally, let me repeat some wise words from a teacher of mine in high school: **DON'T FREAK OUT**. These are words that I remembered throughout my high school career, and they have helped me out on numerous occasions. I'm sure they can help you make it through some hard times as well. Be persistent and eventually you'll get things right.

Engineering Your Success

SANDOR WEINACHT
ALUMNI MENTOR COORDINATOR

The Engineering Alumni Forum is an excellent platform for gaining insights from professional engineers on everything from school and co-op placements to careers and personal life. We are fellow Engineers who have dealt with the questions and challenges you are now facing, and we can offer strategies for success. Our volunteers range from last year's UW Engineering graduates to seasoned professionals who will link with you on-line and discuss all of your questions; whether your question is of the most personal concerns, the proper steps in building up academic excellence, or handling job interviews.

This is the response given when we asked one of our volunteers why he got involved in this project:

"As a University of Waterloo Engineering Alumni, I have participated in the PD Eng program, and one of the most beneficial things from those courses was the Alumni forums. I gained a lot of insight from speaking to them, and I was able to get a feel of what I could possibly do with my degree after graduation, such as what kind of jobs I get, and what opportunities to pursue after graduation. In brief, I appreciate the benefit of being able to talk to a future self that has much wisdom to offer, and now I would like to provide the same service for the current students attending University of Waterloo."

Here is an exchange found on the forum on the subject of,"The working world – co-op jobs."

Q: "How important are co-op term rankings after you graduate? What are some distinguishing features that would make an Outstanding coop student stand out from say an Excellent student? Naturally, it will vary depending on the job, but what sort of approach should I be aiming for?"

A: "Good rankings and good grades can be a noticeable differentiator. I am very likely to hire someone who consistently got high rankings on work terms because they tell me something about how they fit in. If someone regularly finds a way to stand out over a 4 month period, they must be able to adjust to their environment very quickly. I like people who can seamlessly fit in and add value.

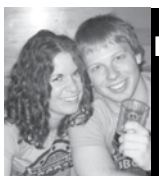
For me to rank a co-op 'outstanding' they would have to clearly show an understanding of issues beyond their formal domain and have taken positive action based on that understanding. Basically I could rate someone 'excellent' for doing extremely well in what they were hired for. They would have to step outside of that to be rated 'outstanding'.....I can't think of any cases where I ranked someone "outstanding" where I didn't also communicate to the student that I would want a chance to hire them when they graduated. That doesn't mean they are the only co-ops I would hire as graduates, I just wanted to make sure the seeds were sown and try to get myself to the top of their list of places to work in the future."

Visit *www.askanengalumni.uwaterloo.ca* today and post a message, a question or a story with your concern and one of our volunteers will engage you in a conversation that might change your life!

Editor's note: This is a sponsored article.

Beer Buzz:

Barrel Aged Ales and Drinking Tales



REBECCA CAMERON
4B GEOLOGICAL
ERIC COUSINEAU
4B ELECTRICAL

Hello readers! We hope that midterms aren't bringing you down and that you are happily awaiting reading week like us. Just a reminder that we are graduating at the end of this term and we need new people to continue the beer column from the spring term onwards. If interested please send an email to Jacob Terry at *jrterry@uwaterloo*.ca (he's *The Iron Warrior*'s Editor in Chief for spring term). The last few weeks have been insanely busy for us and we will be newly ringed as of Saturday, February 11th. With IRS and disorientation week came plenty of opportunities to conduct lots of beer research. So later in the article we will be taking a look (and taste) at barrel aged ales. However, one thing we both noticed with all of the hullabaloo surrounding IRS is that it is very drinking intensive. We figured it may be time for the beer column to take a quick look at responsible drinking.

A lot of responsible drinking habits are obvious, such as not drinking while sick or taking medications, not drinking before driving, never leaving a drink unattended, and eating food while you drink to slow the absorption of alcohol. However, there is a lot out there about alcohol that people don't know - like that drinking alcoholic carbonated beverages increases the absorption of alcohol into the bloodstream, and that a survey of Canadian campuses in 2004 found that 32 per cent of undergraduates drink at a dangerous level (Centre for Addiction and Mental Health).

While researching for this article we learned of several serious health problems that long-term heavy drinking can cause. They include liver damage (you only have one, back in second year Rebecca was convinced she had two), heart disease, stomach ulcers, blood vessel disorders, impotency in men, menstrual irregularities in women, and even some types of cancer (Health Canada). As if these long term effects are not scary enough the short term effects of binge drinking can be deadly - a person with alcohol poisoning needs immediate medical attention or they risk death. Alcohol poisoning has the following symptoms: Cold, clammy, pale or bluish skin, unconscious or unable to be roused, slow or irregular breathing, and vomiting repeatedly or uncontrollably. You should call 9-1-1 if you see someone exhibiting the above symptoms, and remember that saving a person's life is far more important than any trouble you or they get into. After you call 9-1-1, place the person in the recovery position (on his/her side with knees bent to prevent choking from vomiting). Do not leave that person alone!

Eric Cousineau
The Ale tastes chocolatey with whiskey notes

The best way to avoid the negative effects of alcohol is to know your limits. We are all for enjoying a few beers with friends (we even encourage it) but please drink responsibly when you are out there exploring the world of beer (and other alcoholic beverages). Good drinking tales are those you can remember clearly :)

Now, let's get on to the beer! Beers are generally best drunk fresh - however, there are a few exceptions. Barrel aged beers are usually brewed with some level of aging in mind and have the benefit of taking on the taste of whatever was previously in the barrel. Oak is the most common wood to use in barrels and adds a lot of sweet notes to whatever liquid resides in it. Almost all barrel aged beers are put into casks from distillers of rums, bourbon, and whiskey.

Today's tasting selection is the Scottish Harviestoun Brewery's Ola Dubh. It is an ale matured in whiskey casks for a whopping 12 years. Ola Dubh means 'Black Oil' and this name is perfect since the ale is gloopy and viscous. Beers like this one need to be drunk at a temperature between 7°C and 13°C (leave it sitting out for a bit to achieve this). In addition, a strong beer like this one should be drank out of a snifter glass (the narrow top will trap the aroma in the glass). The bottle came with a fancy tag that read: This ale tastes chocolatey with whiskey notes and has a roasty, bittersweet aftertaste.

The beer pours a deep cola black with very light lacing but no head retention. The aroma is composed of oak smoke with hints of vanilla and molasses. The taste is the most notable aspect this beer with a very pronounced mix of whisky and chocolate flavours. In addition to the main flavours, coffee and dry malts add to the taste on the palate to make a very complex flavour. The mouth-feel is very light with little carbonation. Overall this beer is exceptional and is a perfect beer for someone that likes coffee and whisky.

If you are keen to find some barrel aged ales another brand which makes tasty and affordable ones is Innis & Gunn - their products can easily be found year round at the LCBO. We hope that we have inspired you to seek out some barrel aged ales, and that you learned a bit about responsible drinking. Best of luck on those pesky midterms and have a great reading week! As we always say, Fear No Beer!!!

The Fortnightly Review: Raw Oysters, Medium-Rare

CHAD
XU
3A MANAGEMENT

Calm.
Collected.
Ready for interviews.
Eight hours of sleep every night.
Paying attention in class.
Eating breakfast on a daily basis.
Attending all lectures.
Attending parties on weekends.
No longer puking in said parties.
No more fast-food and unaccounted calories.
Able to run a seven-minute mile.
Able to finish assignments without copying peers.
Saying hello to acquaintances in the hallway.
Feeding structured responses through the mouth.
Subdued excitement and apprehension at the prospect of graduating.
An active member of the Engineering Society.
An individual fond of expressing his/her originality and uniqueness through the work of others.
Always meeting new people.
Passing judgements without voicing intent.
Paying gratitude to the bus driver.
Being a good friend.
Holding the door open for strangers.
Waiting.
Patiently in line for your turn to give them your money.
Saying no to spare change that is less than a nickel at the CnD.
Occasionally tipping over twenty percent at restaurants.
A faster computer.
A new pair of shoes.
No more stress.
No longer believes in love.
No longer procrastinates.
Still fond of posting drinking photos on Facebook, despite all its banality.
Still procrastinates.
Enjoys a good book now and then.
Abides by all toilet etiquette.
Greets all encounters with a firm handshake.
Mature.
Free.
Appeals to logic rather than emotion.
Still believes in love.
No longer a hypocrite.
Tells the occasional lie.
Finds refuge in ignorance.
Content.
Able to enjoy sex without emotional-attachment.
Screaming, silently, at all that is wrong.
Keeping warm in cold weather.
Dressed, in a pair of jeans (from Levi's), like everyone else.
Like a goose that no longer migrates in winter.
Like a goose that no longer flies.

Bad Movie Review

A Nymphoid Barbarian in Dinosaur Hell (1990)

MICHAEL NEW
4B CIVIL

This week's spotlight is a movie by the name of *A Nymphoid Barbarian in Dinosaur Hell* (1990). Talk about a catchy title. I watched this on the recommendation of one of my fellow writers. Although I usually have reservations when it comes to B movies, this one had me hooked with its ridiculously awesome name. Here's what was going through my head after reading it: Nymphoid (Ooo, hot chick), Barbarian (Conan!), Dinosaur (Jurassic Park), Hell (Hell yeah! But you already had me at Nymphoid).

This movie definitely delivers. There is a nymphoid barbarian. She is rather cute and wears almost nothing. There are a lot of evil dinosaurs who are pretty cool looking in a funny, clay-mation sort of way. There are also mutants, guns, crossbows, and a recital of *Jabberwocky*. The plot: In the near future, humans have gone and blown up half the planet and have saturated everything with radiation. This radiation has mutated animals into dinosaur-like monsters and has turned a lot of the humans into mutants as well. Every humanoid in the movie wants to get with our nymphoid barbarian.

So what did I think of the movie? It was… OK. I appreciate a really bad movie, especially when they are royally screwing up, and this movie does it in droves. However, I think many of you would actually find a few stretches of the movie to be rather boring. It came close to being serious a couple times (Whaaat?!), though fortunately, you never go longer than 10 minutes without having someone eaten by a dinosaur. The acting is pretty non-existent, but that's to be expected. I'd say it's worth watching if you like laughing at bad films. It's definitely funnier than the animated *Titanic* movie, but not quite as funny as *The Room*.

There's a special place in my heart for dinosaurs. The first movie I can remember seeing in theatres was actually Steven Spielberg's *Jurassic Park* (1993). I was four years old at the time, and I thought it was the greatest film ever. This is *still* my favorite movie of all time. Flash forward a few years to when I was still but a kindergartener. I wanted nothing more than to become a paleontologist and spend the rest of my life digging up dinosaur bones. It wasn't until grade 6 that I decided I wanted to be an engineer instead. That being said, I'll still watch just about anything if it's got dinosaurs in it. On a side note, an interesting tidbit about *Jurassic Park* is that originally, all the dinosaurs in the movie were stop motion (think T*he Nightmare Before Christmas* (1993)), and they were changed to CGI half-way through the movie's production. This week's spotlight has stop motion dinosaurs. When done correctly, stop motion can be creepy and eerily real. When done poorly, it's hilarious. These effects are hilarious, but they are really hard to get right. There's this one really funny scene at the beginning of the movie where one of the main characters is fighting a giant dinosaur worm and shoots it with a tiny crossbow. I laughed so hard I coughed hummus (and perhaps some chip crumbs as well) out my nose. I'd forgotten how awesome dinosaurs were.

Topz (With a Z):

Top Innovations for the Drug Industry

WADE WILSON
EDWARD BLAKE
2Z HANDSOMENESS

Drugs are pretty awful. In The Picture of Dorian Gray by Oscar Wilde, Dorian walks into the mystical wonderland that is the opium den and "looked round at the grotesque things that lay in such fantastic postures on the ragged mattresses. The twisted limbs, the gaping mouths, the staring lustreless eyes, fascinated him. He knew in what strange heavens they were suffering, and what dull hells were teaching them the secret of some new joy. They were better off than he was." And if you think you can trust Oscar Wilde, keep in mind he once single-handedly fought off a group of innocent attackers at Oxford and decorated his room with sunflowers. And for what are poppy flowers used? So remember: Opium is terrible! This is why this week's Topz is dedicated to our top new strategies for the drug industry for you entrepreneurs out there! And remember: The Iron Warrior does not advocate the use, sale and purchase of illegal drugs (using legal drugs in accordance with the package directions is at your discretion)!

Branding: According to a recent study by Sexist Assumptions, the overwhelming majority of heroin users are men. There is a huge, untapped market of potential female heroin users, but the question remains, how to reach them. The answer, is branding! Name new brands of heroin after famous heroines! Want to ride the underground railroad to funkytown? Try some Harriet Tubman heroin(e)! Joan of Arc heroin(e) will make you feel like you're talking to God. Princess Diana heroin(e) will make you feel like a real Wonder Woman! Jane Eyre heroin(e) won't even get you high; you'll just be depressingly incapable of loosening ethical idealism. Again, we do not condone this behaviour, but if you were to try it out, it could be rather lucrative.

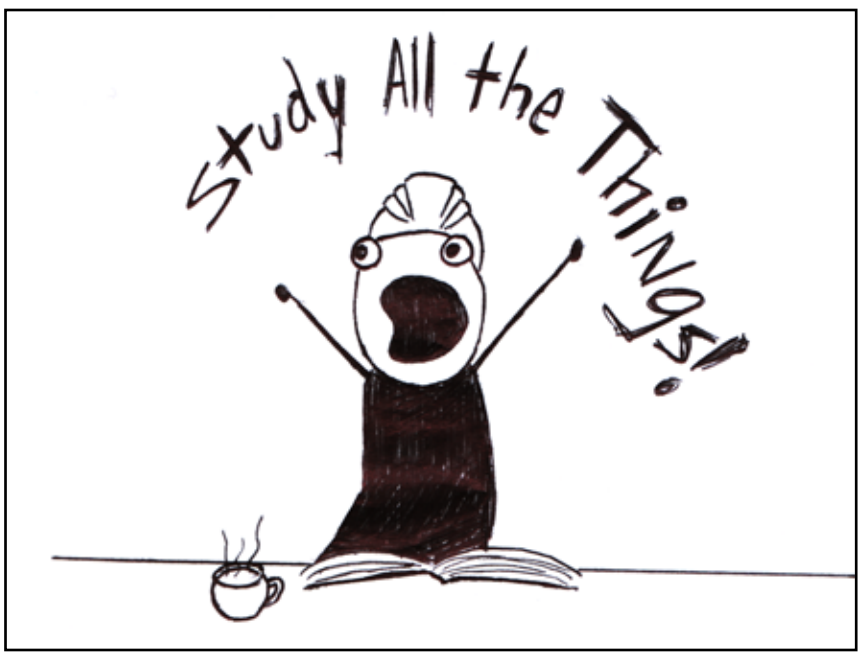
Culture Cultivation: People love drugs because drugs are "cool." For this reason, you should keep drugs cool by keeping them illegal. "Now why should we lobby for our own product to be illegal?" you might ask. Answer: what's cooler than increased danger, higher rates of death and infection, imprisonment with violent offenders, gang funding, and the risks of increased popo-prescence? Nothing! In fact, we suggest bringing back alcohol prohibition, along with the illegalization of cigarettes, painkillers, and hard candy. Whoop-whoop. It's the sound of the police. Whoop-whoop. It's the sound of a steady flow of reliable income, which is bad, and we do not condone it.

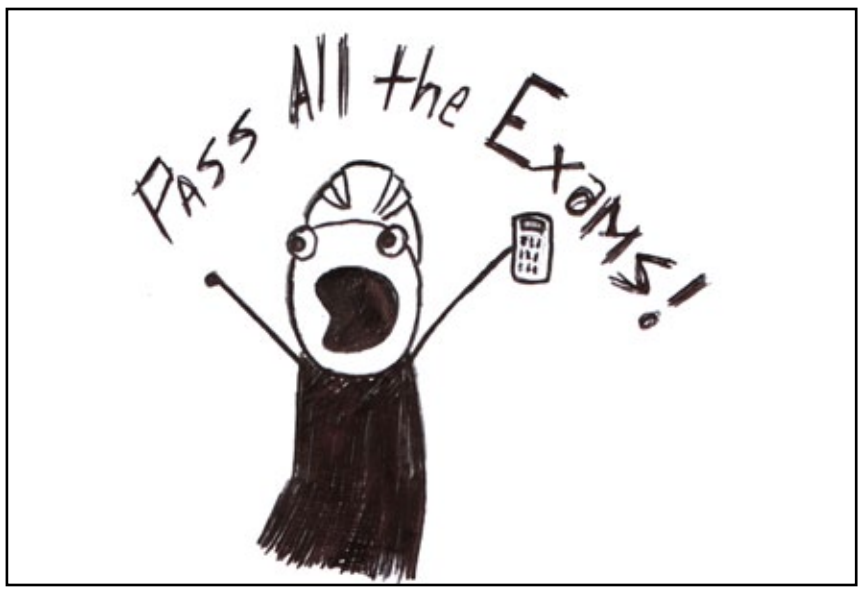
New Age Demographics: Old people love prescription drugs; true story. Getting high keeps them alive and fresh. Whether it's a blue pill that makes your pep-pep able to give it to your me-ma, or shooting up insulin before they crash, old people love prescription drugs. Now why get a taste of that juicy action? No, we're not talking about me-ma; we're talking about OMCM (old money cash money)! Also, what about children? Is nobody thinking about the children? Children are the future … junkies littering the ghettos of tomorrow. Cigarette companies have already been targeting this market for decades. Make fun mascots like Cheech and Bong, Cracky McCrackpipe, and Needles Malloy! Also, hand out cool games like scratch-and-snort trading cards all around the playground. And remember kids, Cracky McCrackpipe always says "School is cool … for meeting people that will sell you drugs to get you high!" But Publishable Pete would like to remind you all that drugs are bad and so is targeting the elderly and youth from whom we can all learn and grow without the use of illicit drugs.

So remember, say no to drugs, even though these tips make selling drugs a great way to make money off of the decisions of free human beings. Drugs are bad.

Study Faster

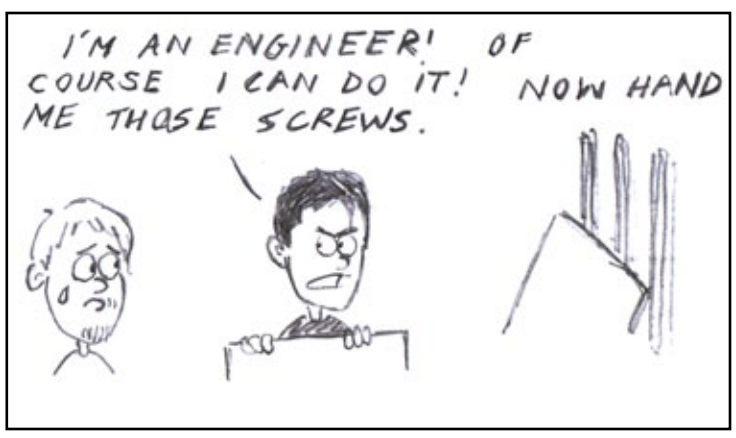
Leah Kristufek





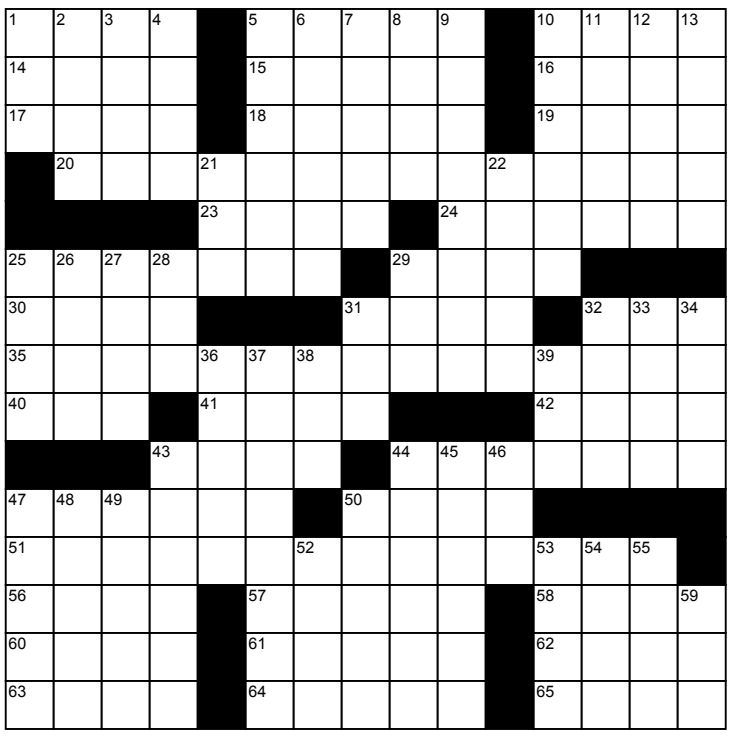
Of Course We Can Do It... Can't we?

Michael New



Loved to Death

STUART LINLEY
2T NANOTECHNOLOGY



ACROSS

1 Distort
5 Dinnerware
10 Gossip
14 Ancient American
15 Air freshener scent
16 Plus
17 Atomic model physicist
18 Stevenson who lost to Dwight
19 Tarzan garb: ____ cloth
20 Desperados in Depression?
23 Pirate syllables
24 Colossus locale
25 How-tos
29 Lure
30 After
31 Sully
32 Scathe
35 Ongoing heart depictors?
40 Slippery fish
41 Camera eye
42 Object of devotion
43 Pierre's padre
44 School
47 Postulate
50 Black, poetically
51 Starcross'd lovers?
56 De-____ (winter product)
57 _____ Lily
58 Char
60 KI, for example
61 Put in place, as a law
62 Pressing need?
63 Quick greeting
64 Saloon sport
65 Love (on)

DOWN

1 Bro or sis
2 Bed or door go with
3 Certain type of location
4 Advise
5 Fashion mag Marie _____
6 The majority of players in a children's game
7 Beginning of a sick simile
8 Indian bread
9 Eco issue
10 Chance to win
11 Broadway composer's middle name
12 Drama technique
13 Current TV crime drama
21 Rest
22 Little one
25 Lord
26 Riposte blade
27 Down with it
28 Tavern
29 Flapper wrapper
31 Distress signal
32 Built
33 Cu or Cl
34 Lean on (with on)
36 Crockett finale
37 Tried again
38 Hereditary molecule
39 Young goat
43 Rico go with
44 Terrible, as a situation
45 Dates
46 Segregated baseball league (abbr.)
47 Stand
48 West-coast short form
49 Aroma
50 Poet Poe
52 Weather phenomenon, La ____
53 Biblio abbr.
54 Italian currency
55 Slower than canter
59 Compass point

Easy

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

Medium

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

Hard

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

THE IRON INQUISITION
Nicole Jiang, 1B Electrical

"What is your plan for reading week?"

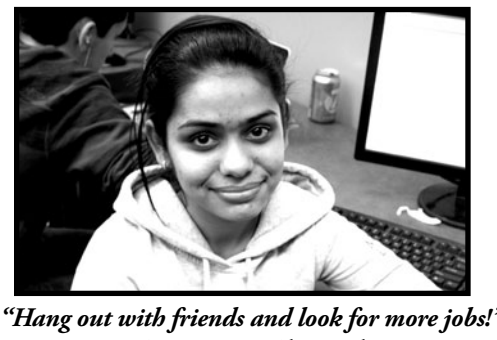
"Everything not work! Canada's wonderland, and party life! "
Garima Dua, 1B Chemical

"Tear down the WEEF Lab"
Frances Pogacar 2A Management,
Eleanor Mak, 2A Civil

"Going on an epic road trip to Vermont, go skiing at Mad River Glen"
Austin Cousineau, 1B Electrical

"Go socialize and party it up"
Matt Aydemir, 1B Chemical

"See relatives, play video game!"
Stuart Alldritt, 1B Electrical



"Hang out with friends and look for more jobs!"
Gurpreet 1B Chemical