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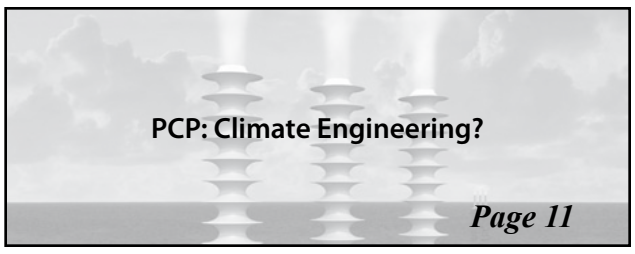
THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY | VOLUME 31 ISSUE 14 | WEDNESDAY, NOVEMBER 17, 2010



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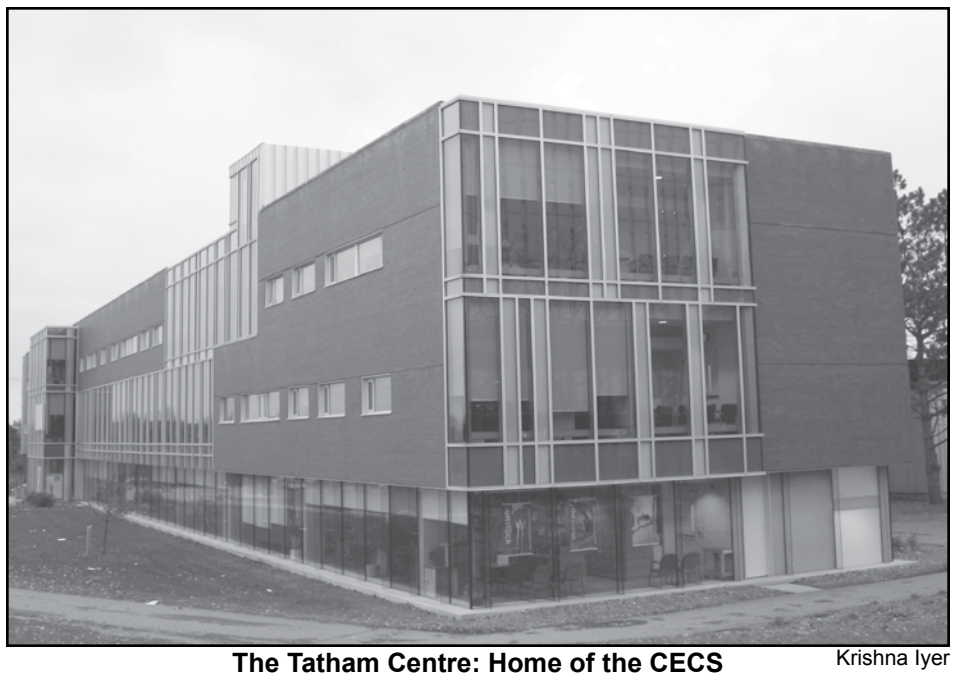
CECS Looks to Improve the Job Market

KEVIN LIANG
1T CHEMICAL



The Tatham Centre: Home of the CECS Krishna Iyer

Co-operative education was founded at this university in 1957 and has provided the world's largest co-op program ever since. Ask any engineering student at Waterloo why they chose to attend the University of Waterloo and their answer would most likely be for the superior co-op education. The prospective students' website boasts high employment rates of 95% and potential earnings between $25,000 and $74,000 by the time of graduation. In addition to the extra income, co-op students receive invaluable experience in real world industries to better prepare them for the working world. Completing an engineering degree with a co-operative program allows the student to gain a large advantage in the job market after graduation over non co-op equivalents.

Of course, this will only hold true if the student gets a job. After the recession that started in 2008, employment ratings took a small dive. CECS (Co-operative Education and Career Services) knew something had to be done. In the fall of 2009 and winter of 2010, the Dean of Engineering released grant funding to professors who would hire co-op students. The University of Waterloo became the largest employer of co-op students. Now that the recession is technically over co-op employment has made its return. But it is still unclear who is considered in the employment tally. The CECS website states that employed students are "students returning to previous employer + students who arranged own job + students matched through interviews." From this definition employment also includes students on unpaid and volunteer work terms. CECS is in the process of eliminating volunteer co-op positions. There will no longer be unpaid jobs advertised on JobMine. However, there will be exceptions if the students find their own jobs. This includes working for a student team, such as Midnight Sun or UW Baja, and creating a start-up company. They are currently compiling a set of criteria for what exactly would qualify for co-op credit if the work is unpaid. CECS is eliminating volunteer jobs because they believe that the student would not be as motivated to work as paid counterparts and employers will be reluctant to assign more difficult tasks or longer hours. This will ultimately lead to the student gaining less experience during the co-op term.

Because of this decision there will be fewer job postings on JobMine in the future. Jobs are especially lacking for chemical engineering students. Currently, chemical engineering has the highest unemployment in all years for the winter 2011 work term. There are 39 chemical engineering jobs looking to be filled and 148 chemical engineering students still looking for employment. These statistics set off alarms at CECS. They keep a close eye on employment rate, especially if participation is required for graduation. CECS has developed an approach to use to improve the employment situation in struggling programs. This approach has four steps:

1. General market analysis (Probe employers, investigate industries, learn everything they can about the market for chemical engineering students)

2. Analyze and dig into CECS data regarding the job statistics for chemical engineering (Job fit ratio, programs competing against chemical engineering, other statistics)

3. Consult with the faculty to better understand the industries that professors research in, use networking contacts through faculty members, see if the faculty can get CECS more leads in industry

4. Develop action plans

They are currently at step 2 and 3, and they hope to have developed action plans by the end of the term. This is the first time CECS has gone through this type of procedure. They hope to be able to complete this kind of analysis in 6-8 weeks in the future. CECS will be releasing their plans when they are finished. Their goal is to have 100% employment for all programs.

With the low number of chemical engineering co-op jobs and high number of chemical engineering students, the market seems to be supersaturated. However, based on market research conducted by CECS, they do not believe this type of statistic represents the job market after graduation.

CECS is devoted to meeting their 100% employment goal. They are attending conferences, gathering leads with employers who expressed interest and following up on each one. They are working hard to identify untapped industries that can employ chemical engineers.

Low Voter Turnout for FedS Elections

KATE HEYMANS
2A CHEMICAL

Most people agree that the members of a committee that controls a budget of approximately 1.6 million dollars should be chosen carefully. It's also the same council that decides which on-campus student groups to support and promote. Considering this, it's almost shocking to see that only about 140 engineering students out of almost 6,000 voted in the recent elections for the Engineering Representatives on the FedS Student Council. Many students were either uninformed or just not interested in voting and other students attempted to vote but encountered problems.

Congratulations to Alex Hogeveen Rutter and Yasser Al-Khder who won the election. They will join Jordan Lui, Praveen Arichandran, Trevor Jenkins and Yousif Al-Khder, the current FedS Councillors. Alex's main goal is to increase communication and understanding between FedS and EngSoc. Yasser's platform focused more on ensuring that engineering students' concerns were represented and on showing the rest of the student body what engineers can do. Suggestions are always welcome and contact information for all FedS Councillors can be found online at *governance.feds.ca/student_council*.

The core responsibilities of a FedS Councilllor are summarised as follows:[1]

1) Ensure that exec are acting in the best interest of students, and remaining accountable. Exec are required to submit monthly update reports of their activities. Councillors can also motion for the Exec to do certain things.

2) Attend monthly council meetings if they live within the predefined area. It is at these meetings that important decisions are made for the way budget should be spent and which student groups to support.

3) Provide monthly update reports to council on their constituency and outline issues that students have identified. Councillors are also expected to read the other reports in order to question or confer with the other councillors as required.

4) Participate in various committees that oversee different operations of the Federation. Core committees (that must always be filled) include, for example, a Budget Committee and Education Advisory Committee. A current ad-hoc (temporary) committee is developing the Long Range Plan for the Federation.

5) Act as a communication tool between the Federation and Students, going both ways. Can use things such as announcements at society meetings, updates to the mailing lists, society newspaper articles or town hall meetings.

Although the stakes of this election were clearly rather important, there was little advertising of the election and the candidates. Only one of the three nominated candidates' profiles was posted on the FedS voting website. The most publicised campaigning was restricted to a few Facebook groups involving less than 30 people and remained very quiet. The actual election itself did not seem to attract a lot of attention despite a call sent out to EngSoc over the mailing list. Overall, the effect was minimal in comparison to the attention gathered last year during the FedS elections, when Team Yellow covered the campus with posters. This may be the result the campaign period being in the middle of the Engineering Hell Week of midterms. There was also none of the debating that occurs for EngSoc elections in the CPH foyer and any posters in the engineering buildings were either non-existent or simply far too discreet to attract any attention. Most of the students I talked to either had a vague idea that there was going to be an election for something, somewhere at some point or simply had no clue.

Many of those students who had a vague idea that voting was taking place simply chose not to vote. Plenty of engineering undergrads on the other hand decided to vote simply for the only candidates that they knew rather than trying to decide which candidate was most suited for the position. It is difficult from the perspective of a busy engineering student to understand how the results such an election can affect you and why it would be worth the time and effort to get informed. After all, FedS doesn't seem directly involved in our classes and plenty of extracurricular activities on campus aren't even affiliated with FedS. However, some would argue that you cannot benefit from such an election unless you choose to get involved.

See FedS Elections on page 3

Letter from the Editor

Multiculturalism in Canada; Maple Syrup!

YIK TUNG ROY LEE
EDITOR-IN-CHIEF

Hello everyone!

Issue four! I'm in the home stretch now. It has been quite a crazy weekend, but I'm quite excited for the 30th Anniversary Issue. We've got some pretty awesome history that we should all be proud of. I know I am. However, I also know that I am a bit biased on that point, so go check it out yourselves.

While putting the issue together we received some blurbs from the old Editors-in-Chief regarding the production week process. I found it hilarious that despite never having met any of these people, I find humour in the quirks that come with the responsibility of *The Iron Warrior*. I also found some pretty big changes. For example, it now takes significantly longer to put together an issue than it used to, the 12-hour time period stated by Gabriel Chan is no longer accurate. James Schofield's feelings for the Letter from the Editor generally resonate quite well with my feelings towards the three columns I am now filling. However, every once in a while I have no problem filling the space. Reading John Olaveson's comment about the couch in *The Iron Warrior* office makes me wonder if he is privy to some special knowledge that failed to transfer through the years. Yes, we still have a couch. With any luck, it's not the one he was referring to. I hope that in ten or twenty years I'll get an e-mail asking me to relive the past few months. It's been a crazy, busy term, but a fun one for sure.

Roy Lee

My favourite part of Canadian culture: A boiling pot of maple syrup

Now, in the past few months I've heard significant amount of buzz about discrimination, stereotypes and symbols or actions of support for minority groups. You've surely heard about the wear purple in memory of the LGBT youths who committed suicide. There are also many other cases where discrimination made front page news. There is the Montréal École Polytechnique Massacre that shook the Canadian headlines in 1989. I also recently watched a movie called *School Ties* which highlights discrimination based on unfair stereotypes. If you haven't heard of any of these things at least look into the Maclean's "Too Asian" article. It raises a good deal of discussion about the Asian population in Canadian universities. Now I agree with some points in the article, however, there are also many deviations from the stereotypes that the article is based on. I won't elaborate on this point since there is another article in this issue that discusses the Maclean's article, so go check it out.

I strongly disagree with discrimination to the point of causing depression, let alone suicide, as was recently the case for several LGBT teenagers. Some stereotypes are justified as cultural or religious differences, but taking them way out of proportion, and bullying and picking on someone doesn't make sense. How would you identify the difference between someone who is homosexual to heterosexual? Beyond sexual preference, there are absolutely no physical differences there. Now I admit that if a guy started hitting on me and asked me out, I would feel incredibly awkward, but there would be no change in my opinion of him. I might avoid him for a while like I would a girl who expresses an unreciprocated interest in me. Are those two situations any different?

The École Polytechnique Massacre brought a whole new light to women in engineering in Canada. Is there a way to justify what happened that day? Fourteen dead women, ten injured women and four injured men. This was a result of a man who felt that he was wronged by feminists and that they were the cause of all his problems. His solution was to kill himself and make the world a better place by taking down some feminists along with him. Now maybe a feminist did wrong him, but that does not mean that all feminists are evil and out to get him.

The École Polytechnique Massacre comes up in my head every time someone questions the existence of clubs like Women in Engineering. I've heard many people make fun of this group, both men and women, as they do not understand the history behind the issue. However, I hope that people realize the severity of the history behind this and stop making fun of these organizations.

In the movie *School Ties*, a high school quarterback was scouted for a Catholic private high school football team. The school board recruited him as he would allow them to win their football game against their main competition. (Please note that this movie is set in a time and place where football was a huge deal.) The quarterback joined the school however he avoided telling anyone that he was Jewish. He fit in just fine with the rest of the guys. Then, all of a sudden, someone leaked the fact that he is Jewish and everything went sour for him. His girlfriend immediately started avoiding and ignoring him, his teammates no longer respected him and people started picking on him for his religion. I am not going to give away the end of the movie but it has a relatively positive ending. This is enough to illustrate the point. The teammates and classmates did not notice his so-called difference until it was pointed out. Would you notice the difference? What makes someone of a different religion or a different culture different? And does it really affect the relationship you have with them?

We all know it's an issue, yet it remains so prevalent in our society. Why? Why can we not just accept our differences and take them as positive features of our Canadian culture. Now, I am not the most culturally aware person out there, but I do my best to learn and understand differences. I am proud to be Canadian and proud to be part of the mosaic we use as a symbol of our multiculturalism. My taste buds' favourite part is the Canadian culture has got to be Cabane a Sucre, or Maple Toffee as you call it in English, or just maple syrup in general.

Enjoy your week!

Roy Lee

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Send your submissions to iwarrior@engmail.uwaterloo.ca
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THE IRON WARRIOR

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

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

All submissions, unless otherwise stated, become the property of *The Iron Warrior*, which reserves the right to refuse publication of material which it deems unsuitable. *The Iron Warrior* also reserves the right to edit grammar, spelling and text that do not meet university standards. Authors will be notified of any major changes that may be required.

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Waterloo Engineering Competition

AMRITA YASIN
4A CHEMICAL

In order to select students to represent University of Waterloo at the Ontario Engineering Competition (OEC) 2011 from the 'A' stream, the Waterloo Engineering Competition (WEC) was organized, on a similar pattern as the previous term. WEC took place on November 5th and 6th in three categories: Senior Design, Junior Design and Consulting Engineering.

The teams were given their respective problems on the evening of November 5th and allotted time to build their solutions. The students then demonstrated their solution to a panel of judges on the morning of November 6th.

The Senior Design problem involved designing a vehicle that would pick up load from various locations and then climb up a ramp and force its way through a set of freely hanging doors. Unfortunately, none of the teams' vehicles was able to complete the challenge.

A whopping 22 teams took part in the Junior Design competition. The objective of the Junior Design problem was to design a projectile launch that was capable of targeting four pre-determined distances. Of those, one team was able to successfully hit all the four targets and was thus declared as the unparalleled winner of the competition.

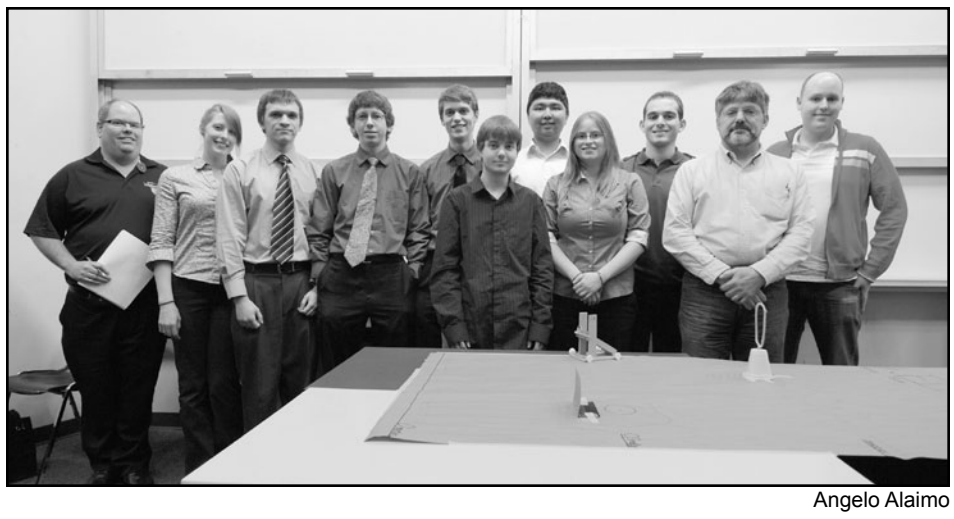
The Consulting Engineering problem was a based on a local topic: review of the current public transportation system and suggestion of an action plan to improve the transportation services giving due consideration of the LRT system to be implemented later.

On behalf of the WEC Organizing Committee, I would like to thank and congratulate the participants on their efforts. I hope it was a great learning experience for everyone. I also appreciate the judges' efforts: Professor Steve Lambert, Professor Bill Bishop, Mr. Oscar Nespoli, Mr. Chris Rennick, Mr. David Effa, Mr. Chris Togeretz, and Ms. Fiona Yiu. I would also like to extend a big thank you to all the directors involved in putting this show together: Aareet Shermon, Thanenjayen Rangan, Tahamid Kabir, Jeffrey Chen, Freeman Kam, and Elsa Thomas.

Winners	Consulting	Senior Design	Junior Design	Technical Speaking
First Place	Kevin Ling Timothy Bandura Adam Klett Marc Tan	Maple Leung Cody Prodanuik Nevin McCallum Jeff McClure	Marc-André Simard Kornel Niedziela Adam Thagard Shari King	Erin Matheson
Second Place	Amir Taleghani Matthew Casswell Fahim Hamidi	Ann Sychterz Tim Schnarr Kristine Campbell Milena Beloia Cheres	Lisa Kogan Leon Rabinovich Mark Khaitman Frank Zhao	Winnie Tse

Angelo Alaimo

First and second place teams in the Consulting Engineering category



Angelo Alaimo

First and second place teams in the Junior Design category

The Difficulties Surrounding the Recent FedS Elections

From FedS Elections from page 1

Sure, FedS controls a huge budget and can be used as a powerful tool of change, but plenty of students feel that all their needs and wishes with regards to FedS' mandate will be met no matter who is elected. For many engineering students the stakes of a FedS election are simply not worth the aggravation required to get informed and actually place a vote.

Some students actually attempted to vote but found that they weren't able to log in to the online voting system. One off-campus students on co-op, although eligible to vote, found that he was not officially part of the voters list. The making of the voters list is a drawn-out process and, according to the FedS IT department, almost always misses students. The Chief Electoral Officer is in charge of requesting student information from Student Accounts based on full-time enrolment and faculty. These lists are then used to populate the online voting ballots. Students who found that they could not vote were given the choice of either going to the SLC to fill out a paper ballot or sending their vote via email to Justin Williams, the Chief Electoral Officer. Although the CEO is bound to confidentiality, it was obviously preferred that students having trouble submitting their vote make their way to the SLC. Although this may sound like a minor challenge for anyone who actually cares about voting, to the reluctant voter it is simply one more hurdle that must be overcome and requires time and energy.

Congratulations again to the winners and hopefully they will be able to achieve the goals they outlined in their campaign platforms. However, this election has also clearly shown that unless engineering students are informed of the reasons why they should actually take a break from their busy lives to vote in FedS elections, voter turnout will be poor. There's no way most engineering students will search through the internet to get an idea of what the candidates are planning to do and they will also not take more than five minutes to complete their voting ballots. FedS elections may be important but engineering students are also very busy and not very interested in stuff that doesn't appear to have a direct impact on them.

[1]Trevor Jenkins, FedS Councillor

FedS Events and Meeting

YOUSIF AL-KHDER
FEDS COUNCILLOR

Hello everyone,

Your FedS councilors just had their November meeting with the rest of council and the executive and have some updates for you.

Before going into updates, we would like to inform you that the by-election is over and we would like to congratulate the 2 new engineering student councilors; Yasser Al-Khder and Alexander Rutter. The election results are available at *http://vote.feds.ca/*

And now for the updates! First, the weekend before last was the Ontario Undergraduate Student Alliance (OUSA) General Assembly. OUSA is a provincial association that lobbies the provincial government regarding issues that relate to undergraduate education. One of the engineering councilors, Trevor Jenkins, attended the General Assembly, so feel free to email him at *tekjenki@uwaterloo.ca* if you would like to know more about OUSA.

FedS is currently forming a video team to enhance communication. Job descriptions will be up soon, so if you have experience with shooting or editing video, we suggest that you apply.

There was a long discussion in the last council meeting about conducting a review of the external organizations that FedS is a member of, mainly OUSA and the Canadian Alliance of Student Associations (CASA) (the federal version of OUSA). The review will be conducted by the Education Advisory Committee (EAC) and the motion will be formally put forward in next month's meeting, after President Brad Moggach and VP-Education Nick Soave come up with a scope for the review.

A reminder from VP-Internal Nikki Best that the Arts Symposium will be happening in the SLC on November 26th.

If you have any questions, feel free to talk with or email us. Your councilors are Alexander Rutter, Jordan Lui, Praveen Arichandran, Trevor Jenkins, Yasser Al-Khder and Yousif Al-Khder. Our contact information is available at governance.*feds.ca/student_council*

CSCE – Student Chapter

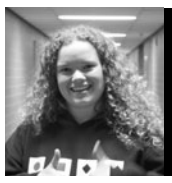
AMIR TALEGHANI
CSCE WATERLOO

The Canadian Society for Civil Engineering (CSCE) is coming back to Waterloo. You probably haven't noticed the door located beside the civil computer lab marked "CSCE Student Chapter," but there used to be an active and vibrant student chapter at our school which is now being revived. So what is the CSCE? It is the only Canadian organization which brings together civil engineers from all specialisations, and promotes civil engineering to the public and to the government. More importantly, the CSCE provides student members the opportunity to learn about the profession, network with professionals and have a lot of fun. Through social events, movie nights, student competitions and conferences, our student chapter aims to build a sense of community and promote everything that is awesome about civil engineering to the student society.

While the Concrete Toboggan team has had a long-standing tradition at Waterloo, there are numerous other civil-related competitions in North America, including the Concrete Canoe Competition in California and the Popsicle Bridge Building Competition in Montreal, which will be our student chapter's first competition. There are also opportunities to attend conferences, and even submit student research papers. Civil engineering is unique in that there is a very wide spectrum of fields in which civil engineers work. Students and the public are often confused about what civil engineering actually involves. From rivers to roads to skyscrapers you find civil engineers hard at work. We plan on inviting practicing engineers for special lectures and presentations to shine light on everything ranging from challenging projects to advice on how to best pursue your career ambitions.

CSCE's next steps involve getting new members, getting the word out, and fundraising to plan events and send members to competitions and conferences. Look for us on a board, in a future issue of *The Iron Warrior*, or in your classroom.

November 7th marks the 125th Anniversary of the Canadian Pacific Railway



MADDY LIDDY
2A NANOTECHNOLOGY

On November 7th, 1885, one last spike was driven into a track, completing Canada's first transcontinental railway. The Canadian Pacific Railway (CPR) has been an essential part in the development of Canada's history, economy and culture. The addition of a railway enabled Canadians to transport goods from one city to another in a manner and at a speed not possible before. People were now able to work in one city and live in another, travelling between provinces in a matter of days, opposed to the other, much longer travelling opportunities. Culturally, the completion of the railway provided the then-young nation with a sense of unity stretched across the entire country.

However influential the CPR is to Canada, it was not the first large railway in Canada. The first true railway in Canada was built and used long before the confederation was established. The Champlain and Saint Lawrence Railroad was used to carry a relative small amount of freight from Montréal to Lake Champlain. This railway was commissioned largely by John Molson and other merchants from Montréal, and was completed on July 21st, 1836. Railways like these that could carry small amounts of cargo across small distances then began to appear all over British North America. These kinds of railways continued to grow in size and length, being able to carry more goods over a larger distance.

Railways did not truly become major factors contributing to Canada's history until after confederation. The history of the transcontinental railways can be sourced back to confederation, which began with including the construction of the Intercolonial Railway in the 1867 Constitution Act. This railway was commissioned and supported largely by British loans, and was completed in 1876 under Sir Stanford Fleming.

As an expanding country, Canada needed incentive for the other provinces to join the newly created country. In 1871, British Columbia joined the country with the promise of a transcontinental railroad to be completed within 10 years of signing. After nine years of disputes and Canada's first scandal, the Pacific Scandal, the contract for the Canadian Pacific Railway Company was finally given to George Stephen on the 21st of October, 1880. At the time, the CPR was the largest transcontinental railway, stretching 1600km longer than the United State's railway. Under the guidance of William Van Horne, the railway was completed on November 7th, 1885, when the last spike was driven. Six months after completion, the first passenger train left Montréal in June of 1886 and arrived in Port Moody, British Columbia on July 4th 1886.

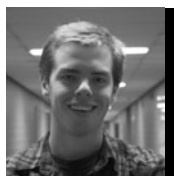
Some of the parts of the CPR history are not as shining as the others; however, they still play an important part in Canada's history. From 1881 to 1884, 17 000 Chinese workers came to construct the railway between Port Moody and Eagle Pass in British Columbia, a contract that was given to the engineer Andrew Onderdonk from New York. When they arrived to work, they were met with poor living conditions, and earning only $1.00 per day, while their white male counterparts earned $2.50 per day and did not have to pay for food or supplies. In addition, they were given the more difficult jobs, involving much of the demolition of the mountains as well as clearing and grading the roadbed for the railway. While they were not working, they lived in camps, tents or boxcars, with little food. This lack of nutrition led to the death of even more workers due to scurvy. In addition, these camps could not be permanent as they had to move them, often as far as 40km, each time the track moved farther and farther down the line.

In the late 1800s, large deposits of valuable minerals were found near the Kootenay Region in the southern British Columbia. Wanting to maintain control of south-western Canada, the Canadian Pacific Railway Company extended its line over the Crow's Nest Pass into British Columbia. The pass is situated 1375m above sea level and was originally not deemed fit to lay a track there when the CPR line was first created. However, in 1898, this track was completed in order to transfer coal and minerals out of the Kootenay area. The creation of this track was one of the greatest engineering feats of its day. To complete the track, the workers worked at the high altitude conditions while blasting through the Rocky Mountains. This was made financially possible with the Crow's Nest Pass Agreement between the CPR and the Canadian Government, which entailed that the company would be granted 3.3 million dollars to build their track. In return, the company was supposed to reduce the freight rates on the Prairie farmers for shipping grain and flour.

The reduced rates allowed for a major immigration to occur, particularly through the Canadian Shield in Northern Ontario and throughout the Prairies. In the 1900s the increase in settlement lead to the creation of many other railways including the Canadian Northern Railway, owned by Donald Mann and William Mackenzie, which linked the railways to other cities like Regina, Saskatoon, Prince Albert and Edmonton. It pushed through the Yellowhead Pass located between Alberta and BC, close to the present day Jasper National park.

Throughout its history, the Canadian Pacific Railway has changed its face and functions many times. It began mostly as a cargo and passenger transport, but has evolved to become so much more with time. It has shaped Canada's history, both good and bad as well as giving it a sense of completion. It will continue to act as one of Canada's greatest engineering projects of its day influencing the nature of this nation.

Major Breakthrough in Prostate Cancer Research



SPENSER GOOD
1A MECHANICAL

We are officially half-way into Movember, and there's no shortage of dirty moustaches being grown on-campus this month. The fundraiser is in full swing, with millions of dollars being raised worldwide that will be contributing to prostate cancer research. With a recent major breakthrough in prostate cancer made this October, it is clear that the trendy facial sported by men (and maybe some women) worldwide during the month of November is making a difference.

A recent study published in the scientific journal, Nature, reported the major breakthrough. Scientists at Monash University in Melbourne, Australia have discovered a 'killer protein' called perforin that can effectively delay the spread of cancer cells. The protein is what helps the immune system destroy cancer causing viruses, and scientists hope to gain insight into utilizing the protein to stop the spread of different types of cancers, prostate being among these different types.

So if you're a fellow male growing a dirty stache this month and are wondering if it is worth your isolation from all those picky females out there, just remember that it is worth it, and, in a weird sort of way, your dirty stache is helping save lives.

Waterloo Attends PEO Student Conference 2010

AMRITA YASIN
4A CHEMICAL

Hola Plummers! Hope all of you had a good term. Twelve of your peers from both A-Soc and B-Soc made an appearance at the Professional Engineers Ontario - Student Conference (PEO-SC) on the weekend of November 12th at the University of Toronto. It was a conference of awareness, education and much mayhem!

The conference started with a remarkable speech from the famous, motivational speaker, Drew Dudley. He made us laugh and cry, question and reflect, smile and ponder by drawing on his experiences from personal interactions with people. Another highly motivational speech from Ron Shimnoy focused on having confidence and positive attitude towards one's self, and development of interpersonal skills in addition to technical education.

Representatives from the PEO were present throughout the conference to ensure everything was running smoothly. There were presentations on the importance of obtaining Professional Engineering License, introduction to the Engineering Intern Training (EIT) Program, the EIT Financial Credit Program (FCP), and chapters run under the PEO and the Student Membership Program (SMP). If you are getting anything out of this article, remember this: **if you register for the EIT program within six months of your graduation date, your registration fee and fee for the first year are waived.**

Emphasis was placed on the participation of engineers in public policy, as public interest is one of the stipulations of the Professional Engineering License. There are currently two engineers in the legislature and the goal is to increase this number to magnify the change that engineers can bring about in the everyday lives of people. A couple of presentations also focused on the technical roles of engineers being intertwined with socio-economic and cultural factors as well as the importance of this awareness among engineers in order to propose the best solutions.

In addition to informational presentations on graduate studies and entrepreneurship, my favourite was a presentation by Vernon Kee; he initially went to school for Biology, dropped out and did competitive paintballing for a year, realized he liked engineering, got a Bachelors in Mechanical Engineering, went to MIT for grad school (Smart people impress me, OK), worked in the automotive industry for a few years and dropped it all to become a high school teacher so he could make a direct impact! How cool is that? That's doing something that makes you happy and contented, risk-taking, believing in one's abilities, the importance of technical education - all in one for me.

Now you are probably thinking, "I am fine with reading this article but who wants to sit all through that for an entire weekend." Well we had our fair share of fun too! The first night was an open bar night with lots of music, dancing and mingling where UW beat Mac at boat-racing with two girls on our team! Saturday night was a rather elegant affair with a masquerade on a cruise. Needless to say, more boat-racing ensued ;)

Keep your eyes out for announcements by the VP-External calling for delegates if you wish to attend a conference. They are a great way to meet people and expanding your network, listen to inspirational stories and mingle with fellow students from across Ontario!

PEO-SC Committee

Delegates pose for for a conference photo

Waterloo - 267th in THE World Rankings

LYDIA TERISNO
1A CHEMICAL

This year's university rankings compiled by different institutions have been published and surprisingly, University of Waterloo did not make it to the Top 200 in Times Higher Education (THE) World University Ranking. This is the first year that Times Higher Education is using a new methodology and data compiled by Thomson Reuters; where as in previous years, QS was the data supplier for the ranking. The new methodology incorporates 13 separate indicators (up from just 6 in the previous years) to determine the best universities.

Believing that University of Waterloo is a good university, I considered the possibility that University of Waterloo did not participate in the ranking exercise. An in depth research and communication with Phil Baty, Deputy Editor of Times Higher Education Magazine, confirmed that Waterloo did participate, but unfortunately did not make the Top 200 list. An iPhone application that could be downloaded from THE website allows readers to access data on 400 institutions. Currently, University of Waterloo is ranked at 267th on the list.

The breakdown of the data submitted by the universities is confidential and therefore, it cannot be seen where the University of Waterloo is lacking in the new ranking indicators. THE's former partner in World University Ranking, QS, has also published their own version of World Top Universities. In their list, University of Waterloo ranked 145th, significantly higher than the rank published by THE. University of Waterloo ranked 39th in Top Universities in Engineering and Technology compiled by QS, which is great news for us, proud engineering students of Waterloo. Different parameters and methodology might have influenced the significant difference in rank, but in all three lists, Waterloo has dropped in ranking from previous years.

The good news about University of Waterloo is that we remain third in Maclean's "comprehensive" universities ranking for Canadian universities. Waterloo even finished first in the social science and humanities grant for this year. In addition, do not forget that we are still the most innovative university in Canada for 19 years in a row. While scoring high in World University Rankings is good for any university, I still think that University of Waterloo has the greatest engineering program. Our students have the unique mix of work experience, professionalism, and hands-on engineering knowledge that sets them apart.

The Falkirk Wheel

ADRIANA CAMERON
3B MECHANICAL

Falkirk, Scotland is home to a one-of-a-kind engineering feat – the world's only rotating boat lift. This rotating boat lift connects two canals which link Glasgow to Edinburgh. These canals are a vertical distance of 24 meters apart, and it previously required a series of 11 locks to connect them.

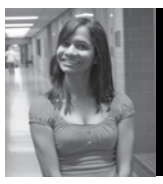
The Falkirk wheel has two diametrically opposing steel arms, each of which have a caisson containing approximately 360 m^3 of water. If a boat enters one of the caissons, water is displaced ensuring that the wheel remains balanced regardless of whether there is one boat in the wheel or two. The Falkirk wheel is capable of carrying a boat with a length of up to 21.33 m, and a weight of up to 200 tonnes.

What makes the Falkirk wheel remarkable, it how little power it consumes when lifting a boat. Due to the fact that the opposing arms are balanced, the force of gravity acting on the descending tank does most of the work. The boat lift consumes very little power despite the 300-tonne mass of the boat and water. The wheel is powered by electric motors which require only 22.5 kilowatts. In order to lift a boat, the electric motors consume 1.5 kilowatt-hours. To put that into perspective, 1.5 kilowatt-hours is what boiling 8 kettles of water consumes.

The Falkirk wheel cost £17.5 million, which is equivalent to $28.5 million Canadian. However, the Falkirk wheel brings in money as it has become a popular tourist attraction.

The Falkirk wheel may not be the world's only rotating boat lift for long, as a rotating boat lift has been suggested for a proposed new canal in Bedfordshire, England.

Drink Away Your Problems, Not Your Genes



ANJALI GOPAL
2A NANOTECHNOLOGY

"It's not you; it's your genes." This ideology has been applied to everything from the size of our waist to the breadth of our intelligence. Its newest application? Drinking.

The latest piece of insight into the human genome indicates the existence of a 'tipsy gene.' According to researchers, up to 10 – 20% of the population might have this gene, called "CYPE21". CYPE21, codes for an enzyme that breaks down alcohol. Although most of the alcohol that we consume is broken down in the liver, CYPE21 produces enzymes that break down alcohol in the brain. Those who have the gene get drunk quicker—and since these people are more likely to feel the negative effects of alcohol, they're less likely to get addicted.

Research on CYPE21 is still in its preliminary stages. Although an initial study did show that confirm that people with CYPE21 did get drunk quicker, integration of this new idea into curbing alcoholism is just starting. However, researchers believe that developing drugs similar in function to the enzymes that CYPE21 codes for can be used to reduce a person's alcohol consumption. Apparently, the purpose is not intended to make people 'get drunk quicker', but to prevent people from having to erode away their liver just to get drunk (whatever the intention, the effect is the same).

However, jumping on this tipsy gene bandwagon might lead to a host of societal problems, because, as always, the discovery of any new gene can stir up a little buzz. Although it is well known that alcoholism does run in families, can evidence of this new 'tipsy gene' be used to excuse people who don't have the gene from their drunken acts of stupidity (or violence)? And what about genetic screening? People are already expressing interest for selecting kids with 'blonde hair' or 'blue eyes'—who's to say that they won't select for a 'non-alcoholic' child?

Although the tipsy gene does provide some useful insight into the cause and effects of alcoholism, it is worth noting that alcoholism is a combination of bad genes and bad environment. You can't blame everything on your parents. Besides, evidence of this tipsy gene might actually ruin our engineering reputation. After all, what if someone claims that it might be a lower-than-average incidence of the tipsy gene among engineering students that allows us to 'demolish forty beers'? I think we deserve more credit.

Do you I3? Give UW a Makeover!

MILENA BELOIA-CHERES
3B CIVIL

When it comes to universities, UW has got the entire package- the brains, the name, the connections- except the looks. I was walking onto campus last Saturday, along with hundreds of inquisitive high-school students and their parents arrived here for the Open House, and could not help noticing how uninspiring a first impression UW must have made. In any situation, first impressions matter. So why does the most innovative university in Canada greet its guests with the blandness of dying vegetation at the entrance to Ring Road, sabotaged trash bins in front of South Campus Hall, architecture that failed to make it into the 21st century, and parking lots large enough to try and compensate for all of the above?

This is the question that Waterloo's Faculty of Environment, Central Marketing team, and Provost's Office asked when they proposed the I3 Challenge- Innovate, Integrate, Implement. The challenge seeks students' innovative solutions to enhance the form, function, and image of the South Campus entrance. Inspiring solutions that would finally capture the innovative spirit of the University of Waterloo. For the first time, UW is ready to integrate its strengths by involvement of all the faculties, as well as of the operations team and the Region of Waterloo, putting together what could easily be the most unforgettable UW competition.

Making It Happen

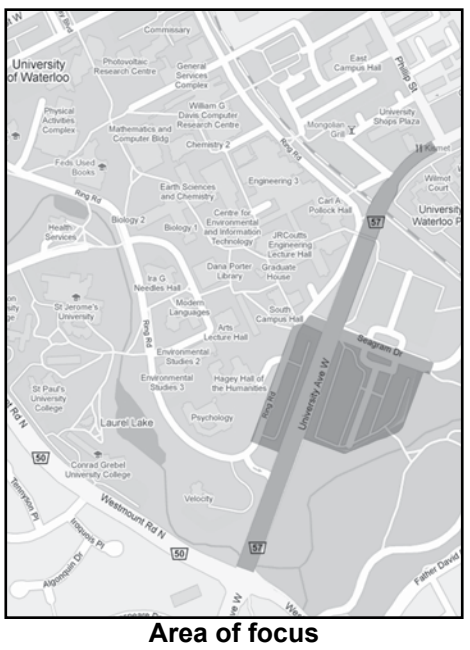
It starts on November 23rd, 2010, at 4:30 PM, with a campus-wide brainstorming session held at Bomber. Students will be asked to focus their design on one or more of the following categories:

- Enhanced integration with the community
- Campus accessibility and transportation
- University of Waterloo identity and marketing
- Sustainability
- Visitor way finding

The Area: The design will focus on the site along:

- University Avenue, between Westmount Ave. and Phillip St.
- Seagram Drive, between northern boundary of Waterloo Park and South Campus Hall
- Parking Lots H, HV, C and their green spaces

The Team: The unique feature of this challenge lies in its integration components. Teams are required to have 3-6 members representing at least 2 faculties, with no more than 3 members from one faculty. Graduate students are also invited to compete, with any team having no more than 2 graduate students. Add to this the professional guidance that each team will receive along the way from faculty advisors, Plant Operations, and industry, and the possibilities are endless.



Area of focus

The Deadlines: The competition will take place in 3 stages. Please refer to the table below for the rough schedule.

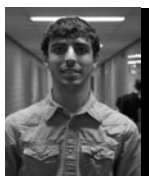
The Criteria: Winning criteria will have two areas of focus:

- Product- Final submissions should satisfy the 3 Is of the challenge, as well as align with the UW Campus Masterplan
- Process- Teams will be required to submit a discussion of how they functioned throughout the design period

Few students get to graduate university and leave behind such a lasting legacy, which will finally redefine the University of Waterloo from the bland school with brains to the hottest school in Canada for years to come. So check out more details about the competition at *innovate.uwaterloo.ca*, and head out to Bomber on November 23rd to kick start the I3 Challenge.

	Date	Deliverables	Prizes
First	February 2011	Your overall vision for the proposed area for the next 3-10 years	10 teams will be chosen to advance to the next round and receive $500
Second	April 2011	Detailed design proposal	4 teams will be awarded an extra $1000 each and advance to the final round
Third	May 2011	Final submission and presentation of the immediate implementation plan	The winner will receive **$100,000** towards the implementation of the project and their design will be set for construction in Fall 2011.

Are You Using Protection... On Your Smartphone?



AMMAR MASUD
2A NANOTECHNOLOGY

Once you go BlackBerry, you never go back. This is usually true for any smartphone including Android phones and iPhones. From browsing the web to downloading applications, there is so much potential from a device that you can carry around in your pocket.

After becoming accustomed to a smartphone it is a stressful and time consuming process adjusting and reacquiring lost information if it is lost or stolen. It is best to be prepared for such events and it can be done by simply downloading an application. You may think it would not happen to you, but having had two friends who have had their iPhone 4s stolen and losing my BlackBerry (R.I.P.) on a rollercoaster (Behemoth at Canada's Wonderland) this summer; it's more likely than you may think. Here are a few recommendations for applications that can save you from such misfortune.

iPhone

Find My iPhone

The priciest application on the list because it requires you to be a MobileMe member which would cost you a $109 yearly fee after a 60 day free trial. But you would be paying for arguably the best application on the list. Particularly, the feature of the application that will gives you the security you need is titles "Find my iPhone." All you need to do is sign in on their website at me.com from any computer and sign in to see where the iPhone is using GPS as well as being able to write a message to be displayed on the phone. If, for example, it is in your home but you can't find it, you may also play a sound to make it much easier to find. In the case you have some extremely private data on the phone (sexting is a rising trend) it is also possible to remotely wipe it and restore it to factory settings.

iLocalis

This option is for jail broken iPhones only and obviously free. Like Find My iPhone, iLocalis lets you track your iPhone using GPS, but an advantage of iLocalis is its ability to let you control your iPhone remotely. This includes allowing you to send a message and make a phone call and it even sends a message to friends near-by.

BlackBerry

Mobile Security (Anti theft)

Similar to the iPhone applications, Mobile Security allows you to track your BlackBerry using, SMS, e-mail, IMEI, and IMSI. In addition, you can remote wipe data to avoid anyone having your private information. The application will cost you $9.99 but there are other options from app world if you'd like the security without the fee.

Lookout Mobile Security

My personal recommendation (it's what I use) for many reasons. Like the other applications on the list it can track your phone, activate a loud alarm, and remotely wipe your data. Unlike the other applications, it also allows you to backup and restore data on the go rather than plugging in with the BlackBerry Desktop Software. Furthermore it also has antivirus protections and scans each application you download to insure your protection (if the application is not an approved app world application). All this for the cost of $0.00.

Android

Lookout

By Lookout Inc., the developer to Lookout Mobile Security for the Blackberry. It is identical to the BlackBerry version sharing all the features and still for free. Details are written under BlackBerry.

WaveSecure

You've probably heard of McAfee, well their answer for mobile safety is WaveSecure. The software is for $19.90USD with a one year subscription which isn't too expensive, considering it's from a big name company. The basic features of a security application are there including backing up and restoring data, tracking and locating your phone, and wiping your data. The best feature would no doubt be its ability to detect a SIM card change then locking, making the phone worthless to the thief. When locked, you can display a personal message on the phone or sound an alarm on the phone to help retrieve it.

Breakthrough in Cell Conversion Research

FARZI YUSUFALI
2A NANOTECHNOLOGY

It is now possible to turn skin into blood. Yes, that's right! This was the subject of some major hoopla this week when Dr. Mick Bhatia and his team of post-doctoral students from the Stem Cell and Cancer Research Institute at McMaster University revealed a process to turn skin cells directly into blood cells.

While most researchers have managed to convert cells from one type to another, the process utilized so far has used a stem-cell intermediate, known as pluripotent stem cells (iPS cells). However, this method has almost always resulted in the formation of embryonic cells (which are not useful for most medical processes), not to mention the issues that arise due to this method. For one, the current stem-cell process requires the conversion of these cells. Deriving stem cells from skin cells can take five to six months of labour. Reprogramming the stem cells to produce the desired type of cells also takes additional time even after the creation of the iPS intermediate. Even after all the labour expended to transform these cells, some of the cells created would revert back to embryonic form.

Dr. Bhatia's research paper is entitled, "Direct conversion of human fibroblasts to multi-lineage blood progenitors." It describes the use of a virus that contains a gene known as OCT4. The harvested skin fibroblast cells were exposed to the virus, which injected the OCT4 gene into the cells. Once the gene manifested itself in the cells, the gene encoded for a protein functions as a "switch board" for other genes in the cell. The important factor in this mechanism is that the protein created from the OCT4 gene controls the function of other proteins in the cell which decide what the cell should specialize as.

A post-doctoral student, Eva Szabo, noticed the distinctly round structure of blood cells in a Petri dish among long skin cells. The researchers at McMaster University took advantage of this discovery and investigated this appearance thoroughly until they were able to devise the process through which these cells could be transformed. The accomplishment of taking harvested skin cells and transforming them directly into red blood cells was amazing in itself. However, what made people in the field of medicine stand in attention was that the blood cells created were normal, adult-like, functioning cells. In addition, the blood cells created were of all three classes, white blood cells, red blood cells and platelets. Furthermore, they did not revert back to skin cells or the intermediate after an extended period of time.

The applications for this discovery are particularly promising because of this process' ability to transform cells into any cell type needed with the use of a single transcription factor or molecular signal. This is a huge leap towards the treatment of many diseases, including cancers of the blood. With the ability to turn skin cells of a patient into blood cells of their own genetic makeup, the need for blood donors, transfusions or bone marrow transplants would become obsolete. Also, the time it takes for a person to receive treatment would be severely lessened, since it only takes a couple of weeks to manufacture these cells. Furthermore, with the relative simplicity of the procedure, the cost of treatment would be a fraction of the standard treatment cost for lymphoma or leukemia used today.

Dr. Mick Bhatia's hopes include extending his research to convert skin fibroblast cells into other cell types and to get his procedure into clinical trials within the next four or five years. The only major issue that he foresees is the need to scale up production of these cells so that they can be useful in many applications. Given the simplicity of the procedure used to transform these cells, this shouldn't be a cause for major concern since any obstacles can be rectified easily. Another issue that has been foreseen is the unexpected behaviour of the newly created cells, especially if they are more complex than red blood cells. If the procedure used was more complex, this potential issue would become more significant given the increased complexity of the cells created (with an excellent example being brain cells). Personally, I believe this discovery has great potential and is promising when it comes to the procedure being implemented into the health care system. With the news of this breakthrough, my interest in medicinal research has been rekindled, especially when these advances are being made on Canadian soil.

Electrified Vehicles: Trends in the Automotive Industry

MICHAEL GIANNIKOURIS
TEAM CAPTAIN, UWAFT

With rapid advancements in automotive powertrains it can be hard to keep up with all of the technologies that automotive engineers are using to "electrify" their vehicles, and how they affect emissions and fuel economy. Based on my experiences with the University of Waterloo Alternative Fuels Team (UWAFT), I want to briefly outline various common electrified vehicle architectures, the resulting challenges in measuring their fuel economies, and how the industry is adapting with new standards. Oh, and most importantly, what are the benefits to you?

At two extreme ends of the electrified powertrain spectrum are the internal combustion engine (ICE) vehicle (no electricity), as well as the Battery Electric Vehicle (BEV) (pure electricity). ICE vehicles have lots of range, power, and convenience, but they rely on our limited supply of fossil fuels. BEVs, depending on how the electricity is made, can have great emissions performance and even great power (think Tesla Roadster), but current battery technology cannot provide sufficient range for the occasional long trip, yielding "range anxiety" for most drivers. So, there are a number of powertrains that attempt to bridge the gap and combine the advantages of both technologies.

First, we have the Hybrid Electric Vehicle (HEV), where an on-board battery pack, stop-start gasoline engine, and electric motor(s) with regenerative braking work together to reduce fuel consumption by increasing overall system efficiency. Think Toyota Prius and almost every other hybrid on the road today. Some HEVs can even drive "all-electric", but only under limited conditions (i.e. low speeds and very short distances). The HEV ultimately gets all its energy from gasoline, it just uses it more efficiently.

Increasing the electrification factor, there is a Plug-in Hybrid Electric Vehicle (PHEV), similar to an HEV except that the battery can be charged from a wall outlet. By using grid energy instead of gasoline we can further displace petroleum consumption (depending, of course, on how the electricity is made). Like the HEV, a PHEV can drive "all-electric" under limited conditions, and turns on the ICE at higher speeds.

Then there is the Extended-Range Electric Vehicle (E-REV). An example you might have heard about is the Chevrolet Volt. In our powertrain spectrum, the E-REV sits between a PHEV and a BEV. It is re-chargeable from the grid like a PHEV, but it can drive all-electric under ALL operating conditions like the BEV. I say it "can" drive all-electric, but there are some very good reasons why you wouldn't want to do that all the time. The revelation that there is a mechanical connection between the Volt's engine and its wheels sparked many stories that, unfortunately, haven't been met with much engineering science to explain the benefits. I will attempt to do so here.

The Volt has a few key powertrain elements: a gasoline engine, an electric generator coupled to the engine, an electric traction motor, a lithium-ion battery pack, and a special transmission to manage power distribution.

Starting with a full charge, the Volt will get up to 160 km/h with just battery power. This is called "charge-depleting mode," because the battery state-of-charge is depleting as you drive. This is an important distinction if you remember that HEVs and PHEVs cannot drive all-electric under all conditions, so even on short trips you are going to use some gasoline.

Once battery energy is (mostly) depleted, we move to "charge-sustaining mode." The gasoline engine turns the generator to create electricity, which spins the electric motor. At lower power demands this "double-conversion" of energy is actually more efficient than driving the wheels directly, because the engine is now free to spin at any RPM and operate in its most efficient region. However, as vehicle power demands increase (say, on the highway), the efficient engine power output is similar to the vehicle demands. It no longer makes sense to double-convert, so the transmission sends power from the engine directly to the wheels. This only serves to improve drivetrain efficiency, and in no way invalidates the original claim that it is an "all-electric" when it is charge-depleting. It is this feature that makes it better.

So, how do we compare fuel economies now that we have multiple energy sources on-board? We use what's called the Utility Factor (UF). The UF is the percentage of your average daily driving distance that is within the vehicle's all-electric range. So, you might drive 80 miles per day on average. With an all-electric range of 40 miles, 50% of all of your miles are charge-depleting (no gasoline) and 50% of your miles are charge-sustaining (engine is on). If you only drive 40 miles per day, your UF is 100%!

So, we can use the UF to weight fuel economy numbers. If an E-REV gets 5 L/100km in charge-sustaining mode, but uses no fuel in charge-depleting mode, we weight the overall fuel consumption as 50% at 0 L/100km and 50% at 5 L/100km, for a total of 2.5 L/100km. This will vary from person-to-person, but if you look at statistical passenger car driving data, you find that close to half of all vehicle miles could be driven with electricity alone, if everyone drove an E-REV like the Volt. That combination of reduced fuel consumption and extended range cannot be matched by the Toyota Prius nor the Nissan Leaf, although those vehicles have their own benefits.

In conclusion, new powertrains like the Volt attempt to use current technology to give consumers the best of both worlds: high performance, long range, and reduced gasoline consumption (and consequently, lower daily driving costs). Sure the Volt is more expensive upfront, but it's the displacement of gasoline that is the key to its appeal. Sure, the Volt mechanically drives the wheels under certain conditions, but only because its engineers figured out how to squeeze every performance benefit they could out of the architecture, the same architecture they promised.

Hopefully this clears the air somewhat surrounding the new powertrains like the Volt, and how the Volt gets an edge over other powertrain technologies such as the Prius and the Leaf. Take a look at the Volt website to learn more about the technology.

Global Engineering – A Tale from EWB

MICHAEL WINER
3B NANOTECHNOLOGY

When I was asked what Global Engineering meant to me by a fellow member of Engineers Without Borders, my first reaction in my mind's eye was a picture of the globe with a bunch of people standing on it holding hands, kind of like those cheesy WordArt caricatures we all grew up using profusely in shotty attempts at our first presentations. Maybe with a few hardhats added in for that authentic Eng feel. But what does it really mean? I've been searching into the topic recently, and I think I've broken it down into three separate ideas. Here are the parts (the sum comes later):

Part 1: The 'Spiderman Complex'

Global Engineering tries to recognize the concept that we all, as prospective or active engineers, have some type of responsibility for our actions. In a greater sense, I like to term this the 'Spiderman complex', from which I proudly take the movie quote, "With great power comes great responsibility". Just like Peter Parker's trusty Uncle Ben, the idea behind global engineering is for all of us to understand our part in the greater fabric of society. Even though most engineers are consistently faced with and focused on specific goals in their field; crunching numbers, measuring chemicals, drawing CAD and testing circuits is the norm, our work, we should always be aware of how we fit into the context of the 'greater good'. We, as engineers, have the power to create extraordinary change in our world, and with that we need to make sure we understand the consequences of our work not just to ourselves, but to society as a whole.

Part 2: Education and Activation

Ok great, so we all know that we should be more socially responsible people, thinking of the greater good, acting in gratitude to others, basically Ghandi-fying our lives. How is that even possible though, especially when being an engineering student at UW already sucks the life out of us (some would say literally)? The key is in two parts: education and activation. To start, the education - we can make it easier on ourselves by choosing some classes that offer a holistic approach on the ideas behind engineering (focus on those dreaded Impact Courses for this. As a note, EWB runs presentations in courses such as STV101 to discuss the ideas behind global engineering including design approaches used to connect with the needs of different communities). Once education takes place, or perhaps simultaneously, we can start with activation of these ideas. Essentially, whenever we have the time, we should take a moment to think about the possibilities to make small changes around us. Say your friend says he has a great idea for a new battery for the University of Waterloo Alternative Fuels Team he joined last month. Maybe just shoot it by them that they should consider renewable fuels – some biofuel, perhaps from a company that supports green tech. Remember, simple is best. In a short while, practically without even realizing it, you could see your thoughts on the topic making a real difference in the engineering that you do.

Part 3: Privilege and Principle

We, as engineers in a professional program, garner a certain level of respect. But there's a reason behind that – we are built upon a pretty old and deeply vital set of principles which, in my opinion, makes our profession one of the best in the world. We each have an innate responsibility to follow this code of conduct, so we might as well use it for the greater good. Global Engineering is all about understanding how we fit in, and understanding our own profession is a great place to start. Next time you're in a class where your prof is a P.Eng., just ask them about how their research reflects a global ideal. They might not be able to answer you directly, but hopefully it gets a bit of conversation stirring in the class – activation at its best.

Examples and Tips

Here are some examples of Global Engineering ideals put into practice in UW's engineering programs (I thought of these myself, I'm sure you can do better yourself):

CHEM: process design for a new drug manufacturing system where cellulose from grain farmers is used in the capsule design. Normally such 'trash grains' would be burned or composted away – why not use it in your product while avoiding carbon emissions?

NANO: nanotubes made of cheaper, lower-grade carbon by-products such as graphite instead of higher-grade graphenes. Sure the properties might be reduced, but for general purpose you could be saving a lot of processing, therefore reducing energy costs

CIVIL/MECH: pumping stations for water or wastewater where each level has a recycling retrofit in order to optimize filtration design and reuse water closer to its source rather than sending it to a central location farther away

ELEC: recyclable batteries and electrical components. This field is already quite profitable, and there's a very lucrative market for companies that can produce a 100% recyclable battery system

SYSTEMS: STEP, renewable designs for 'replenishable' housing. Many resources in houses are brought in from afar (electricity via power lines, water via pipelines). Finding a way to recycle and reuse these utilities at the home rather than shipping them in and out is much more efficient both in energy and convenience

SOFTWARE: AI. Building software that could help people with all sorts of problems without requiring external operators could lead to a level of sophistication and ease in society that could be revolutionary to the way we live and help others.

ENVIRO: rainforests as a model for compost and nutrient harvesting. Rainforests are an ideal environment for compost at the forest floor. Urban rainforests could help to encourage simple and effective means of producing compost without need for expensive and inefficient transportation methods

MANAGEMENT: promotion and direction of companies towards global engineering ideals. This could include setting up an infrastructure within a company where employees are rewarded for creating novel ways to integrate more efficient means of process design, or product development.

Just a few short tips to get yourself on the global track (the sum of the parts):

- Recognize what you love the most about your field, and think of ways that it fits into the 'bigger picture' of society
- Think of Charles Darwin: we're in a 'survival of the fittest' society these days. Think of ways that could even the field of play for those less fortunate than yourself
- Your degree is a very powerful vessel for change, even if it's not complete. Try to consider the ideal of Engineers Serve The World (ESTW) along with ERTW when you act in an engineering capacity
- Come to Engineers Without Borders events to find out more (look for Olivia or Mike for Global Engineering specifics)

Senate to Decide on 1A Promotion Rules

JAY SHAH
SENATOR

Hot off the press, the November Senate agenda was released in time for some pre-meeting commentary, as follows.

The most relevant to our faculty is a proposal that has made its way from the First Year Office, through Senate Undergraduate Committee and now to Senate on Nov. 15th. It can be found on page A77 (*http://secretariat.uwaterloo.ca/governance/Senate/20101115oagsen.pdf*). The proposal is suggesting that we change first promotional requirements to be in-line with upper year promotion requirements (i.e. 60% to get to the next term, as opposed to the current 50%). The stated rationale is that students who make it through with a sub 60% average simply aren't prepared or ready for upper year, and will likely end up failing a term. So, how does increasing the average do anything other than cause the failure to occur earlier? Well, it doesn't...which is why the proposal also suggests that if the promotional average requirement is raised to 60%, students will be allowed "to take a combination of reduced load terms, thereby completing 1A in two partial terms."

I believe the intent and rationale for the proposal is certainly positive, however a very large risk/question remains. There are no specific details on how this plan will be implemented, specifically, how students at risk will be identified and how/when they must make the decision to split their 1A term into two. A balance needs to be found, it would likely not bode well for academic spirit if students are allowed to decide to split their 1A term in half the day before finals, alternatively, it would not bode well for student success if they had to decide in the first two weeks of class.

The worst case scenario with regards to this proposal is that the term average required for promotion rises by 10% without sufficient student understanding of their term splitting options. The end result would really just be a bump in the term average requirement with no offset for student success.

Some interesting figures regarding student financial support:

1) A total of $1 781 000 (1175 awards) was distributed to the 2010 first year engineering cohort (Presidents and Merit Scholarships)

2) A total of $7 496 823 (4202 awards) was distributed to all engineering undergrads in over the past year (Scholarships, bursaries, awards)

I will report back in the next issue of *The Iron Warrior* what happened during the November Senate meeting.

Keep being awesome, study hard for finals, and ask me questions if you have any! (*senate@engmail.uwaterloo.ca*)

Fire Sales and EngSoc Donations are Amazing!

MARC TAN
VP FINANCE

Ok, well its getting old now that I will always mention somehow that I am still exec, so I'll stop that now. But new tradition, i.e. sitting with other exec writing this report and drinking some delicious cold drinks shall now start.

Now I will try to be responsible. Due to the asbestos removal in the CPH Foyer, Novelties will set up a temporary location in the back room of the Engineering Society Office (CPH 1327). All the same products will be there. So don't be shy, come in and say hi! If you were at the fire sale, it was amazing. we sold so much that Novelties is pretty bare now. We finally got rid of the remaining long sleeves. The TOOL Bearer bobbleheads are almost all gone, so get them while you still can! New items have been ordered, so don't worry, Novelties will be as well stocked as it was before the fire sale took place. Donations were also a big hit this term, with the largest turn out we've had in a long time. For the Student Teams still looking for money, I should have another round of cheques out now. The donation allocation for this term is detailed on the table below.

Now to more important things: I woke up today and had delicious ribs for breakfast instead of going to class. It was probably the best idea ever since sleep is such a good thing. That's about it from me for now. Unfortunately, I'm afraid I can't think of anything else to say so I'll stop here.

Also, thanks to Adriana Cameron for helping me write this report.

Group	Requested	Granted
Canadian Federation of Canadian Students	$500.00	$200.00
Clean Snow Mobile	$900.00	$900.00
Concrete Tobbagan	$750.00	$500.00
Canadian Society of Civil Engineers	$1,000.00	$200.00
Engineers Without Borders	$2,000.00	$300.00
Faculty Orientation Committee	$1,300.00	$500.00
Formula SAE	$2,070.00	$900.00
Gradcomm	$500.00	$500.00
iGEM	$200.00	$100.00
The Iron Warrior	$500.00	$500.00
Midnight Sun	$1,500.00	$700.00
Robotics Team	$600.00	$600.00
Rocketry Team	$700.00	$500.00
Space Society	$750.00	$300.00
Sustainable Technology Education Project	$500.00	$250.00
Waterloo Off-Road Mini Baja Team	$2,000.00	$900.00
UW Alternative Fuels Team	$2,500.00	$900.00
UW Nanorobotics Group	$3,000.00	$750.00
WEEF	$500.00	$500.00
Total	$21,770.00	$10,000.00

From the Desk of the President

TIM BANDURA
PRESIDENT

It is with great sadness that I write this final report from POETS for the term. POETS and the CnD closed on November 12th, but don't despair! Novelties, candy bars, pop and juices are still available from the Orifice (CPH 1327).

Of recent note: I attended E&P (Examinations and Promotions) on Monday, November 8th. It went fairly quickly; there were not a lot of cases. I urge every student who finds themselves filing a petition to talk to either Scott Rankin or myself. We can help you optimize your petition and support it! But please talk to us! If you know someone in this difficult situation, please ask them to touch base with us. We can help!

On Friday, November 12th I sat in on the renewal for the Waterloo Cases in Design (WDCE) NSERC chair. I wish the organization the best of luck in their review.

I just want to give a huge thanks to Stuart Pearson. He organized our fantastic Remembrance Day ceremony last Thursday. A special thank you to him and all of our volunteers: Alessia Danelion, Rebecca Cameron, Cameron Winterink, Mike Raymer, and Melanie Hazlett.

The term is wrapping up nicely! The Santa Claus parade is on November 20th, and our next council meeting is on November 17th. Hope to see you out at both events!

Have a good week A-soc!

Busy November!

SEAN WALSH
VP INTERNAL

Hey everyone,

So I won't take up too much of your time because I know how busy November gets and I'm sure you have plenty of events/studying to get to. Curling was AWESOME! Thanks to everyone who came out to it and had a great time. The 2011 spirit party was a hit as was the 2013 last day of POETS party. Genius Bowl had a great turn out as well, congratulations to the winning teams and a big thanks to all the markers and directors for making it work!

SEMI HAD OVER 200 PEOPLE ATTEND! What a turnout! To all of you who came I hope you had a great time! A big thanks to our Semi Directors and to AHS for all their work to make it such a success! As for other past events, Engineering hockey has been going well; make sure to come out to next week's ice time. Coffee house this past Tuesday was hosted with Chem-EngSoc and the performances were excellent! Another Enginuity event was hosted last Friday, good job to everyone who managed to catch the egg.

UPCOMING EVENTS!!!! EngPlay this weekend (Thursday, Friday, and Saturday)!

2015 Year spirit party next Tuesday in the SLC Multi Purpose Room.

The final Engineering Hockey Event is next Wednesday.

See you in the last edition!

IRON WARRIOR

A FORUM FOR ENGINEERING CONCEPTS

Al Werenko — Entrepreneur

ENTREPRENEUR [FR: SEE ENTERPRISE] ONE WHO ORGANIZES A BUSINESS UNDERTAKING ASSUMING THE RISK FOR THE SAKE OF THE PROFIT.

Every undergrad who has sweated through a WATFIV primer is familiar with the WIDJET system. What is unfamiliar to most is that those terminals are manufactured by a Waterloo-based firm headed up by Waterloo engineering graduates. Volker-Craig Ltd is a classic example of what can be done when determination meets good engineering practices. Established in 1973 by Mike Volker and Ron Craig, the company initiated production in 1974. In the intervening six years, it has secured a world [illegible] with subsidiaries in four countries, and currently has annual sales in excess of 10 million dollars. Al Werenko joined soon after it's founding and currently is head of marketing and sales.

I.W.: Could you tell us a bit about your background?

Werenko: I finished grade 12 at Fort Francis then went to Ryerson from 1966-69 where I took nucleonics, the electronic physics program. I went from there directly to Waterloo, where I got my Bachelors degree in electrical in 1972, and went on for my Masters in 1973.

I.W.: So you went through the whole co-op experience?

Werenko: No, I came from Ryerson into 2B.

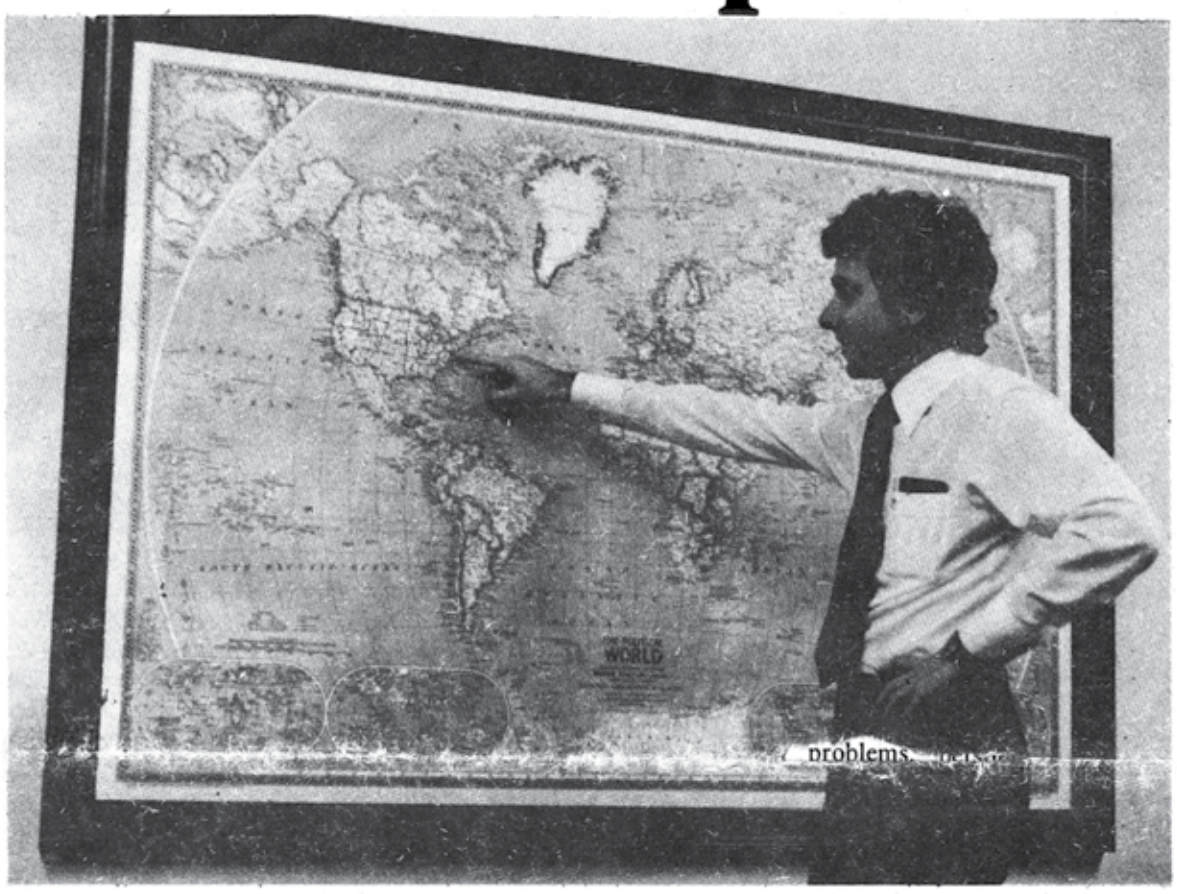
I.W.: You did have some co-op terms though?

Werenko: Yes, I did two terms at Atomic Energy and one at a paper mill.

I.W.: Did your co-op terms help you for this job?

Werenko: What I'm doing here [illegible] Not directly. [illegible]in ma[illegible]ing now. I[illegible]'m no[illegible]ng engine[illegible] now; o[illegible]se jobs [illegible] do engi[illegible]g, so [illegible]e sense [illegible]on th[illegible]bs I did [illegible]er-in[illegible]ere is [illegible]ect re[illegible]ship.

I.[illegible] Did [illegible]ver foresee [illegible]ourself [illegible]eing in mark[illegible]en you were an undergrad?



Al Werenko zeros in on foreign markets.

Werenko: N[illegible]0%. When I first went [illegible]erson, and had bee[illegible]ere for some time, I [illegible]st saw myself going in[illegible] cation -- teaching. when I finished R[illegible], jobs were so scarc[illegible] I came back to u[illegible]ty. All I was doing [illegible]hat point was riding [illegible] and beefing up [illegible] rather than floundering in the m[illegible]etplace. It really wasn[illegible] until I did my M[illegible]ters degree, when, [illegible] the research did me [illegible]n. I said, "[illegible]at [illegible] no more engi[illegible]ring." So I went o[illegible]o s[illegible] with Hewlet[illegible]d. My job there [illegible] direct result of my e[illegible]ion, had I n[illegible] been [illegible]gine[illegible]t wo[illegible] have [illegible]unlikely would have got the job.

I.W.: Perhaps then, your Masters degree wasn't much of an advantage?

Wer[illegible]nko: [illegible]e M[illegible]ter d[illegible]gree wa[illegible] advantag[illegible] that [illegible] done so[illegible] esearc[illegible]ultrasonic [illegible]al [illegible]ing. The [illegible].P[illegible]ne me[illegible] divisio[illegible] there [illegible] a direct relationship between what I had been doing in engineering projects and what I was selling. When I applied for the job they [illegible]ook[illegible]my exp[illegible]

I.W.: So [illegible] work [illegible]erm experie[illegible]really didn't help you [illegible]our goals for after grad[illegible]on.

Werenko Page 2

30 Years and counting...

Forge your own destiny

Mike Scriabin

Blessed is he who has found his work;

let him ask no other blessing.

Thomas Carlyle

Carlyle is right,of course.For most of us our work occupies half of our working lives,and the remainder is cut into by other necessary chores such as shopping, washing, cooking, eating, and so on,leaving precious little time for the pursuit of pleasure.Now if we could just find a job which required us to do only the things which we enjoy,we would brighten up most of our day.Easier said than done? I don't think so.

Let's jump ahead a little and look at the people who seem to be doing what they want to do in their work. One almost invariably finds that these people have established a reputation for themselves,not necessarily in the sense of notoriety and fame, but rather an essential respect from those who provide the work.An author who manages to live on his income from writing has the respect of the publisher and readers,an engineer who has specialized in computer applications has the respect of the engineering community for whom he solves problems,a professional tennis player has the respect of the tournament organizers and his opponents.

There are three ways to go after that reputation. Bra[illegible] you [illegible]ow, [illegible]ting up [illegible] business [illegible] service; (b) look for a job hoping that a potential employer will offer you the right one and settle for the best offered ; (c) compromise, picking up a job or opportunity which doesn't provide exactly what you want now,but which allows you to embark on your quest for the reputation you need for the future.

Now there is nothing wrong with branching out on your own,trying to do your thing right away.It is without a doubt the most exciting way to go,but for many the excitement is outweighed by the uncertainty of success.The second alternative is certainly safer but it can [illegible]ly lead [illegible]ed[illegible]n, indiff[illegible] and finally dissa[illegible]or the job, particularly if pay figured too prominently in the criteria for job choice.

The third way might have a negative ring due to the word "compromise," but one has to compromise in adapting to reality. For instance,in my field of management science one spends a great deal of time studying optimization,only to find that the firm is not

see Destiny page 4

Our Unique Newspaper – Since 1980

BAHMAN HADJI
EDITOR-IN-CHIEF, SPRING 2007

Every Waterloo Engineering student over the past three decades has had the chance to read a copy of the official newspaper of the Engineering Society, *The Iron Warrior*. Most have taken the time to read an issue or two, whether to stay informed on the news or keep entertained by doing a crossword. Some have contributed articles, while others have even taken the reins and run the newspaper for a whole term as Editor-in-Chief. But why is it that the University of Waterloo is the only school in Canada with a full-length Engineering newspaper that has a serious focus while being published regularly year-round and run entirely by a volunteer staff of students? To answer that, you have to look all the way back to the beginnings of UW.

Back in 1957, when UW was in its infancy, Engineering was its only faculty. Shortly after, the students of the Faculty of Engineering formed the Engineering Society, now the oldest student society on campus, which was at the time a mostly social organization that would not get a constitution for another 14 years. Many things were different back then: A-Soc and B-Soc were referred to as A-Term and B-Term, and terms were three months long instead of four. As the Engineering Society became more structured, it was able to financially support a publication (while advertising revenue also covered a portion of the cost). And while the origins of *The Iron Warrior* don't go back that far, the roots of the first Engineering Society publication, *Enginews*, date back to those early days.

Enginews was originally started in 1959 as a newsletter to keep students informed about events. It eventually folded into the campus newspaper, *The Coryphaeus* (later *The Chevron*), but made a return in 1967 amongst complaints that *The Chevron* was not serving students or representing their views. This reborn version of Enginews was wholly different: It was meant to be a humorous and irreverent publication. It was published several times throughout the term, contained a questionable mix of news and humour, was the self-proclaimed "best and most exciting (and frequently most disgusting) publication on campus," and claimed to represent the uncensored image of the engineer.

Indeed, its tongue-in-cheek content was criticized by some as being sexist, racist, and generally offensive. While at one time *Enginews* was distributed all throughout campus, by the late '70s and into the early '80s, the Engineering Society became more mindful of its content, and its distribution was restricted to Engineering students – spawned by complaints from students from other faculties and administration. It even attracted national attention in 1983 when a female employee at the printing plant where *Enginews* was published took offence to its content, refused to do her job and was consequently fired. In 1985, *Enginews* was finally shut down, never to be officially resurrected. This action actually brought good publicity to UW, as it became one of the first universities to axe its crude Engineering student publication.

The most obvious reason for the death of *Enginews* over 20 years ago is that its content was offensive to a wide variety of people, including Engineering students, and not just because they didn't "get" the content, but because it stereotyped engineers as crude, drunken hooligans. But there is also a deeper reason. Satirical and humorous content does not have to be offensive, even if it is about a "touchy" topic. The problem is that it is not viable to produce a high-quality humorous publication on a regular basis. As a result, to fill content, the editor of such a publication has to resort to lowering its editorial standards, resulting in the type of low-class content that puts the paper in the gutter. The simple fact of the matter is that a tasteless student newspaper that is trying to be funny reflects badly on the editor, the students, the school, and engineers in general.

It was in the shadows of *Enginews* that the Engineering Society decided to begin publishing *The Iron Warrior* back in 1980. "A Forum for Engineering Concepts" is what the original masthead contained, and at the onset, the newspaper was published twice (and shortly after three times) each term, containing informative articles about the on-goings of UW and features on the profession of engineering. It quickly blossomed and found a large readership, with its content ranging from opinion pieces on current affairs and social issues, to features on student entrepreneurs, professors, student teams, and Engineering Society events, to outspoken editorials, to even cartoons and humour, done the right way. It quickly became apparent that a newspaper like this, without the pressure of trying to be funny, was more feasible to be printed regularly, served a wider audience, and promoted a better impression of students, the school, and the Engineering Society. As such, the resources (monetary and otherwise) of the Engineering Society were and continue to be well-spent on a professional publication.

In the five years that *The Iron Warrior* co-existed with *Enginews*, the Engineering Society supported both publications, but as the latter started to fall out of favour with most, the former began to win praise from students, faculty, the University, and even Deans of Engineering at other schools. While *Enginews* was cutting back its distribution, *The Iron Warrior* began distributing copies to other faculties' buildings. In 1983-84, it even began to receive attention from Imprint, UW's official student newspaper. Nathan Rudyk, an Imprint staff member and Arts student, wrote a letter to the editors of *The Iron Warrior*, the President of Engineering Society "B" and the editor of *Imprint*. The letter shows what a refreshing impact the publication had at the time, and how it radically changed the way people thought of the students in this faculty:

Reviewing the archives of *The Iron Warrior*. I want to congratulate [the staff] for a fine paper. Events, investigative reporting, and human interest stories were all of high quality and made a very vital, engaging impact as I flipped through the pages. Not once was I persuaded to think engineers are assholes as I frequently have been by other student engineering publications . . .

It was this standard which was set almost 30 years ago that *The Iron Warrior* has tried to maintain over the years. Copies of the newspaper are distributed to many buildings on campus (though circulation is only 2000 due to the paper's limited financial resources) and sent to engineering societies and Deans of Engineering at other schools, and other persons of interest. The Waterloo Engineering Society seldom receives publications from other engineering societies, it may be because most other schools' engineering society publications are either in the satirical mold, or not relevant enough to warrant distribution beyond their own student population.

It is for this very reason that *The Iron Warrior*, which was another innovative Waterloo idea, is unique and stands out among its peers. The fact that each year sixteen full-length issues of a newspaper can be produced with a miniscule budget and fully volunteer staff speaks volumes about Waterloo Engineering, and gives students, faculty, and staff alike something to be proud of.

As you leaf through *The Iron Warrior* archives, you realize that there are some traditions that just don't die for generation after generation – and at the University of Waterloo, a quality Engineering student newspaper is one of them.

Engineering Newspapers

ALISON LEE
2A NANOTECHNOLOGY

In celebration of engineering journalism, I sent requests for information to other engineering newspaper teams across the province. Papers at universities like Lakehead (The RACK), Ryerson (The Golden Ram), and Guelph (OSNAP), remain somewhat ubiquitous, but I received good responses from some of the bigger publications over at Queen's, McMaster, and U of T. Some, like *The Iron Warrior*, are comprehensive newspapers, while others are strictly humour. Regardless, we all have one thing in common: a history of controversial or offensive content and threats of being shut down. Hopefully we've evolved a bit since then and on a brighter note, we're all volunteer-run and currently going strong. Read on to see what your fellow engineering students can pick up on their campuses. Issues from these papers are also just a simple Google search away.

University	Name	Est.	Approx Staff	Publications	Typical issue contains…	Random Facts
University of Waterloo	The Iron Warrior	1980	20	2000 copies biweekly	Real engineering and campus news, opinions, technology, entertainment, humour	IW was born while the EngNews was under fire for offensive content in the 80's. Thanks to co-op, the IW is the only engineering newspaper published year-round.
Queen's University	Golden Words	1967	Varies; volunteers from all faculties	9000 copies weekly	Humour from all faculties, based on whatever's going on that week.	Tagline: Canada's Other National Newspaper GW holds a yearly science fair; past projects include a robot alcohol dispenser, a bike powered blender, and a stoplight funnel. This year is GW's 45th anniversary
McMaster University	Plumbline	1958	10, including 2 editors	Monthly	Eng-itorials, *Shines and Moons* of the month, opinions, entertainment, Future News, Academic Advice	Plumbline was originally printed on 8 ½" x11" until switching to newsprint in 1971. Plumbline was shut down in 2005-2006 for offensive sexist content. Despite this, Plumbline has its first female editor in over 10 years.
University of Toronto	Toike Oike	1911	10	5000 copies monthly	Engineering and other crude humour that's certainly not afraid of being politically incorrect. Did I mention crude?	Toike Oike celebrates its 100th anniversary this year. Toike was sued for offensive content in the 80's. Issues from 2007 and October 2010 were pulled from stand for offensive content.
	The Cannon	1978	22	3000 copies monthly	Engineering and campus news, opinions, technology, entertainment, humour	Features: Skule Updates, News, Clubs News, Theatre, Opinions and Technology. Named after their Skule mascot: *Ye Olde Mighty Skule Cannon*

Catching Up with Editors-in-Chief

Where Are They Now?

Gabriel Chan

Gabriel Chan was Editor-in-Chief during the Spring 2006 term. He graduated in 2008 from Systems Design ("08SYS"). For his fourth year design project, he built a website annotation system. After graduation, he commercialized it, and co-founded *Thinkpanda.com*, a thought-based collaboration platform, in 2009. "We became experts in the art of knowledge management, which encompasses data and information science," says Gabriel, 'Chief Ninja' of *Thinkpanda.com*. "I've since been working on these 'data smart' projects for customers from various industries."

Ironically, Gabriel hadn't even planned to be an Editor-in-Chief—but during the spring 2006 term, there were no returning *The Iron Warrior* staff who hadn't been Editor-in-Chief before. "'Destiny seldomly comes at the time of our choosing,'" quotes Gabriel. Nevertheless, he developed a fast and efficient system during production weekend. "I assembled a huge staff from IW veterans and my classmates, and our operations ran like clockwork. We typically put together the whole thing in twelve hours."

One of the most notable features about Gabriel's Editor-in-Chief term was that it was during his term that the "Irongate Scandal" happened. Many students from the 3A Systems Design class were largely dissatisfied with the Spring 2006 executive, and two students wrote biting editorials criticizing the organization of the Engineering Society at that time. These editorials, published in the fifth issue, drew the attention of many active EngSoc members, who later canvassed the university to remove all printed copies.

"This blew up into the 'Irongate' scandal," says Gabriel, "which exposed a great deal of neglected administrative and bureaucratic relationships and spurred a debate about media funding, censorship, and professionalism throughout the entire Faculty. Since Issue 6 was the last issue, EngSoc complained it was not given an opportunity to rebut, so I put together Spring 2006 Issue 7.

"Prior to Irongate, EngSoc really did not care about what IW put in the paper, nor were they interested in growing it, though quad-monthly UW's talent churn makes continuity a challenge for many organizations. EngSoc took IW much more seriously after Irongate, participating much more in its content and vision. Overall, I think Irongate left a positive legacy for *The Iron Warrior*."

Gabriel has left a legacy with his extracurricular activites at Waterloo. While on term, he spent 80% of his time in extracurricular activites, everywhere from being the first conductor for the Engineering Jazz band, to organizing the Canadian Undergraduate Technology Conference, to rowing for the Systems Design Engineering Dragonboat Team. He also went on an exchange in Germany (despite being four months late for the application process, and not having enough language credits), and ended up finding employment there for his subsequent work term. He stayed there for nearly a year.

Gabriel truly believes in the Chinese saying "grinding an iron pillar down to a needle." "People can say all they want about how stupid you are for trying or how pointless it is, but the truth is only you know why you have to do it and how you will do it, and you know you gotta do it." At present, he's devoted to his start ups, and other entrepreneurship committees. Although Gabriel is grateful for the technological expertise that Waterloo provided him, he believes that a more business-intensive background is something that is learned outside of the classroom. However, he has had great mentors to help him in his career, and he's an active part of organizations such as EPIC and Junior Achievement so that he, too, can mentor students passionate in both business and technology.

James Schofield

James Schofield was Editor-in-Chief during the Winter 2005 term. He graduated in 2008 from Computer Engineering ('Overclocked' was the class name, "but a plurality of the class preferred to drop the "l", as a reflection our extreme gender-imbalance," quipped James). James is currently living in Seattle, working in Amazon's fulfillment centers. He tackles a variety of computing problems, but at the same time, gets to travel around the world to visit many of Amazon's warehouses.

> ***"I underestimated the time it would take to edit the paper on my first issue."***
>
> -John Olaveson

Notable articles written by various staff in James' term included the covering of the first EngInuity, the movement of the School of Architecture from the Faculty of Environment to the Faculty of Engineering, and a Point-Counterpoint about whether the Iron Ring Stag is still a "relevant" celebration. James also wrote a thought-provoking editorial about some comments that Dr. Lawrence Summers, the then-president of Harvard University, made regarding the idea that women might be 'innately less capable' in the field of math and science.

> ***"I absolutely hated writing the letter from the editor"***
>
> -James Schofield

"I absolutely hated writing the letter from the editor," admits James. "I would fuss over perfecting every other page of the paper, completely ignoring the four columns of space I had to fill on page 2, until finally it was midnight the day of the deadline. I thought most of what I was writing was complete garbage, and then I happened to be hanging out in the SyDe room, and noticed that somebody had clipped my column and stuck it on their wall. Maybe it wasn't that bad after all."

Apart from *The Iron Warrior*, James has a love of travel and the outdoors. After graduation, he went backpacking around India. He also loves the outdoors. "It's easy to fill a weekend with some biking, backpacking, rock climbing, or skiing," says James. "As soon as I got my first pay cheque I bought myself a nice road bike, and worked up to doing a 300 km Seattle to Portland ride." He's taken a mountaineering course and reached the summit of Mount Baker.

James really encourages students to do an exchange. In his third year, he went on exchange in Lausanne, Switzerland. to experience life abroad. "I met a lot of great friends, learned to function in French, and got to experience Europe, living as a local." He believes it is a great way to get out of Waterloo for a semester and actually see another part of the world.

John Olaveson

John Olaveson was Editor-in-Chief during the Spring 2004 term. He graduated in 2008 from Civil Engineering ("Full Tilt"). John is currently working for Brampton Transit, and worked initially with IBI Group. He works mainly with municipal infrastructure projects, completing design reviews, and performing contract administration duties, but he's getting more into the in-depth side of design.

John really felt the pressure of being an Editor-in-Chief during his term. "I underestimated the time it would take to edit the paper on my first issue. I had an all-nighter getting that thing together, and as soon as I finished, I fell asleep on the IW couch [back when the IW office was in the Orifice]." As an afterthought, he adds, "I hope you've upgraded that couch."

John had the ability to work with an enormous variety of articles written by many students during his time as Editor-in-Chief, including an article detailing the tragic death of Professor Robert W. Macdonald, written by Francis Hope. Other notable articles covered during his time included a thought-provoking Point-Counterpoint/extra-editorial insert about whether minor political parties should sponsor candidates in elections and whether landed immigrants with dual citizenships be allowed to study at Canadian universities.

Co-op jobs, and networking, is one aspect of Waterloo for which John is extremely grateful. He admits to having a long period of unemployment some time after graduation. "[I] finally got a job through an old co-op boss, so keep in touch," he recommends. "Networking may sound like a cliché, but it worked for me."

However, one of the biggest changes in John's life was having to fight testicular cancer. He is a strong supporter of the Underwear Affair, a fundraising event from the BC Cancer Foundation. The Underwear Affair is a 5-10 km walk, used to raise funds to support the prevention and detection of the seven "below-the-belt" cancers. "Don't be shy," John warns. "Check yourself or see your doctor."

Outside of work, John's taken an active interest in local hockey teams. "I played on the company softball team the past two seasons and I just joined a shinny hockey group. It's my first time playing hockey on ice so I have a lot to learn but I'm excited to be participating."

EICs of the Past

Term	Editor-in-Chief
Fall 2010	Roy Lee
Spring 2010	Angelo Alaimo
Winter 2010	Amrita Yasin
Fall 2009	Trevor Jenkins
Spring 2009	Michelle Croal
Winter 2009	Kevin Ling
Fall 2008	Stuart Pearson
Spring 2008	Sunny Ng
Winter 2008	David Morris
Fall 2007	Faraz Syed
Spring 2007	Bahman Hadji
Winter 2007	Harout Manougian
Fall 2006	Jaclyn Sharpe
Spring 2006	Gabriel Chan
Winter 2006	Andrew Dodds
Fall 2005	Dan Arnott
Spring 2005	David Yip
Winter 2005	James Schofield
Fall 2004	Andre Beltempo
Spring 2004	John Olaveson
Winter 2004	Jeff Henry
Fall 2003	Joseph Fung
Spring 2003	Jonathan Fishbein
Winter 2003	Jonathan Ng
Fall 2002	Matthew Harper
Spring 2002	Niki Czerniak
Winter 2002	Maria Simoes
Fall 2001	Stephanie Purnell
Spring 2001	Margaret Parkhill
Winter 2001	Peter Cresswell
Fall 2000	Raymond Ho
Spring 2000	Tania Bortolon
Fall 1999	Mat Pigozzo
Spring 1999	Ian Tein
Winter 1999	Luke Windisch
Spring 1998	Caroline Page
Winter 1998	Pierre Menard
Fall 1997	Mike Herman
Spring 1997	Jeff Gobatto
Winter 1997	Chris Foster
Fall 1996	Ryan Cheng Wing
Spring 1996	Katalina Princz
Fall 1995	Andy Chan
Spring 1995	Scoot Dumville
Winter 1995	Colin Young
Fall 1994	Cathy Richardson
Spring 1994	Kim Farwell
Winter 1994	Martin Zagorsek
Fall 1993	Marc Risdale
Spring 1993	Don Bowman
Winter 1993	Scott Chandler
Fall 1992	Marc Sherman
Spring 1992	Scott Chandler
Winter 1992	Ramesh Mantha
Fall 1991	Chris DeBrusk
Spring 1991	Gus Scaiano
Winter 1991	Kevin Johnson
Fall 1990	Gary Peterson
Spring 1990	Linda Hachey
Winter 1990	Elliot Simcoe
Fall 1989	Todd Rutherman
Spring 1989	Carolyn French
Winter 1989	Danny Lee
Fall 1988	Lindi Wahl
Spring 1988	Neil Boyd
Winter 1988	Ian Simpson
Fall 1987	Thomas White
Spring 1987	Christina Tague
Winter 1987	Michael Schatz
Fall 1986	Brian Hamilton
Spring 1986	Peter Stubley
Fall 1985	Niraj Bhargava
Winter 1985	Lar Wilke
Fall 1984	Frank Baylis
Spring 1984	Mike Urlocker
Winter 1984	Peter Hagar
Fall 1983	Mike Urlocker
Winter 1983	Aaron Sandler
Fall 1982	Arnim Littek
Spring 1982	Dave Williams
Winter 1982	Dave Williams
Fall 1981	R.G Franks
Spring 1981	Kurt Mitchell
Fall 1980	Kurt Mitchell

A Letter from a Former Editor-in-Chief

JEFF HENRY
EDITOR-IN-CHEIF, WINTER 2004

It is entirely possible I would not be where I am today without *The Iron Warrior*.

For a recently elected member of City Council here in Waterloo, that is a bold statement, so let me explain.

Ten years ago, I was starting my second year in computer engineering. I went to class, I did my assignments, and I was doing well. But I wasn't doing much else outside of my classes, and I certainly didn't anticipate that I was going to.

Then a friend of mine asked me to write an article, because *The Iron Warrior* was short on content (which I'm sure never happens today). Pretty soon, I'd been pulled in. Three consecutive Iron Pen awards drew me in further, and by Winter 2004, I was the Editor-in-Chief.

At the same time all of this was going on, these same friends, who were also my classmates, had also pulled me into the Engineering Society. I had the opportunity as well to serve as Vice President External and, at the same time, as President of the Engineering Student Societies' Council of Ontario (ESSCO).

"I look back fondly on the four years I spent writing for the paper"

In class, I wrote code, drew electrical schematics, and did calculations. Before I started engineering, I used to write, and write well. *The Iron Warrior* gave me a chance to reconnect with that, to find more confidence in leadership, and to find a platform for argument and expression. And it was that reconnection with argument that supported taking those leaps into leadership.

After graduating from Computer Engineering in 2004, I had the opportunity to serve twice as the Vice President Education for the Federation of Students, where I worked with Dean Sedra to improve financial aid distribution to Waterloo students.

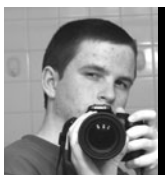
Recently, as I've mentioned, I ran for and was elected to Council in the City of Waterloo, particularly for the area including the University of Waterloo.

What I learned in the latter stages of my degree and since graduating is that people with an engineering background should not just spend time working on technical solutions. They can and should work to change the policies that constrain those solutions.

A world where engineers can think through technical problems but can also understand people enough to tackle our community challenges is a better place. Talking to other people, doing research, and writing thoughtful articles are a step in the journey to getting there.

In this 30th anniversary year of *The Iron Warrior*, I look back fondly on the four years I spent writing for the paper and the four months I spent editing it. I miss the long nights laying out pages and putting out 1100 words into a letter from the editor but not because doing that was great. It was enjoyable because it was an opportunity to use the time I had as editor to help new volunteers start the same journey I had been on.

A Publication from the Past: *Enginoods*



MICHAEL SELISKE
2B COMPUTER

In 2002, several Grad students were very upset with the lack of orientation passed onto the frosh during Orientation week. They decided to write a publication which would try and help educate the frosh on certain things that are less than official and not affiliated in any way with Waterloo Engineering.

"Some friends and I were disappointed about the lack of things like the Plummer's hymn and BOAT racing in the frosh handbook. Since we couldn't mention things like "beer" in songs, we came up with some "alternate" lyrics. We had an idea for a second issue the week after, and then it just sort of became a thing for a year or so." -Founder of *Enginoods*

A total of 34 *Enginoods* were created between 2002 and 2003 with the tagline "We ain't affiliated with nobody." These weekly publications started off as an educational tool and later turned into a less-than-politically-correct satire newsletter poking fun at certain things happening within engineering.

The first issue contained such things as information and rules of BOAT racing, a guide on how to make a batch and several stanza's of Lady Godiva's Hymn. After the Frosh week issue, it quickly turned into a satirical newsletter, featuring adjusted comics, word puzzles, and illusions as random filler when there wasn't enough content to fill the standard four pages. The articles often commented on currents events happening within engineering and came up with witty engineering related lists and ironically fake tips to succeed. They also solicited content and feedback from students and often commented on random emails they would receive. This publication was unofficial in nature and was not meant for everyone as its contents were sometimes outright offensive. However most of the humour, although vulgar was amusing from time to time.

Continuing traditions such as Andre's, A-Soc and B-Soc rivalries, Nutsy running for President, interdepartmental jokes and the reputation of local bars were frequently mentioned and are very similar to the way they are today. Overall, things cannot be expected to have changed that much over the past decade but with a five-year turnover rate (for most people) some of these things can easily be forgotten. Even the 'noods themselves have not been forgotten with various editions popping up around Frosh week, some years being far more tasteful then others. I enjoyed reading through the issues and hope that the traditions outlined in the 'noods can continue for years to come using a new medium to transfer them to the future.

Travelling through *The Iron Warrior's* first decade

ALISON NGSEE & SAMANTHA POON
1A MANAGEMENT

We decided to celebrate *The Iron Warrior's* 30th anniversary with a trip to the past. As first year students, we have just been introduced to all the information that the Engineering Newspaper holds, and what better way to familiarize ourselves with it than a look back to its first issues. We focused on the first decade of its publications, and pulled out the most interesting facts we could find.

In the Editorial section of the July 1981 issue, it was written that Waterloo had the world's second largest co-op program. It is no surprise that we are currently the world's largest co-op program at the university level! What makes us so great? Lets explore some facts and figures!

According to the statistics obtained by the university:

- World's largest co-op program – 3,500 co-op employers worldwide – that's about 1,000 more than the next largest co-op program
- $25,000 - $74,000 – potential co-op earnings by graduation
- $136 million – last year's co-op students' total approximate earnings
- 14,686 undergraduate co-op students – more than twice as many as the next largest program in the world
- 4 to 6 co-op work terms by graduation
- 16 months to 2 years of work experience gained through co-op
- 95 % – co-op student employment rate for 2009-10

It can also be noted that many issues of the papers in the '80s had large alcohol ads. Some of them covered as much as two thirds of a page. The liberalism from back then is prominent throughout the newspaper.

CAD/CAM in Waterloo Engineering

We have all used AutoCAD to create most of our 2D and 3D drawings, instead of tediously drafting them all. But before 1984, students didn't have that privilege. That was the year Waterloo Engineering introduced CAD and CAM (computer automated manufacturing) to the engineering labs.

The Waterloo Engineering Design Competition was held recently, but did you know that the first Canadian Engineering Design Competition was held here in Waterloo on January 1985? Now it is held annually for Engineering students across Canada.

If you want to read more into the fascinating past of *The Iron Warrior*, the archives that contain articles from almost a decade ago can be read online. Furthermore, a new section, ``From the Iron Archives`` was just introduced this year for each issue, and it provides an interesting take on past articles.

Don't Forget to Stop and Smell the Roses

Todd Ruthman, June 1986

What does it take to be an engineer?

Ingredients:

1 cup strong math ability
2 tbsp interest in science
½ cup good analytical skills
3 tsp good working habits
3 cups resistance to heavy work loads

Mix well and place in a pressure cooker just below boiling for five years, alternating between classrooms and office ovens every four months.

Serve immediately, garnished with a degree and small iron ring.

Engineering Applications: Theoretical Limitations of BOAT Racing Times

Dave Petro, June 1987

The flow into the model racer must be considered at each of the first two phases. The flow during this stage can be expressed as:

$$\frac{dV_{in}}{dt} = \frac{dV_{storage}}{dt} + \frac{dV_{out}}{dt}$$

From inspection, (I like to use "inspection" when I can't perform the derivation), the storage increase in given by:

$$\frac{dV_{storage}}{dt} = w\theta\ [(l \sin\alpha)/(\sin(\theta t+\alpha))]$$

Using Bernoulli's equation for analysis of the flow trhough the cylindrical pipe gives:

$$\frac{V_2^2}{2g} = (1/r)(p_1-p_2) + (Z_1-Z_2) + \frac{V_1^2}{2g}$$

Ignoring the pressure differential (causing those tasty burps), and assuming the initial velocity is negligible, we can simplify the final velocity to:

$$V^2 = [2g(Z_1-Z_2)]^{1/2} = [2gL' \sin(\theta t)]^{1/2}$$

Assuming the esophagus has a diameter r at 2. we can express the flow rate out of the funnel as:

$$\frac{dV_{out}}{dt} = \pi r^2(2gL' \sin\theta)^{1/2}$$

Integrating the sum in (1) gives:

$$V_{in} = wl\ [\sin\alpha ln(\tan(\theta t+\alpha))] + (\pi r^2/\theta)(6gL' \cos(\theta t))^{1/2}$$

For the steady state:

$$\frac{dV_{out}}{dt} = \frac{dV_{out}}{dt} = \pi r^2(2gL')^{1/2}$$
$$V^{in} = \pi r^2(2gL' t)^{1/2}$$

Assuming reasonable values for the parameters, it was determined that the 8 ounces could be drained from the glass without spilling in approximately 4 seconds. Allowing 0.1 s for forward flexion, the model suggests that fluid flow restrictions limit boat racing times to 5 seconds.

Over 70% Enrolled in PD Elective! Along With Other Academic Endeavours!

ERIC COUSINEAU
VP EDUCATION

It's time for yet another VP Ed report, yay! I have a lot of items to report on this time around, so I'm going to do my best to do so efficiently. I am pleased to announce that Major Warren Miron, an Engineering Officer from the Canadian Forces, will be our guest speaker for the term. He will be speaking about his time as commander of the Construction Management Organization (CMO), focusing on stability engineering support efforts. The talk will happen on Monday Nov. 29th from 5:30 to 7:00 in RCH 302. There may or may not be food at the event.

A lot has been going on with the WatPD Eng Curriculum Committee and things have been busy in the last few weeks. WatPD 20 development is going well, and I've been told it is on track to begin quality assurance in December. Things are looking great on that front; I'm excited to hear what first years think after they take it this Winter. As it says in the title of this article more than 70% of the students expected to enrol in a PD elective with work term have already done so, this is amazing! Please encourage your classmates who haven't already done so to enrol on Quest. The due date for response to the RFP for PD21 passed on Nov. 3rd, and we received 3 proposals. The committee is currently evaluating the proposals and will make a decision by the end of the month. I'll let you know who the successful candidate is when the committee makes a decision. Some more good news, as per the recommendations from the PDEng Renewal Committee in May, an assistant to the WatPD Academic Director, Dr. Gord Stubley, has been hired. Please join me in welcoming Lynsey Ellis-Smith to the role of Assistant to the Academic Director, I have confidence she will do well.

I attended SUC (Senate Undergraduate Council) on Nov. 9th, and CEC on Nov. 11th. At the SUC we discussed the introduction of instructions for proctors for use during tests and midterms. Instructions included things like giving a 10 minute warning before the end of the test, and instructions to not sit at the front of the room while performing other work. At the CEC meeting we got several updates from CECS about Waterloo Works, the employment situation, and other initiatives. Waterloo Works is making some good progress; they are currently on their second pilot and still plan on launching for Spring 2011. Some of the new features include: Improved search capabilities, easier application process (including the ability to apply to multiple jobs at once), PDF resumes, and the ability to upload cover letters and resumes separately. I'm very excited about this, and can't wait until Spring 2011 to apply to jobs using it. To give you an idea of the employment situation, the overall percentage of employed students as of Nov. 11th is 54.6%, where we had 52.3% on Nov. 12th last year. This is spectacular, especially when you consider the 537 more students going on co-op this winter than last year.

Resume Critiques happened last Tuesday, and my directors estimate they critiqued approximately 150 resumes. I would like to thank my Resume Critiques Directors for all their work this term, I'm certainly impressed. For students who still need help with their resumes, I encourage you to book an appointment with CECS to get your resume critiqued, see *http://www.careerservices.uwaterloo.ca/* for more information. I met with Rocco Fondarcaro to discuss the employment situation for chemical engineering. If have any questions, please forward them to me and I will do my best to get you an answer. Last EngSoc Meeting I created a thread on the discussion forum about ideas for coop. It can be found here: *http://engsoc.uwaterloo.ca/node/5362*. Course critiques were stuffed last week, and should be coming around to your classes soon. Please make sure they get back to the EngSoc Office once they are filled out. Academic Rep Meeting #3 will be on Nov. 23rd, with location and time to be announced. If you are an academic rep and have not been receiving invitations to this event, please let me know. That's all for now, if you have questions or comments please send them to me at: *asoc_vpedu@engmail.uwaterloo.ca*

WEEF Allocations

PRAVEEN ARICHANDRAN
WEEF DIRECTOR

This term, WEEF had a total of $284,267.06 in requested funding. With $60 000 available to allocate, we had some very tough decisions to make.

Funding Council met on November 8th and 9th to listen to over 40 proposal presentations and ask questions. We met one last time on November 10th where we engaged in very thoughtful discussion and decided on allocation amounts for the term. Remember, Funding Council is made up of representatives from each class and is completely composed of students.

The allocations that were decided upon by Funding Council are available in the chart below. These amounts will be finalized once approved by the WEEF Board of Directors this month. We would like to thank everyone who submitted a proposal for your dedication to UW Engineering. We're sure that this term's funding will go a very long way and we encourage all groups that received funding to make their purchases promptly so that the WEEF impact will be felt by students as soon as possible.

To see details of the proposals, please visit *www.weef.uwaterloo.ca*, where the complete Fall 2010 proposal booklet is available. If you have any questions regarding the decisions of Funding Council or the discussion that took place, please feel free to talk to your class WEEF representative or send me an email.

As usual, questions, comments or concerns are welcome at *weef@engmail.uwaterloo.ca*.

Proposal	Requested	Allocated
Architecture		
Architecture Proposal	$12,000.00	$3,250.00
Civil and Enviromental		
Civil Fourth Year Room Equipment	$860.00	$50.00
Survey Level and Tripods	$4,264.10	$1,600.00
Repair and Calibration of Direct Shear Machine	$1,026.00	$772.00
Dionex 1100 Ion Chromatograph	$38,727.00	$0.00
Electrical and Computer		
ECE Laboratory Monitor Upgrade	$4,200.00	$1,050.00
ECE Lab Computer CPU Upgrade	$2,730.00	$0.00
ECE Nexus Computer Upgrade	$4,750.00	$0.00
ECE Lab Equipment for Circuits and Devices Courses	$10,000.00	$2,000.00
Simulation Package for Power Electronic Circuits	$11,700.00	$0.00
Power - Control Electronics - Additional Equipment	$20,254.00	$4,448.00
Blackboards for Student Lounge	$432.06	$0.00
Lab Development for MTE460	$9,739.17	$6,349.17
Geological		
Thin Sections for Earth 232 Laboratory Sessions	$4,000.00	$2,000.00
Management Sciences		
Conveyor Material Handling System for New Lab	$30,429.00	$5,500.00
Mechanical and Mechatronics		
Optitrack Indoor Positioning System	$9,954.17	$2,054.00
Engine Disassembly Lab	$18,400.00	$4,600.00
Systems Design		
Multimedia Equipment for E5 Classrooms	$9,060.00	$4,440.00
MISC		
Engineering Student Machine Shop - Mill Acquisition	$10,000.00	$4,000.00
Departments Total	$192,525.50	$42,113.17

Movember, Conferences and Santa Clause Parade!

LEAH ALLEN
VP EXTERNAL

First off, I would like to say that traditions are awesome. Especially the new tradition of sitting in the back of POETS writing exec reports with the rest of exec while sipping on beverages. Too bad this tradition cannot continue for the remainder of the term. Sad face.

Onto conferences! PEO-SC was awesome, the sessions were very rewarding for the delegates and the speakers, especially Drew Dudley, were very inspiring. Expect a more thorough report at the EngSoc meeting tonight and possibly a presentation! This weekend A-soc will be taking an excellent delegation to the National Conference of Women in Engineering in Ottawa. Hopefully I will have some developments to report after the conference.

Two weekends ago was the Waterloo Engineering Competition where students competed in Senior, Junior and Consulting category. The winners of each category will be advancing onto the Ontario Engineering Competition hosted by Western in February.

MOVEMBER is well underway! As of last Friday, (when I was writing this article) Waterloo engineering has raised a whopping $1,816.00! Great job everybody and keep raking in the dough! Since the Canadian Federation of Engineering Students (CFES) has made Movember a competition between engineering societies throughout Canada, I thought I would give you some stats about that. All of CFES has raised $9,831.00 which means we (Waterloo engineering students) have raised 18.5 % of all funds raised by engineering students in Canada! WO!

Shadow Day was a HUGE success! I need to thank the Shadow Day Directors for all of the commitment and hard work that they put into the event to make it a huge success.

This coming weekend is the annual Santa Claus Parade! This year the Baja and Concrete toboggan team are participating. It is on Saturday, November 20th starting at 10 am at King and Erb in Waterloo! Come out, show your Waterloo Engineering pride and you also may get to see Santa!

That's all the external updates for now! If you have any questions please contact me at *asoc_vpext@engmail.uwaterloo.ca.*

Proposal	Requested	Allocated
Engineering Student Teams		
Engineering Orientation	$3,110.03	$500.00
Rocketry	$3,500.00	$1,900.00
WatSat	$475.00	$300.00
Concrete Toboggan	$2,200.00	$600.00
UW ASIC	$1,670.00	$250.00
Clean Snowmobile	$14,265.50	$1,000.00
IEEE Student Branch	$400.00	$240.00
UW NRG	$6,800.00	$1,000.00
UWAFT	$3,996.00	$600.00
UWMAV	$9,637.00	$1,000.00
WARG	$4,000.00	$800.00
UWRT	$5,500.00	$1,500.00
FSAE	$8,545.00	$2,563.84
Mars Rover Team	$3,200.00	$900.00
Baja SAE	$2,446.29	$1,096.00
Engineers Without Borders	$315.00	$75.00
Midnight Sun	$4,500.00	$2,500.00
Chemical Engineering Student Society	$59.99	$59.99
STEP	$5,381.75	$500.00
Iron Warrior	$1,740.00	$620.00
Student Teams Total	$81,741.56	$18,004.83
Grand Total	$284,267.06	$60,118.00

Talk TED Talks: Our Line in the Sand

BRENT MCCLEAVE
1A NANOTECHNOLOGY

Hurricanes, earthquakes, floods, droughts. These are but a fraction of natural phenomena that wreak havoc on the land we live on, bringing more death and suffering than a band of Dark Jedi. However, there is another addition to this list, far less known but just as environmentally disastrous: desertification. For those of you who are unaware, desertification is the process of Earth's arable land being slowly transformed in desert, caused primarily by erosion and human activity.

Sadly, the most accurate explanation of what Earth is turning into is Tatooine from Star Wars, a veritable uninhabitable infinite desert. In northern Nigeria, the southern border of the Sahara desert migrates approximately 600 metres every year, making the dunes consume more than a metre of cultivable land every day. To put that in perspective, a Nigerian farmer could simply look out into the desert, and count (not calculate, count) the number of days that he has left before the desert consumes his home and he is forced to move his family elsewhere. It is predicted that by the end of the 21st century, one third of the entire Earth's arable land will have been encroached on and consumed by deserts. But now to the good news!

At a TED conference in July of 2009, architecture student Magnus Larsson presented his radical solution to prevent the desert encroaching villages in northern Africa. His solution is a heavily modified version of the "Green Wall", a plan by 23 African countries to plant a line of trees across the southern border of the Sahara desert. Instead of building a wall of trees (which were cut down by poor farmers who needed firewood), Larsson's plan involves constructing a barricade, but one that is built out of the sand itself. Larsson's proposal involves using a common, wetland bacteria, Bacillus pasteurii, to modify the sand into a sturdy construction material. This process occurs when chemical reactions within the bacteria produce calcite, which fill in the gaps in the sand, creating what is, for all intents and purposes, sand concrete. Experiments in petri dishes have shown that pasteurii can solidify sand in less than one day. Obviously, this duration would increase given that more sand will be need to be hardened, but a couple of years is more than reasonable for a Great Wall of Africa, especially considering how short term solutions have yielded no significant results.

The process for producing a sand barrier is reasonably straightforward. One would fill a balloon-like structure sand and the bacteria, and allow the sand dunes to pass over them. Once the sand has consumed the balloon, the balloon structure is simply "popped," disseminating the bacteria within the sand. The sand around the edges of the balloon structure would be solidified, and the sand in the centre of the balloon would remain as grains, which could be excavated by hand, or eroded away by wind. Given the considerable amount of sand, one could return after a few years and begin to grow trees in that region of the desert, alternative, bacteria could be directly injected beneath the surface of the sand, allowing the sand concrete to take virtually any shape desired. The massive network that would be formed could be used to provide structural support to another tree wall, but also provide shelter for countless people, providing protection from the elements, shade, as well as the ability to harvest condensation for water (or "moisture farming" if you're loving the Star Wars references as much as I am).

Humans as a species have wrought destruction and mayhem virtually every aspect of nature by playing god with the environment. Luckily, our blind ambition and our unquenchable desire for meddling have actually resulted in an idea that will protect both human society and the natural world. Desertification is a catastrophic phenomenon, so it is with Larsson's proposal that we must draw our line in the sand.

The Royal Flush

The Best (and Worst) Bathrooms UW Has to Offer

REBECCA CAMERON
4A GEOLOGICAL

After almost 5 years here, one of the most important lessons I have learned is to choose your bathroom wisely. Many a desperate student has entered one of the bathrooms on campus only to find a long line, or a cleaning sign blocking their way to relief. Or perhaps you have been dissatisfied with an on-campus bathroom experience and have longed to be in your own comfortable, private bathroom at home. Well have no fear – The Royal Flush is here to show you where to go when you gotta go.

So let's start with DWE. If you are female, DWE is pretty undesirable in terms of washrooms. There is only one easily accessible bathroom, and it's on the second floor. It is always packed during break times. However, if you have the time the bathroom in the basement near RCH is excellent. It is usually very private, with a large number of fine stalls to choose from. If you are male, well lucky you! It's like DWE was made with you in mind. Bathrooms are plentiful, and are clearly not an afterthought like the women's washrooms were.

CPH has a very odd distribution of bathrooms which follow what I like to call the "Dean's Proximity Rule." Basically, the closer you get to the fourth floor, the better the washrooms get in terms of cleanliness, privacy, and repair. On the fourth floor, the women's washroom even has an attached room with a couch! This is a great place to have a private chat.

E2 is a very hit or miss building for bathrooms. On the first floor near the computer labs are what I think are the most used bathrooms in the engineering buildings. They are not in the best shape, and terrible for privacy. However, the women's washroom does boast a private wheelchair bathroom – complete with a couch, and a handy ledge. On the second floor the bathrooms are pretty typical – except for what is my favourite bathroom on campus. It can only be used after office hours because it is a staff washroom. It has a ton of lovely plants, big windows, a couch, and magazines. It is extremely private, super clean, in perfect repair, and entirely free of graffiti. Be sure to use staff washrooms only after hours and to keep them pristine. The third floor of E2 is unremarkable.

E3 is a very puzzling building for washrooms. It has one women's bathroom which has an industrial hand cleaner perfect for removing grease. However, that is where the awesomeness ends. The men's washroom boasts showers and lockers… apparently the designers of the building never intended for a women to work in the labs and require a shower afterwards. But have no fear, I have used the showers many times and every time has been a pleasant experience. Just be sure to have someone on lookout to prevent any embarrassing situations.

E5 is quite simply lovely in terms of washrooms – all of them are sparkling brand new. However – if you want to fill your water bottle anywhere in the building you won't be able to. There are no water fountains, and the bathroom water takes a really long time to get cold (a few minutes). Apparently the architect enjoys the thought of dehydrated students.

RCH follows a similar rule to CPH – the best bathrooms are at the top. The women's bathroom on the second floor is kinda scary…it is basically falling apart – as of this week, one of the stalls no longer has a lock. The bathroom is very small, smells like it has no ventilation, feels like a cave, and is painted in circus colours. I don't recommend using it unless you absolutely have to. On the bottom floor there are single private bathrooms. On one hand, the privacy is amazing. On the other hand, they are never clean, and they are very busy during break times. Make your own call on this one – but I always just go up to the third floor.

Unfortunately, I have still not visited all of the bathrooms on campus. But I have visited quite a few and EIT's first floor easily has the best bathrooms on campus as far as I know. The bathrooms are very clean, pretty, and reasonably private. Just watch out for the crowds of children visiting the museum sometimes – they can turn these bathrooms into the ninth circle of hell in under 10 minutes. I have seen it, and it was not pretty. But the risk is totally worth it. Also, occasionally (especially in the older buildings on campus) you can find the holy grail of UW's bathrooms – the secret bathrooms. I have found one such bathroom and have never seen anyone else in its one stall. Rumours are that there are several of these bathrooms – but you will have to find them for yourself!

Photos by Rebecca Cameron

Photos clockwise from top left: One of the showers in the E3 men's washroom; The first floor E2 men's washroom; The second floor E2 women's staff washroom; The nasty 2nd floor RCH women's washroom; The women's first floor washroom in E2

Point Vs. Counterpoint

Should Research Into Climate Engineering Be Allowed?

POINT

ALISON LEE
2A NANOTECHNOLOGY

Climate engineering, like most forms of science in their infancy, is a somewhat obscure topic of study that conceives ways to quickly and significantly normalize our climate in the event of a "climate change emergency." As climate change science continues to advance and our impacts on global temperatures continue to show, the field of climate engineering will inevitably mature to larger-scale experiments. Skeptics of climate engineering say that engineering the climate is tempting fate, but there are a number of misconceptions that make it seem far more perturbing than it actually is.

Firstly, there have been many proposed climate engineering ideas, but only a handful of them have been taken seriously. Unfortunately, some of the more radical ones tend to make for the most exciting news, especially when an organization wants to incite public fear and mistrust. Mostly bad ideas, such as seeding the ocean with iron to dissolve more CO_2, laying reflective material over large parts of the northern tundra, or pumping deep cool ocean water to the surface to prevent hurricanes, are sensationalized to the point of sounding insane. It's a good thing that those ideas make the public uneasy because trying to alter the climate is an enormous responsibility, but the majority climate engineers are far less radical and understand this fact.

In the current field of climate engineering, the most attention is directed at two ideas: solar radiation management (SRM) and direct air capture (DAC). SRM aims to change the earth's albedo: the amount of radiation that is reflected back into space. This is done by suspending aerosol particles in the stratosphere with reflective properties. What makes this promising is that these effects are fast and drastic compared to the warming effects of greenhouse gases (GHG's). DAC is a more gradual approach that focuses on GHG remediation. GHG's such as CO_2 are scrubbed from the air with a chemical solution and then the carbon is isolated and (most commonly) sequestered. SRM and DAC are both very large-scale operations, however, no climate engineering method is about to be ready to use soon. Until more support is given to this research, we cannot know how powerful climate engineering might be.

The second reason that climate engineering is not as scary as it seems is that humans have been altering weather patterns for some time now. It's common knowledge that the Chinese government seeded clouds with chemicals to cause rain and reduce pollution in time for the Beijing 2010 Olympics. A lesser-known application is in military combat, where cloud seeding is done to influence battlefield conditions. However, cloud seeding is weather modification, not climate engineering. It is important not to confuse something that changes the weather for personal means with something that aims to control the climate if it ever becomes dangerously unstable.

Speaking of controlling the climate, in our Post-Industrial era alone, humans have certainly produced enough emissions and altered enough land surfaces to change global climate patterns. It can be said that this is "accidental" climate engineering. If we've been inadvertently modifying our climate for decades, then it is certainly possible for us to modify it on purpose. You may still ask: but if we don't fully understand how we're changing the climate, how are we supposed to change it some more? Of course there is no clear answer, but the underlying point isn't that we must abandon climate engineering because it's too complex; the point is that – yes – we are changing the climate. And we know it. No, that's not a solution, but it's a realization that it reversing our climate impacts could technically be done. Sure climate engineering is a dangerous line to walk, but if it's possible then you're guaranteed that someone will try it.

It's just as important to invest in climate engineering research to have working technology available as it is to prevent the misuse of faulty technology developed by unregulated organizations. The latter could have disastrous effects on the climate. Aerosols in the atmosphere for SRM purposes are very effective, but they also incite large temperature increases when they fall out of the stratosphere. Furthermore, a large-scale experiment might inject large doses of chemicals into the air, which in turn might damage an ecosystem or human population. We definitely want many independent climate engineering studies on a small scale right now, rather than underground large-scale disasters in the future.

A current major road block in climate engineering is investors who fear that developing mitigation technologies will weaken the sense of urgency to reduce emissions. If they invest in climate engineering, it's like saying that we won't be able to prevent a climate crisis by changing our behaviour, so we might as well not try to cut emissions at all. Companies might start to use climate engineering to emit more and still meet emissions caps and the public might fall back into complacency. The problem with this attitude is that it assumes that climate engineering technology is in final development stages. It isn't, and if it's used before then because there's no research data to contradict it, then who knows what price we'll pay.

Climate engineering is engineering on a global scale. You cannot simply ban it and expect nations and scientists everywhere to comply. Any attempts to ban it would just push the research underground. The reality is that, as more and more scientists study how human activity impacts the climate, the more they believe it's possible to alter it on purpose. So from this, do we move in a direction where chemicals are covertly injected into the atmosphere in non-peer-reviewed experiments, or do we want to move in a direction where scientists can debate these issues openly and the research data is public domain? It is time to bring climate engineering out of the dark and take it seriously because, even if it is never needed, the knowledge gained from researching it is certainly worth staying informed about.

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.

COUNTERPOINT

ANJALI GOPAL
2A NANOTECHNOLOGY

Climate engineering has generated a lot of interest because of its 'quick fix' approach to global warming. However, for all the promises of 'low cost' and 'fast results' that climate engineering offers, it might be nothing more than sticking attractive duct tape onto the problem of climate change.

There are two areas of climate engineering that have come under scrutiny by media: the first is 'carbon dioxide removal' (CDR). To remove excess carbon dioxide from the atmosphere, scientists are planning to capture CO_2 and pump it deep into the ocean. Some like to think of it as 'planetary liposuction'. Of the two, CDR is the preferred climate engineering technique because it does tackle the root cause of climate change. However, CDR is less popular because despite the large-scale removal, it might take decades to observe any noticeable effect on the climate.

The second technique is 'solar radiation management' (SRM), in which small aerosol particles would be dispersed into the upper stratosphere to scatter sunlight away from the earth. In 1991, Mt. Pinatubo in the Phillipines produced an effect akin to SRM, when its volcanic eruption sent 20 million tonnes of sulfur dioxide into the stratosphere. The average temperature of the earth decreased by about 0.5°C. However, recall that global warming has also increased average worldwide temperatures on a similar scale of magnitude: from the 1950s, average temperatures of the earth has increased by about 1°C. So, it should seem that the Mt. Pinatubo effect must have stabilized the Earth's temperatures somewhat. The reality was that Mt. Pinatubo's sulfur emissions were barely a blip on the climate change radar: the momentary decrease of the earth's mean temperature has been quickly eroded away by industry's churning out of greenhouse gases. Granted, climate engineering might be more large-scale, and more carefully controlled, and thus have a more lasting effect than Mt. Pinatubo's spewing of sulfur dioxide. Nevertheless, many researchers believe that despite the initial drop in mean temperature that climate engineering offers, without active efforts to curb greenhouse gas emissions, the temperature might rebound quickly.

This is where the main problem lies: since climate engineering is 100 times cheaper than research on carbon dioxide emission cuts, industry might see that as an 'alternative' solution to greenhouse gases. It's not. Channelling money and resources to fuel climate engineering research when the same funds could be used for research in greenhouse gas emissions, is both wasteful and dangerous.

Furthermore, SRM may also have a host of unpredicted consequences. Any meddling with solar radiation—even in a localized area—could have large-scale effects around the globe. For instance, some scientists have suggested that studies on polar testing should be confined to the arctic—but even injecting sulfur particles in the Arctic could affect (besides Canada, of course) climates as distant as those in Africa and Asia, disastrously altering weather patterns and monsoon seasons. Even injecting carbon dioxide into the oceans is dangerous—it can cause effects such as ocean acidification. The oceans are already under a tremendous amount of stress because of current climate change problems; fixing the atmosphere by destroying the oceans is not the answer. Moreover, the climate models that scientists are using to predict 'natural' climate change have been inaccurate many times—do we really want scientists using these same models as guidelines in their quest for 'forced' climate change?

Now, suppose, just for a second, that despite all of the various scientific reasons, and despite the fact that the odds are really stacked against us, scientists and engineers decided to go ahead with climate engineering anyway. Suppose we give them the benefit of the doubt, and that the technology and procedure went off without a hitch. Now there is an even bigger issue: who is in charge of the technology? SRM is fast and 'inexpensive'. As a result, many organizations—not even a country, but a small state or region—might have the resources to buy, or create, such a technology and take matters of the earth's climate into their own hands. The economics of such technology is a whole new can of worms, and things could go wrong even with the best of intentions. For instance, despite the claims for 'cheap results', 'cheap' is still a relative term … we're still talking about billions of dollars worth of funding. With a project as volatile and large-scale as the one that climate engineering supporters hope to achieve, combined with the amount of money involved, people will be less likely to admit when things go askew. And when playing Bob-the-Builder with the earth's climate, 'askew' is not a relative term.

Climate engineering has too many uncertainties, and too many associated risks, to be considered a serious solution to climate change and global warming. Climate engineering is just another method for rich industries and wealthy governments to find quick-and-dirty patch job to a hole that the same industries and governments have spent fifty years digging. We should take a page out of our mistake-ridden history books and realize now is not the time for seductive new technologies that have the potential to go drastically wrong. Now is the time to look for lasting, and long-range solutions that works with the mould of the Earth's natural climate, not against it. And just think: if our governments can't even buckle down on its industries' carbon emissions, do we really want to entrust to them the fate of our Earth's climate?

Are we really 'Too Asian'?

The stir behind the MacLean's article

JON RADICE
4A CHEMICAL

It's interesting how fast news spreads. On the morning of November 10th Maclean's released an article with a very blunt message, especially so for the many Asian students of this school. By the afternoon, it was all everyone in the class was talking about it.

"Have you seen what MacLean's posted in that article?" I was without laptop all morning, hadn't read the article in question, and asked what it was about. The response: "Well, according to Maclean's, our school is too Asian."

Some people I've talked to said that the article is pure racism; others told me it points out an issue that gets buried under the guise of "politically correct conversation" and needs to bubble to the surface. But is Waterloo, moreover, is UW Engineering, 'Too Asian'?

If engineering is too much of one group, it's too many of a lot of groups as well. If there are too many Asians, there are also too many men, too many Muslims, too many Indians, too many exchange students, and the list can go on. The article makes a point of saying that immigrants, especially, but not limited to, Asian immigrants, are raised in a family where hard work and a good education are highly valued achievements. The cause for this is straightforward: immigration laws allow highly-educated, successful and diligent people into Canada, so naturally their children will be of the same mindset. University, and especially engineering, is meant for the hard working students that can focus and retain a lot of knowledge. Looking at statistics from 2006, the top four immigrant countries were China, India, the Phillipines, and Pakistan. This trend of Asian immigration has been common for the last two and a half decades, so now the parents have kids right at the university age. Surprise, surprise, the mixture of an influx of intelligent immigrants from certain countries would yield a higher percentage of them going to Canadian universities. What's the problem with that?

If there are too many Asians, there are also too many men, too many Muslims, too many Indians, too many exchange students, and the list can go on.

The article focuses on two main problems with a school being 'too Asian' and that is the problem with one-sidedness and social segregation on campus. Being from Chemical Engineering, with a very diverse amalgam of Asians, Whites, and even (gasp!) girls, social segregation may not be as prevalent as in many classes. Social segregation is not a new or uncommon issue; it starts in grade school, solidifies in high school, and proliferates at the university level. The old chemistry phrase of 'like dissolves like' can be applied here; people are much more comfortable being around people that have had the same experiences as themselves. This can be beneficial and comforting; new students coming to Canada for the first time can at least have a group of people that understands their anxieties and struggles. Groups like this, especially larger school-wide groups, act almost in the same vein as fraternities. It allows the student to acquire an identity and a sense of stability while they are new. The problem with social segregation is when there is a lack of communication or involvement with people outside of a social circle. When this happens the social group and the excluded public create a rift that is hard to access or rebuild.

One-sidedness is hard to assess because the level of a student's involvement, no matter where the student is from, is dependent on the student him or herself. The article claims that an upbringing of focusing on studying and good grades will weaken other areas of students, especially the social side. The often unmentioned aspect of the Engineering Faculty is that, in order for students to really stand out from the crowd, especially when looking for jobs, it isn't the grades that will land you a job, but the extracurriculars. Sure, the marks will help you, but if you're not adept at communications, you're not moving up that business ladder very quickly. Nothing spells a doomed engineer like a life doing labwork. An interesting point that the article mentions is the lack of Asians (specifically Eastern Asians) in Student Councils or EngSoc groups. The article even specifically mentions the fact that there are no Asians on the Board of Directors or the Executive Council for FEDS, and comment that it has no meaning in the hierarchy of importance to an Asian student. I'd like to say that 20% of our Engineering Exec are Southeast Asian, and our benevolent Editor-in-Chief is one too. However, many of these positions, and the governance around it, can be just as exclusive as many of the cultural groups on campus. Societies and groups, regardless where the race lines lie are much more warming to the inside than the out. With the large amount of Asians in this school, it's only time before their prevalence in student governments will be seen.

Is our school 'Too Asian'? I don't think so. We may not be the most boisterous school, but we are a school that is focused on academics and hard work. Even for the partier at heart, you can always mingle with Laurier students if you need your fix of a 'White School'. An increase of any race is only a problem once social chasms begin to form due to alienation of that group. A focus should be put in place to integrate students better, and promote cross-cultural communication.

On Your Plate

Packable Meals

ALISON LEE
2A NANOTECHNOLOGY

With the CnD on vacation, many of us will be looking for other cheap and convenient ways to feed ourselves. The problem is that those two things seem to have an inverse relationship. Maximize convenience by eating at the caf, plaza, or another CnD, and your wallet gets minimized. Conversely, if you maximize cheapness by packing your own food, you've minimized convenience by having to cook and pack things from your kitchen. Somewhere in between the two extremes there must be a happy medium - you just have to find it.

Lunch time! Krishna Iyer

Call me crazy, but it's probably easier to pack a lunch that's convenient than to lobby Tim Hortons to sell $0.50 bagels, so I will share some advice on how to make packing your own food as simple as possible. Before you get lazy just thinking about it and stop reading, consider that if you pack lunch or dinner instead of buying it to-go, you can easily eat a filling meal for under $5. You'll also like what you're eating, or at least hopefully not hate it.

The most convenient of all foods are the grab-and-go types. If you're almost late for the bus, it's handy to have food you can just grab while running out the door. Realistically, it probably won't be the most delicious meal you've had, but you won't be hungry and you'll have lots of snacks. Fruit and granola bars are always key to have around, and if you ask me it's completely legit to eat a red pepper or carrot without cutting it up. The best fruits and veggies are the ones that won't get squished beside a textbook or pencil case. Some trusty staples are apples, oranges, pears, cucumbers, or broccoli. Other snacks you may have around are muffins, juice, nuts, or bagels. If you're really pressed for time there's always that mostly finished bag of bread.

However, let's hope you have at least five minutes to plan out your food. That's enough time to make a sandwich if you've got the stuff on hand, but then you're stuck with the sandwich dilemma: use Tupperware and find it looking more like a salad mixed up in the box, or plastic wrap it only to find it obscurely deformed in your bag. My suggestion is to make a wrap instead. Pitas and tortillas are more robust than fluffy bread, and if it's the last one in the bag, then you have something to transport it in. Spreads like peanut butter or hummus are easier to wrap up, but stir-fry or curry leftovers usually work in wraps too.

This brings us to another (almost) grab-and-go meal: last night's dinner. If you have 2 minutes in the morning and cook in large batches, you can probably find a quick lunch in the fridge. Instead of putting the whole pot of leftover pasta in the fridge the night before, pack it in a bunch of meal-sized containers that can be stuck in a microwave. Also make sure the lids are tight-fitting and that you pack a fork! Even freezing meal-size portions works if you make too much or like to plan way in advance. But this is starting to sound like a lot of work again. One way to share the work is to split cooking or lunch-making with your roommate. Assuming your schedules and tastes are compatible, if you make lunch on days your roomie is busy and vice versa, your stress level and wallet will thank you.

How much will your wallet thank you? I re-emphasize: it's easy to go under $5 a meal with packed food! Eating out costs at least $5 if you want to get full, and then you have to walk there, wait in line, and usually find somewhere different to eat. Having your food on you lets you eat whenever and wherever is convenient. Most of us pack meals some of the time and realize it saves money, but it's the time (or laziness) factor that stops us from doing it more often. Hopefully this has given you a couple of ideas on how to survive the closing of the CnD and come of it well-fed and with some spare change for its grand re-opening.

Review Based on the Trailer - Black Swan

JON RADICE
4A CHEMICAL

Readers from papers' past know that many times I talk about essential first year movies that everyone seems to have on their hard drive by the time they're done 1A. *Fight Club* is one of them, *Boondock Saints* is up there too. However, there is one movie, prevalent all around DC++ that stands apart, in tone and presentation. People that watched *Requiem for a Dream* know that it stands as one of the essential first year movies. The rise of tension that builds until the last 20 minutes is incredibly powerful, a true movie that puts you on the edge of your seat for the entire ride, a shocking, horrifying and in the end, a harrowing event. The director, Darren Aronovsky is a gem of a filmmaker; every single one of his films, including *Requiem*, *Pi*, *the Fountain*, and *the Wrestler*, has a unique feeling, one that is captured in a stunning fashion. Where *Requiem* and the *Fountain* exuded a style that was at times wondrous, *Pi* and the *Wrestler* gave the viewer a direct line into the life of the main protagonists. *Black Swan*, Aronofsky's latest, seems to be the amalgamation of both sides.

Let's get down to the basics. This movie stars Natalie Portman and Mila Kunis, so right there, every guy should want to see it. It is set around the New York City Ballet company, so right there, every guy should want to avoid it. The trailer depicts a classic tale of envy, Portman as the shoo-in lead ballerina of the season's top show 'Swan Lake' begins to get rattled when a newer, younger, more talented dancer (Kunis) begins to steal her thunder. It doesn't stop there however, as Aronovsky loves to take a simple story and drive it home. Portman, sandwiched between her oppressive ballerina mother and the stress of a new star ready to take on her lead role spirals into her own pit of despair, and the thrilling climactic of the trailer has a visibly distraught Portman, blood shot eyes full of tears, staring at a single swan feather plucked from her increasingly ravaged back. The trailer allows for the tension to build quick and disturbingly, a great indication of the pace and chilling nature of the film. The film is classified as a Thriller / Horror, which is an interesting genre to set a ballet around. All of these nuances combined makes for a very intriguing movie. The trailer comes off very cold and sterile in the beginning, allowing for the viewer to feel that much more for Portman and her struggles. Grey haunts every cell of this movie, again adding to the rising tension that emanates from this film.

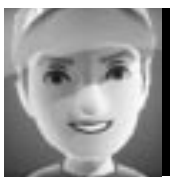
www.imdb.com

I'm sure I lost most people reading the article by trying to convince them that the world of jealous ballerinas is something not only interesting, but worth spending money on. Aronovsky's films have always been one of the best movie experiences of the year, and this one looks to top all his others. This movie (outside of *Toy Story 3* –I'm a softie for my childhood) has been my most anticipated movie of the year, and judging from the trailers, will be a gripping suspense movie similar to the much heralded Requiem. My only regret is that there is only one trailer to watch. So see it, go watch it, you'll love it. If it's not your cup of tea, would it be enticing if I told you there's a Portman/Kunis lesbian scene? Well, there is, so at least go see it for that.

Black Swan hits theatres December 1st. Go see it.

PS - The reviews are in for *Unstoppable*- that stupid looking runaway train movie I reviewed last issue. Rottentomatoes has it at 86% fresh, meaning the critics loved that movie. I'm going to go hang myself now.

The Future of Gaming - Looking Back at the Past...



JON MARTIN
OBI JON1138

Hey everyone, for this issue I thought it would be good to look back at the history of the video game industry – from the humble beginnings to the current behemoths of gaming. Since this issue also marks the 30th anniversary of The Iron Warrior I think it is a fitting tribute as well.

For this article my main sources of information are the Guinness Book of World Records – Gamers Edition 2008 as well as Wikipedia, of course. There is some debate over the actual beginning and end of the so called gaming 'generations' so this is for fun information only.

So, to begin with we are actually going to go back a bit farther than thirty years – got to start at the beginning right? Right (I know I just agreed with myself, but that's OK). Console gaming is generally accepted to have start in 1972 with the Magnavox Odyssey, a simple system running off batteries and connected to your TV. Colour was simulated using coloured overlays attached to your screen, while the system itself was also available with dice, poker chips and score cards for games. The system sold approximately 300,000 units between 1972 and 1975.

The classic Pong game that most of our parents will remember was created by gaming giant Atari. It debuted in arcades in 1972, followed by a release on simple home consoles like the Odyssey system in 1975. Pong inspired many copy-cat games that were popular until the introduction of microprocessor based systems – which heralded the second generation of gaming.

In 1976 the Fairchlld Semiconductor company released the Fairchild VES (Video Entertainment System) which allowed users to purchase new games rather than just being able to play the same games that had been programmed into the first generation systems. Atari responded with the release of the Atari VCS (Video Computer System) in 1977, the system was renamed in 1982 to the more commonly known Atari 2600.

In 1980 (now we reach the 30 year mark) Mattel created a threat to Atari with the release of the Intellivision console. While the Atari 2600 had used 2 kilobyte cartridges, the Intellivision used 4 kilobyte cartridges, allowing for more advanced games. This trend of increasing the cartridge memory size increased until it had reached 32K. Around 1983 the American gaming industry crashed, leading to a new generation of systems.

The third generation of gaming saw the focus of gaming numbers change from cartridge size to the processor power, this is where the 8-bit systems ruled the industry. One of the first systems in the new post-crash landscape was the Famicon console, which was released in Japan in 1983. The system was later renamed the Nintendo Entertainment System, or more commonly NES. The main competitor to Nintendo was the Sega Master System, released in 1986. It became very successful in other countries, despite never conquering the NES in North America.

origin.arstechnica.com

The fourth generation started with the release of the first 16-bit system, the PC Engine, known as the TurboGrafx in North America. In this generation Sega and Nintendo were the biggest contenders, both releasing numerous consoles taking advantage of new technology. It was also during this time period that gaming controllers shifted from joysticks and keypads to the gamepad we know now. In 1991 Atari discontinued the 2600 model, making it the longest production run of a gaming console.

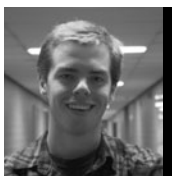
The fifth generation was again dominated by Nintendo and Sega, though they were now threatened by personal computers, which had finally reached the point where they could produce 3D graphics (not the jump out at you 3D we hear about now). This prompted the jump to 32- and 64-bit systems, while simultaneously facing a new threat in the console market with Sony jumping into the industry. The original Sony Playstation was released in 1994, and it was one of the first systems to use disk media instead of the standard cartridge system. While cartridges could load faster they had vastly inferior storage capacities, the Nintendo 64 was one of the very last systems to use cartridges. Atari dropped out of the console business following the 1993 release of the Atari Jaguar which failed to attain a viable market share.

Now we get to the Sixth generation, started by the Sega Dreamcast in 1998, the first 128-bit console while also offering online gaming. Sony released the Playstation 2 in 2000, to amazing success, which probably contributed greatly to the discontinuation of the Dreamcast system in 2001. Also in 2001, Microsoft entered the gaming market with the Xbox. Interestingly the Xbox was only a 32-bit system when most other systems in the generation were 64-bit, but the powerful processor made it the fastest console of that generation. Nintendo also released their successor to the Nintendo 64 in 2001, with the Gamecube.

So, that brings us to the current generation – that's the seventh in case you lost count – which is ruled by Nintendo, Sony, and Microsoft, with the Wii, PS3, and Xbox 360 respectively. While all the systems use disk media the PS3 is the only one to use blu-ray technology while the other two still use standard dvd. With the economic recession, experts are predicting 10 to 15 year lifespans for the current generation systems, making this one of the longest generations in the history of the gaming industry. To this end, all of the companies are trying to develop and expand their existing consoles to make them commercially viable for a longer time. 2010 has seen the release of the Playstation Move controller, adding motion control to the system, as well as the Microsoft Kinect camera, adding controller free motion control to the Xbox. Nintendo, meanwhile, has released the Wii in special edition alternate colours – ooooh, ahhh, red. After the lack of innovation on Nintendo's part you knew I would sneak in an insult somewhere :). Come on Nintendo, do something interesting, anything would be an improvement at this point.

So that is the history of gaming, in a heavily condensed form. Hopefully everyone can appreciate a little more the huge advancements that have been made in gaming when you think of how different the current systems are from the Magnavox Odyssey, with only 38 years separating them. As for the future, keep on Gaming.

The True Leafs of 2010-11 Have Revealed Themselves, and They Suck



SPENSER GOOD
1A MECHANICAL

My main concern when I wrote my article on our beloved Leafs for the last issue of the IW, was that it would become irrelevant between the Friday deadline and distribution date the following Wednesday. After all, the Leafs were winning, and how long could that last? Sadly, my pessimistic attitude fuelled by watching the Leafs lose for fifteen years or so, was once again accurate. At least I won't have that worry this week, because the true 2010-11 Leafs have revealed themselves, and they suck.

Many fans will attribute this losing streak (0-5-2 in their last seven) to the absence of captain Dion Phaneuf, who went down with a laceration in his left leg in the Ottawa game on November 2nd. Sure Phaneuf logged a lot of minutes, but I'm going to be frank, his performance with Toronto up until the 2nd had been mediocre, if not awful. Losing your premier player is not an excuse to suck, especially when your premier player is nothing more than a defensive liability with an oversized contract. The good teams in this league, namely the Capitals and Penguins, have proven they can still perform without superstars Sidney Crosby and Alex Ovechkin, and those guys are much better players then Dion Phaneuf.

The main issue on the ice is the lack of scoring. Phil Kessel has always been a streaky scorer, and right now he is on a cold streak, having not scored for seven games in a row up to the stinker in Florida on Wednesday the 10th. I have to admit that I am not a huge Kessel fan, but somebody has to bury it for the Leafs other than the former Bruin. The guy who was supposed to fill that role as backup scorer was Kris Versteeg, the former Blackhawk who buried 20 goals with Chicago last season. So far this year he's netted two in fourteen games, and I'm starting to think that this might be attributed to the difference in playing with Nikolai Kulemin or Mikhel Grabovski instead of Jonathan Teows or Patrick Kane.

On the game against Tampa Bay on Tuesday the 9th, the Leafs had two five on threes in the first period and failed to score on either one. There's no excuse for that. It's time to show some desperation and charge to the net, or find somebody in the Marlies who will, because passing the puck around the perimeter isn't going to accomplish anything, especially on their miserable powerplay.

Unsurprisingly, the penalty kill ranks only one spot ahead of the power play in league standings, at a miserable 26th. Frankly, I am tired of coming up with reasons why the Leafs suck in every aspect, and although I am sure a lot of it can be blamed on the players, it is high time Brian Burke starts rethinking his commitment to Ron Wilson's position as head coach. This guy has proven nothing in his time in Toronto, except that he can coach an Olympic team a lot better than an NHL one. He came here touted as an excellent special teams guy and a good player coach, only to see the Leafs' special teams drop to league worst and premier defenseman Tomas Kaberle become dissatisfied with an environment he has played in for the last eight seasons.

For a Leafs team that was supposed to be completely different than last year's, right now they seem to be pretty similar. Apathy, sloppiness and a lack of leadership still define a storied franchise with a fan base that deserves better. That fact has been true since Dave Keon lifted the cup in 1967, and it's not going to change this year unless Brian Burke does something. To all those in the sport who admonish panic in desperate situations, I am going to be frank, the Leafs are in a position to panic. Burke traded two first round picks for Phil Kessel, one who turned out to be Tyler Seguin, and he also gave up quite the price for Dion Phaneuf. He also put his faith in the hapless Ron Wilson as coach. All of these moves were gambles by the Stanley Cup winning general manager, and if they don't start to pay off soon fans and management are going to hold him responsible for another two years of losing. Time is running out for Burke and Wilson, and if they don't put their big heads together and pull this team out of the league basement then heads will roll, and worse than that, it will be another year of disappointment and mediocrity for loyal Leafs fans who deserve so much more.

The Fifth Down

SI JIA ZHANG
4A NANOTECHNOLOGY

<u>"2 Minute Warning"</u>

Topic: Fight for your right… a case for reviewable referee calls:

For those who didn't see the Baltimore Ravens vs. Atlanta Falcons on Thursday night, you definitely missed an action packed, suspense driven and high intensity NFL game. The ending was beautiful: with the Ravens down by 6 points, Baltimore's QB Joe Flacco led a touchdown drive which put them up 21-20 with only a minute left on the clock, but the game was all but decided. Atlanta's QB Matt Ryan, aka Matty Ice, calmly led an 80 yard touchdown campaign with WR Roddy White scoring on a beautiful 33 yard pass. With only 20 seconds left on the clock, Baltimore could not muster up another score and the Falcons won the game 26-20. As good as this may seem, there is one underlying problem: Atlanta's game winning touchdown should not have counted; the wide receiver pushed the defender to the ground and became wide open for the score. Even though the referee fully saw what happened, an error in judgment resulted in a game winning score. Far too often in the NFL, games are decided not by hard working players who put their bodies on the line, but by black and white striped gentlemen equipped with a reckless whistle. Just last week for example, the Steelers were comfortably ahead of the Bengals: 27-7 in the fourth quarter. Due to two blatantly horrible referee calls, the Bengals came back and nearly won the game. On Friday, the league admitted the two blown calls in question were indeed erroneous, however a simple admission is not enough. True, the Steelers did manage to win, however had it gone the other way, the referees would have essentially helped the Bengals overcome a huge deficit and steal a victory. The NFL should implement an instant review of sorts for referee calls made in the last 5 minutes of the game. This would be beneficial to the game and to the referees as well. Think about it, how bad a ref must feel when his call or missed call negatively affected the outcomes of the game. Or as Chris Chase of Yahoo! Sports put it: "NFL seasons turn on plays like this. The difference between 13-3 and home-field advantage and 10-6 and missing the playoffs can be as little as a Roddy White shove." Something to think about.

<u>Game Winning Field Goal:</u>

(Since *The Iron Warrior* is a bi-weekly print, tips will be provided for the upcoming week only.)

Top 3 Additions:

1) Jacob Tamme (TE, Indianapolis) 82% owned in Yahoo! Leagues: Replacing the injured Dallas Clark (out for the season), Tamme has been averaging 82 yards/game in his last 3 outings, resulting in 2 TDs and 24 receptions. No brainer here.

2) Jon Kitna (QB, Dallas) 17% owned in *Yahoo! Leagues*: After firing Cupcake Phillips, Kitna tore through the Giants' offense with 327 yards and 3 TDs. The Cowboys are finally waking up, and with Romo potentially out for season, it's time to ride the Kitna train.

3) LeGarrette Blount (RB, Cleveland) 73% owned in *Yahoo! Leagues*: Tampa Bay's offense is clicking, and a huge reason for this is because of this man. Simply put, 120 yards and 2 TDs on Halloween against the Cardinals and that got him the starting role over Cadillac Williams. On Sunday, he racked up 90 yards and a TD against the Panthers. Get him while you still can.

Top 3 Starts:

1) NY Jets WRs Braylon Edwards/ Santonio Holmes against New Orlean's Saints' 32nd ranked pass defense.

2) Cincinnati RB Cedric Benson against the Bills' 32nd ranked run defense.

3) San Diego WR Malcom Floyd against the Denver Broncos. The Chargers are ranked #1 in passing, and Philip Rivers is having a record year. Expect Malcom Floyd to play big.

Top 3 players to bench:

1) Seattle QB Matt Hasselbeck: Forget it, the Saints are coming off a bye week with the #1 ranked pass defense. Although Hasselbeck has been playing good as of late, expect a subpar performance in the Seahawk's passing game.

2) Oakland RB Darren McFadden: As good as D-Mac has been playing, the Steelers' will take it out on the Raiders next Sunday. Their defense will definitely be fired up after giving up 39 points to the Patriots in Week 10.

3) Washington QB Donovan McNabb : The Titans defense will light it up in Week 11. Donovan will get sacked and hurried throughout the game, bench him and look elsewhere for QB options.

<u>Post Game Press Conference:</u>

<u>(Current prediction success rate: 83.33%)</u>

The 3 Lockdown Picks:

Green Bay Packers over Minnesota Vikings: 2010-2011 Favre vs. Green Bay: 0-2

Dallas Cowboys over Detroit Lions: The coaching change should have been done much earlier. Cowboys FTW.

Cleveland Browns over Jacksonville Jaguars: The Browns are for real this year, and their efforts will translate to a hard fought win over the Jaguars.

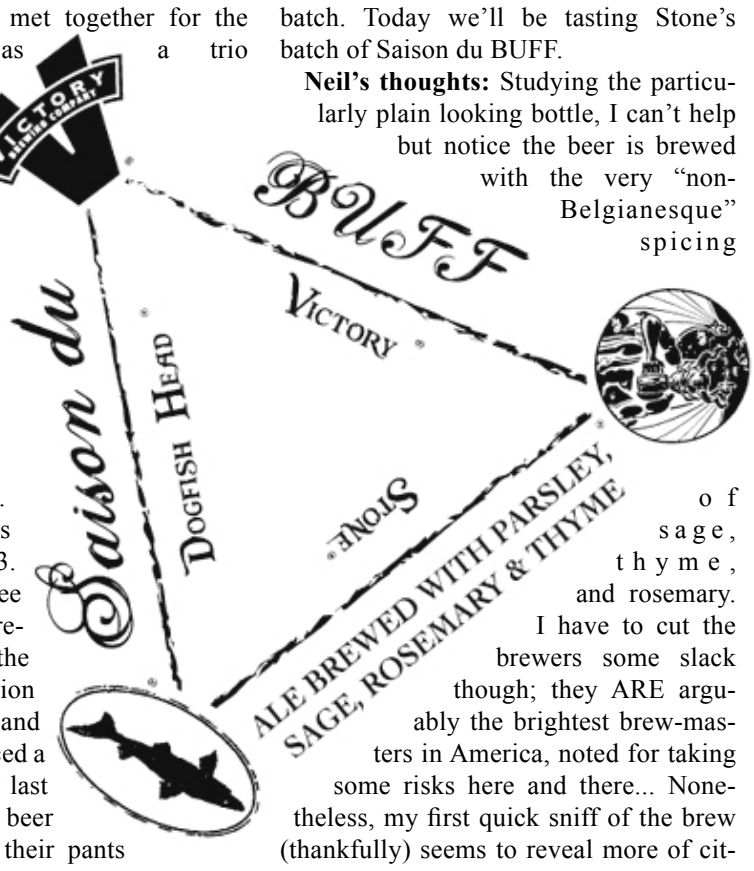
The Brew Man Group - Saison du BUFF

DAN ARMSTRONG
4A MECHANICAL
NEIL PARTRIDGE
4A CHEMICAL

Dearest brew-friends, is it already that time of the term again? You know, the post-midterm pre-final bender season? Indeed it is, and it would be the Brew Man Group's honour to start you off on the right foot, with some delicious cool beer (but not ice-cold... that mutes flavours!). This week, we have a beer that will curl your toes and send shivers down your spine, and only possibly in the euphoric sense. The saison, dear readers, is one of the most interesting beer styles being attempted by the world's brewers. Some will rave about its complex flavours and distinct character, while others will cringe in confused disgust as they deal with the indigestion that (rarely, but occasionally) can occur from consuming beers of this nature. For better (you likely won't have to deal with that indigestion) or for worse, saisons are quite hard to find in Ontario.

Neil: Saison (French for 'season', for you non-bilinguals) as a style is probably one of the more outrageous offspring of Belgian origin. These beers are diverse in nature, owing to the fact that they were brewed independently from farm-to-farm in the region of Wallonia. No, that is not a mythical forest in WoW, but simply the French speaking region in Belgium… nerd. Anywhooo, each of these ales was brewed in the autumn, aged during winter and spring and served in the summer months as a potable, refreshing ale to farmhands. Just like in modern times, drunken operation of farming equipment leads to bad times, so these beers traditionally stayed at approximately 3% (booo!). Thankfully the modern interpretation has diverged into the "jolly-zone" of 5-8% (hooray!). In addition, potent spicing like orange zest, coriander or ginger may be added to the brewer's satisfaction. Combine this with super high fermentation temperatures, consequently leading to the potential for wild yeast cultures (which help to develop some wacky flavour and digestion problems, such as the "horsey" flavour of Brettanomyces.) All in all, saison is perhaps one of the most interesting, albeit unknown, beasts in North America (the other beast of course, alluding to me).

Dan: The saison we'll be sampling today is the product of collaboration between three prominent American breweries, namely Dogfish Head (of Delaware), Stone (of California), and Victory (of Pennsylvania). The three owners, Sam Calgione, Greg Koch, and Bill Covaleski respectively, met together for the first time in 2003 as a trio under the self-ascribed name BUFF (Brewers United for Freedom of Flavour). Hoping to gain some sort of beer-culture notoriety, they held a press conference to publicize the union. Turns out, no one really cared. But hey, this was way back in 2003. Each of the three breweries have remained leaders in the craft beer revolution of recent years, and when they announced a collaboration brew last year, the modern beer nerds nearly sh*t their pants (or just started blogging and tweeting and raised expectations to unattainable levels... whatever).



The idea for this brew was to maintain the fruity ester and spice flavours of a classic saison but to add some unique characteristics (as American brewers tend to do) by including herbs such as sage, rosemary, and thyme. Such experiments aren't uncommon when it comes to collaboration beers. When Brooklyn Brewery and Germany's Schneider teamed up, the result was a culture-clashing hopped-up imperial hefeweizen (that was actually really good). Recently Samuel Adams met with Weihenstephan to brew a new champagne-style beer than still follows the ancient German Reinheitsgebot (beer purity law). The moral here is that collaboration leads to experimentation, and when geniuses experiment, that leads to deliciousness. In this case, three geniuses got together and made a beer recipe, then returned home to each produce a single batch. Today we'll be tasting Stone's batch of Saison du BUFF.

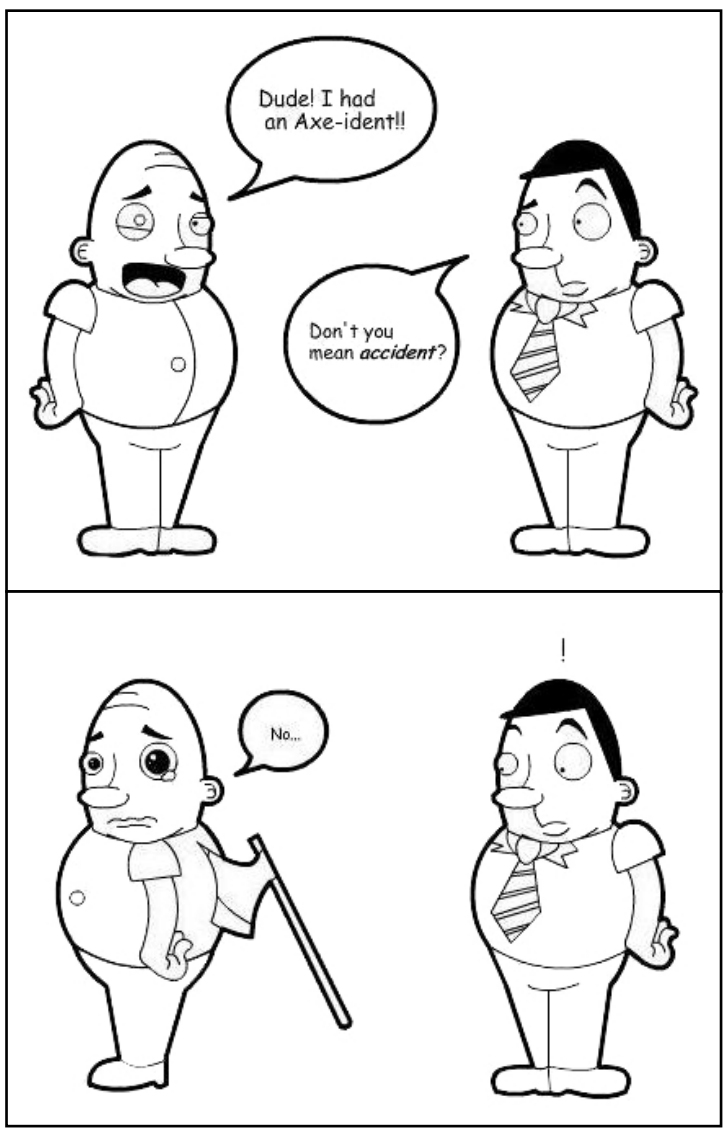
Neil's thoughts: Studying the particularly plain looking bottle, I can't help but notice the beer is brewed with the very "non-Belgianesque" spicing of sage, thyme, and rosemary. I have to cut the brewers some slack though; they ARE arguably the brightest brew-masters in America, noted for taking some risks here and there... Nonetheless, my first quick sniff of the brew (thankfully) seems to reveal more of citrus punch than pasta sauce, all backed up with a little Belgian funk. Upon pouring delicately in our standard tasting glass, an egg white head flares up like with no provocation, so perhaps the carbonation is a little overdone. However we did bottle-age the sucker for several months, meaning the extra carbonation may have been owing to our patience (damn that patience, nothing good comes when you wait). The taste backs this up, where the prickling sting of CO_2 is not entirely welcome, as it seems to fight and mask the aforementioned profile. With that said it's still a pretty beer (like, Adrianna Lima pretty), as well as quaffable. To get up high in my books, especially for a saison, the advertised spices should show through and compliment the brew. For this reason, I rate this beer lower than its potential. **[3/5]**

Dan's thoughts: 'Belgian funk' is a term that requires some tasting experience to fully understand. In short, it's the product of wild yeasts being allowed (or forced) into the fermentation vessels. The result is an odd, sometimes sour, sometimes leather-y or "horse"-like flavour. Some saisons show off these controversial flavours in abundance, while some keep them toned down (the style has no strict guidelines, so neither practice is right or wrong). Saison du BUFF, it can be noted immediately from a first sniff, is on the lighter side of the Belgian funk spectrum, but does include the classic flavours of lemon/acidic fruit and peppery spice. The taste mostly follows this profile, but brings in a touch of the aforementioned herbs (a touch is all you'd want), and an unexpected bitterness in the aftertaste.

When drinking a saison, I try to keep in mind how open to interpretation the style can be, and judge it simply on how good it tastes, not how well it fits a certain profile. This is definitely a tasty beer, complete with fruity citrus, spice, herbs, and a light dose of funk. While the relatively high carbonation might have bothered Neil, my only complaint is the relatively high bitterness, which might have been even worse had we drunk it back in August when I received it as a gift. Despite this, its unique flavour profile and sheer tastiness make me into a fan. **[4/5]**

Recommended for consumption. Also seek out: Saison Dupont, Unibroue Blonde de Chambly, Fantome Saison.

Props to hops // Dan and Neil



INCONSISTENT COMIC

By Eric Fleurent-Wilson, 3B Mechanical
dontyouhaveanythingbettertodo@gmail.com

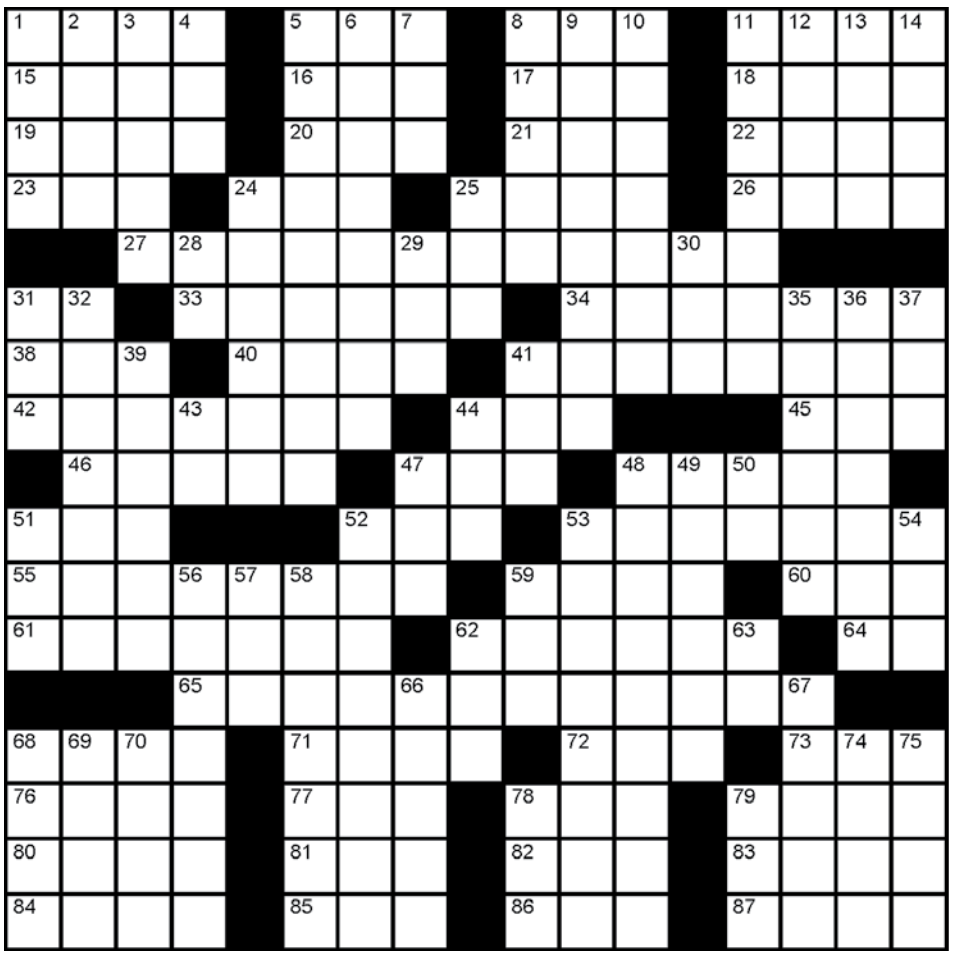
The Iron Sudoku

MADDY LIDDY
2A NANOTECHNOLOGY

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

The Iron Crossword

STUART LINLEY
2A NANOTECHNOLOGY



Across:

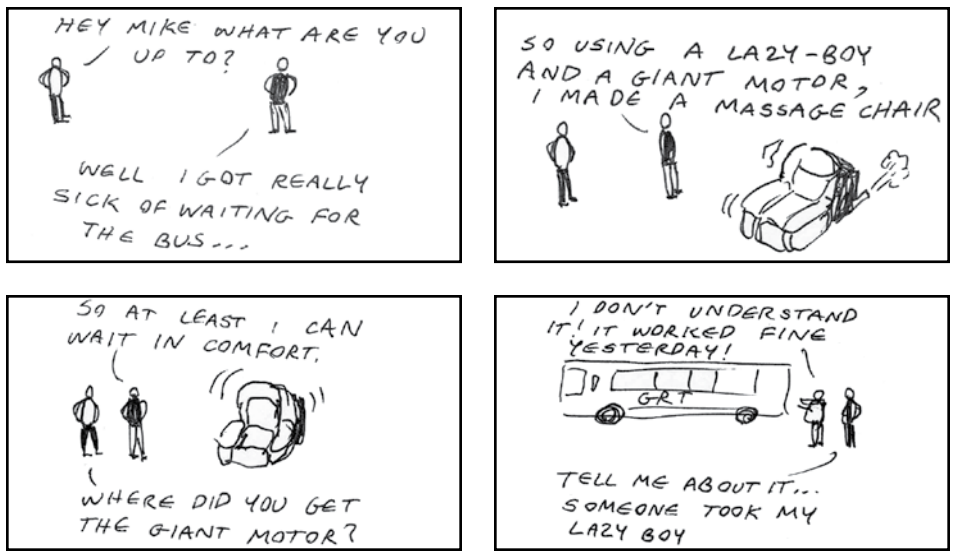
1. Nautical post
5. With 8-Across, Boss for 27-Across
8. See 5-Across
11. Ornamental nephrite
15. Hair pests
16. Old Testament Priest
17. Lyrical poem (alt.)
18. Functions
19. Element of 27-Across
20. Racket
21. The reason for using protection
22. Gather
23. Professional suffix
24. Press the gas
25. Make acquaintance
26. Long tale
27. It's 30!
31. Simile word
33. Stats population knowledge: A _____
34. Like physical plasma
38. Popular compression format
40. Mobile device OS
41. Turncoat
42. CBC, BBC or CNN
44. Old MS OS
45. Wrestling move
46. It's like a donkey
47. Scottish hat
48. Change
51. Biblical boat
52. Revolution musical, Les ___
53. One with steady hands
55. Like Yonge St. or King St.
59. Asks permission: Is it __ __...?
60. Brown and rhymes with Snoop (PhD)
61. Tempers
62. Great pyramid alternate name
64. Twice; it's average
65. Special 10-Down of 27-Across
68. Maul, Dooku and Palpatine
71. Predetermined course of action
72. Type of sea eagle
73. Id
76.Double reed
77. Like some stares
78. In_2O_3 doped SnO_2 (abbr.)
79. Goal oriented group
80.Protoss homeworld
81. Natural Resource Partners
82. 'I think' conclusion
83. Small island
84. Taxes before harmonization
85. Perceive
86. French of 83-Across
87. A stone's throw

Down:

1. Plus 78-Down give 1055, to Cato
2. Shows
3. With 39-Down; Prez! (Offstream)
4. Times 3 = 27-Across' age
5. Overhauls
6. Sometimes virgin or extra-virgin
7. Yang partner
8. Last placer
9. Bistros
10. See 65-Across
11. To arrange in a makeshift fashion
12. Out of port
13. Letter starter
14. Sports network
24. Filler programming
25. ___ tai
28. Maker of printers
29. Sporty Subaru
30. Anagram of 54-Down
31. Electricity tends to do this
32. Vastly arid
35. Tased
36. 5-Across is the chief of these
37. Lion's home
39. See 3-Down
41. Toronto museum
43. Doesn't apply (Abbr.)
44. 1981 epic war film: ___ Boot
47. Like some bits
48. Racing arena
49. Spontaneous visit
50. Argentum
51. Answer to what are you?: I __ _...
52. Indiscriminate mass murder
53. Like some muscles
54. Anagram of 30-down
56. Far regions
57. Rally cry
58. Unsaturated double bonded hydrocarbons
59. Surprise exclamation
62. I feel like the C stands for 'Compulsory'
63. Softie course code
66. Semiconductor with electrons as carriers
67. Chocolate/peanut treat
68. Tyler Durdan manufactures it
69. Egyptian wader
70. To solicit
74. Grand party
75. Jewish ritual: Counting of the ____
78. + 1-Down = 1055, to Cato
79. Element of 65-Across

Mike the Engineer

MICHAEL NEW
3B CIVIL



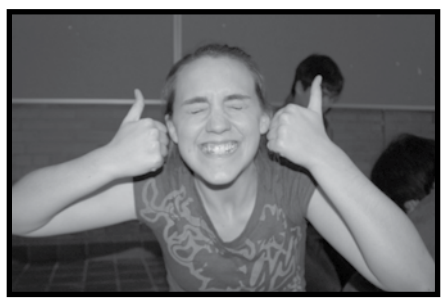
THE IRON INQUISITION

Krishna Iyer, 2A Nanotechnology

"What will you do now that the Engineering CnD is closed?"

"Get 'boggan burgers"
Kristen Roberts, 3B Civil

"Cry long and hard"
Ryan Collins, 1A Systems



"I'm going to have to make my lunch everyday"
Liz Celentano, 2A Chemical

"Lose weight"
Caitlin Tretter, 2A / 2B Chemical

"Cry myslef to sleep everyday"
Amalia Gil, 3B Chemical

"Find a new source of chocolate milk"
Justin Bailey, 2A Mechanical