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THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY

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Greenpeace Accused of Piracy

CAMERON SOLTYS
1A MECHANICAL

Salvatore Barbera

The *Arctic Sunrise* was boarded and all 30 of her activists were detained by Russian security forces on September 18.

Greenpeace International has made headlines in recent weeks in a daring escapade to stop Arctic oil drilling by attempting to board an oil rig off the Russian coast. On September 18th two members of Greenpeace from the ship *Arctic Sunrise* unsuccessfully tried to climb aboard the rig, which is operated by state-owned Gazprom. The crew of the oil platform fended the activists off with fire hoses while Russian security forces in inflatables attempted to stop them.

The next day the Arctic Sunrise was boarded by more security forces who detained all thirty activists on the ship. According to Greenpeace this boarding occurred when the Arctic Sunrise was outside of the 28 mile (44 km) contiguous zone within which a nation is allowed to enforce its laws, making the boarding illegal. Russia, however, claims that the Arctic Sunrise violated a 500 m security zone around the Gazprom oil rig, meaning that it was threatening Russian sovereignty and thus they had a right to board the ship. Greenpeace denies the allegations, saying that they stayed outside of not only the security zone but also the 3 nautical mile (5.6 km) exclusion which Russia "illegally" set up shortly before the protest.

The Russian authorities towed *Arctic Sunrise* to the northern port of Murmansk while the crew remained on board under armed guard. Once in Murmansk the activists were charged with piracy, a crime which faces up to 15 years in prison under Russian law. Greenpeace is adamant that the actions of the *Arctic Sunrise* do not constitute piracy, on the grounds that they were engaged in "peaceful protest", not violence and threats to seize property.

Russian President Vladimir Putin freely admits that the protesters are "obviously not pirates" and Russian authorities have indicated that they will reduce the current charges of piracy to a less serious offence if their investigation determines that the charges are unreasonable. They maintain, however, that Greenpeace's actions were a serious threat to the safety of the oil workers and created "the risk of an environmental catastrophe in the Arctic."

Kumi Naidoo, the Greenpeace International executive director, commended the "brave activists" for "[standing] in defiance of those who wish to exploit this unfolding [climate] crisis more oil." And while Arctic drilling is only possible due to the continuing trend of lessening sea ice, this does not address why taking advantage of the situation should be denied; if the Arctic oil reserves remain untapped demand will simply cause other—potentially less efficient—reserves to be exploited.

In any case Russia is preparing to take economic advantage of the melting Arctic sea ice while keeping balance with environmental considerations. Aside from substantial oil reserves, the Arctic Ocean also boasts the fastest sea route from most of Russia to Europe and other markets and could be a strategic military position.

Greenpeace has brought significant global attention to the Arctic and the human presence there. It is clear that, for good or for ill, this presence is going to continue to increase as lower ice levels open the Arctic Ocean's resources and transportation opportunities.

BlackBerry Finds Escape?

Fairfax Offers to Buy Struggling Tech Giant

BRIAN CHAN
2A NANOTECHNOLOGY

BlackBerry, once a prestigious company leading the communications industry with top-of-the-line smartphones and innovative research, was years ago reduced to being a second rate technology company trailing behind the likes of newer tech giants Apple and Samsung. On September 20 2013, 4500 employees were laid off and you could tell that the company was in a hole so deep that in about 12 -24 months it might have spelled the end for the Canadian company. However, hope has arrived for BlackBerry. The founder and previous CEO, Mike Lazaridis and his love for his company, may have found a lifeline, a saving grace, the savior that can lead BlackBerry to redemption.

Over the past month, Mike has been travelling and visiting many financial groups who are willing to buy out all the shares of the company and privatize it once again. For those who do not understand what benefit there is to privatizing the company, it essentially means that the stocks of BlackBerry will not be sold and traded on the market and the influence of public company shareholders will not be able to decide on the future of this tech company. This is good because it is partly the shareholder's fault that BlackBerry has been reduced to such a lowly state and now, people who want to keep the company afloat over making money can push the company in the needed direction and let it rebuild to once again become a tech giant that could compete with others in it's industry.

The financial group that is looking to buy this company is Fairfax Financial Holdings Ltd. It gave a preliminary offer to BlackBerry on September 23rd, 2013 to buy the company for 4.7 billion dollars. This is only the first step however. The offer can be rejected if BlackBerry finds another offer. Fairfax though is currently the top stakeholder and the closest to being able to buy back all the shares of BlackBerry. However there is a long way to go and many more obstacles to surpass. Just on October the 4th, 2013 BlackBerry was sued for misleading the shareholders and inflating the share price by creating a very rosy picture of what they plan to achieve with the new BB10 lines.

Letter From the Editor

ALEXANDER LEE
EDITOR-IN-CHIEF

Hello readers and welcome back to the second issue of the Fall 2013 Iron Warrior. Once again, I'd like to thank all my staff for all the hard work they put into copy editing and writing to make this issue happen. I would also like to extend a warm welcome to our two newest members, Cameron Soltys and Christy Fung, both in first year! Particular articles I want to highlight this issue include Caitlin McLaren's interview on page 5 with Dr. Christine Moresoli, which is a continuation of the Teaching Excellence Initiative started last term, and Kevin Liang's tips for safe biking on page 12. I know I learned a lot from both articles, and I hope you will too.

I'd like to put in a reminder that we printed our special EngSoc election issue last week. I hope many of you picked it up and voted, and if you haven't voted yet, you still have time. Elections close on Wednesday October 9, which is…Today! So get on your Waterloo account, find the election email, click the link and vote!

The first thing I'd like to do is to apologize to Alison Lee, a 4A Nanotechnology Engineering student. Last issue, Alison was quoted without permission in an opinion piece regarding Elon Musk's statement about women at Waterloo, and the University's response. The quote was taken out of context and was not approved by Alison, and hurt both her image, and the image of her new student club, WiSTEM. For this I apologize, and the offending quote has been removed from the online edition of the paper. In addition, Filzah Nasir, the author of the opinion piece, has written a retraction of the quote.

You may have also noticed that the first issue's Iron Inquisition question and answers did not make sense. I apologize for that as well; the question should have read "What is your pre-interview ritual?" The Mars question was from the first issue from Spring 2013.

You may be used to the steady rhythm of having The Iron Warrior to read every two weeks. However, the next issue will not be published until October 30, which is three weeks from now. Some of you may be wondering why I would do this. Do I hate you? Do I do it to watch all our readers suffer? Well, actually, no. We're skipping three weeks to avoid a) Thanksgiving, and b) hell week. Being in Nanotechnology Engineering, my hell week will be the week of October 21-25, and that means that I will be working on the third issue of this newspaper… right after hell week. However. HOWEVER. This still beats working on it right before hell week.

With all that out of the way, I'd like to use this space this issue to talk about what was probably the biggest news of the past week: The US government shut down. When I first heard this, I was utterly confused. How exactly does a government 'shut down'? Does all of it's institutions just stop working all of a sudden? Does the state fall into complete anarchy? What happens to the Constitution? What about the three branches of government? After reading more, I realize that it wasn't quite as big a deal as I initially thought. It turns out that all it means for now is that the some government services cease to function because the government cannot pay them. Now I was confused for a different reason; how is a government unable to pay for its own services? Even though the China has been making gains, the United States remains the largest national economy in the world right now. How is a country so wealthy unable to pay its workers? After further inquiry into the matter, I learned that the problem lay, as always, with the Republicans and the Democrats. Put simply, the Republicans took issue with Obamacare and refused to pass government funding. As a result, the government technically does not have the 'funds' to pay for services, and has to shut them down.

I also learned that this wasn't the first time this has happened. In fact, it has happened 18 times since 1976. It also isn't quite as world-changing as I initially thought (and partially hoped for). However, it is the first time this has happened in seventeen years. It also highlights some of the flaws of the two-party system, mainly that it can lead to extreme partisanship. Inherently, there is nothing wrong with a two party system. It has worked fine (for the most part) for our southern neighbor for the last 240 years or so, and in many cases allows for effective government because there is always a party that has a majority in a house. In Canada, it is much more difficult to have a majority, because there are four mainstream parties, and while there are two dominant ones, the other two still draw a significant number of votes and seats.

However, recently the political system in the United States has become increasingly polarized. I don't know exactly when it started, though I would say sometime in the eighties, but it became very obvious in the late 2000s, namely at the end of the Bush era in 2009. This was when Obama assumed power, but when he did, he was faced with a House of Representatives that did not support him, and a Senate that did.

At this point I'd like to note that while Canada, in a sense, does suffers from having four parties, we do not suffer from having two houses. Even though we do have a senate, it was defanged a long time ago and is now largely ceremonial in essence. Thus, it could be argued that Canada is effectively unicameral. I should also note that if America was also unicameral, as well as having two parties, there would never be any issues with a deadlock in parliament.

Anyway, with one house controlled by Democrats, and the other by Republicans, it has been extremely hard for either party to do anything during the Obama Administration. Thus, the government shutdown is not an isolated effect, but rather a symptom of a much more pervasive problem in American politics: extreme partisanship. The GOP and the Democrats are so polarized that they cannot get anything done; there is no room for compromise anywhere between the two, and until both sides warm up a little and reopen true communication, America will face this problem indefinitely.

Canada actually experienced a similar crisis relatively recently, though not to the same extent. In 2006, during Paul Martin's rule, our four party system had aligned with the Conservatives and Bloc Quebecois on one side, and the Liberals and NDP on the other side, and their numbers came up exactly even. It was only the Speaker of the House's vote that broke the tie in favour of the ruling party, which allowed the governmental budget to pass and the Liberals to hold onto power.

Note that while I spent the last several paragraphs trashing both Canada's four party system and America's two house system, both are actually crucial. If a democratic form of government actually only had two parties and one house, while it would be a lot more decisive, it would also be very dangerous, as the ruling party would have virtually no opposition to their agenda. The minorities and those opposed to the government would not have an effective way to have their voices heard, and such a system can quickly turn autocratic. So such divisive systems are necessary to check the ruling party's power, but they come with their own problems.

Some of you may be wondering why we as Canadians care about what happens down south. The truth is that the whole world should care, because while it's no longer as dominant as they once were, the USA still remains in many way the world's greatest power, and thus when something crippling happens to it, it affects everyone. This is especially true for Canada, as we are heavily linked with America, particularly economically. When America sneezes, we feel a gust of wind up here.

Politics and international relations is a very deep topic, and there's no way I could cover even a fraction of it in a 1400 word editorial. In addition, we're engineers, so we don't need to know such a topic particularly well. However, we as engineers should have a thirst for knowledge in all forms, not just scientific, and knowing even a little bit about humanities topics can go a long way in the future. Even for a topic as distant as politics, we can all take away something personal from the largely impersonal government shutdown: communication and compromise are crucial skills to have in today's world.

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

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Industrial Soot Linked to Glacial Retreat

MEAGAN CARDNO
2A NANOTECHNOLOGY

The environmental effects of black carbon, commonly referred to as soot outside of the scientific world, are no secret to the world-- it has been placed second only to carbon dioxide in its contribution to global warming. However, soot has recently suggested to be the missing piece in explaining the glacial retreat observed even before the earth's temperature was observed as rising.

The Little Ice Age, starting around the year 1350, was a period of extensive cooling observed up until the late nineteenth century. In this time frame, alpine glaciers documented (mainly in the Italian-Swiss Alps) were thought to be twice in volume compared to their present sizes. However, those studying the glaciers noted that the large ice forms began to recede around 1850, despite theoretical evidence and calculations based on the alpine climate records suggesting that the glaciers should not have stopped growing until sixty years later, in 1910. Clearly, some factor had not been considered into their model of the glacial patterns-- and for once, global warming could not be blamed.

Researchers seeking the answer to the quandary have recently pegged soot as the guilty party. Due to the sudden rise in steam locomotives, factory smokestacks, coal-heated homes, and massed burning of any sort of biomass (i.e. forests) from the recent industrial revolution, an enormous amount of black carbon was released into the environment and atmosphere, eventually settling around the mountains and glaciers. Due to the albedo effect, the dark soot deposition would cause an increased absorption of sunlight and its heat, leading to the accelerated melting rates of the icy structures that were observed.

Originally, scientists did not expect that enough soot would have deposited to create such an effect on the glaciers, but newly examined ice cores drilled in the alps proved otherwise. When the given amount of soot discovered was factored into the previous glacier models, their behaviour became reasonably close to the known patterns.

The newfound discovery is a great step in documenting the history of the Alps, but unfortunately many other mountain ranges and glacial areas have not had the same extensive documentation as the Alps. While other ranges, such as the Himalayas, could perhaps also have fallen subject to the same soot-induced glacial retreat, as India and China would have also contributed large amounts of black carbon into the area, not enough empirical evidence is available in these areas to properly confirm the hypothesis.

A Response to Last Week's Elon Musk Article

CASSANDRA COLE
4A MECHANICAL

This article is written in response to 'Elon Musk and the Lack of Women at Waterloo Engineering' written by Filzah Nasir, 2B Environmental, on September 21 2013.

Musk toured the Waterloo campus in the 90's. Of course there weren't many women; the University of Waterloo was founded in 1957 on Science and Technology, not Arts and Business – like Queens. In the fifties, the social norm was that men went to school and work while women were homemakers. Women got the right to vote in 1929, but things didn't change overnight and nor is the number of women in engineering. The reason being: social norms.

Barbie's, mini-kitchens and anything pink is for girls and Lego, cars and Tonka trucks are for boys. That is what the aisles of the toy stores look like and that is how we are raised. If all toys were unisex, more girls would get the chance to play with toys, like legos, that promote mechanical thinking and start to give a sense of design and engineering at a young age. This is not Waterloo Engineering's problem; this is North America's and for the most part the world's problem. All Engineering programs across Canada and the US have similar statistics when it comes to the number of women enrolled in their programs and they are all looking into ways to increase the number of women in engineering, including Waterloo. In fact for the past few years the percentage of Women entering 1st year engineering at Waterloo has been 21% , which is above the Ontario region average at 18% and the Canadian average at 17.6%.

Women in Engineering (WiE) is not a girls-only club, it's an organization comprised of engineering faculty, graduate students and undergraduate students seeking to increase awareness and support for women already in engineering as well as to pique interest in young girls. Since 1992, the committee has been hosting on campus events like talks from graduate engineers to speak to engineering students, male and female, about their personal journeys. WiE also hosts numerous events for young girls and their parents, like GoEngGirl where grade 7-10 girls learn what engineering is about through hands-on activities. In fact this years GoEngGirl event will be held on October 19th – maybe you could volunteer to help out and find outmore about WiE! I have witnessed the progress of WiE in my time at Waterloo and I can say that many members have worked extremely hard to get to the 21% female enrollment Waterloo has in 2013. This group is captivating children that want to learn, design, build, test, break and build some more - sound familiar? Sounds like engineers in the making to me, and even if they pursue something else, at least they got a taste of engineering before deciding and that's thanks to WiE. I should also point out that the WiE committee won the University of Waterloo's Status for Women and Equity Committee (SWEC) Equity and Inclusivity award this year for all their hard work and accomplishments.

As for Musk's quote, I don't think he is out of line what-so-ever but Filzah, your comments are. Would you like to go to school with only women? I highly doubt it. As humans we need balance and diversity and that means having men and women in our lives. If Musk visited campus and didn't see any women, his choice to study elsewhere is perfectly understandable, it doesn't make him sexist.

I find it funny that some Waterloo engineering students are offended by the Faculty's video response to Musk's quote. Waterloo is known for over-reacting in situations when their faculty is put into question, however, this time Waterloo responded more directly with a touch of humour. The only questionable part of the video is the clip of adding flowers and spraying books with perfume. Obviously this is not what was done to increase the number of women in Engineering, they worked hard to make it happen (and still are) but in the context of the video they brushed it off to get the "yeah, that's right, we've got the girls now" vibe. And I would say that having a higher enrollment of females in engineering than 70% of all other Canadian Universities looks pretty darn good on us. And Filzah, if 18.5% isn't the right number, what is?

Lastly, Filzah, I'm sorry to hear that you feel so out of place at Waterloo Engineering, I'm sure you knew that Engineering was a male-dominated field before you chose the program. It's up to you to find the clubs and societies in and outside of the Engineering Faculty that allow you to grow as a person and learn from the good and the bad experiences that you not only face right now but will continue to face for the rest of your life.

Hopefully you will realize that you can help make Waterloo Engineering an even better place for women, present and future. Best of luck.

Retraction

FILZAH NASIR
2B ENVIRONMENTAL

In the previous issue of the Iron Warrior I wrote an article titled 'Elon Musk and the Lack of Women at Waterloo Engineering' which included a quote from a student, Alison Lee. This quote was not intended for publication and did not present a complete or accurate representation of Alison's views. I would like to officially retract the statement from my article. I want to make it clear that the opinions presented in that article were solely mine. Furthermore, I discussed a group called UW WiSTEM (Women in Science, Technology, Engineering and Math) started by Alison. To clarify, UW WiSTEM is a student founded group meant to provide a space for undergraduate students studying in the STEM fields to discuss gender issues, career options/ barriers and promote diversity. If you're interested in finding out more about UW WiSTEM or joining you can find them on *Facebook atfacebook.com/UWWiSTEM.*

Talking With the Dean

YASSER AL-KHDER
PRESIDENT

Did you vote yet? No? Alright go to your uWaterloo email account, find the election email, click on the link and vote. I'll wait…

You're done? Cool I can start now.

Hey everyone. We're already a month into the term. Somehow I never cease to be amazed by how quickly time flies by. You'd think I'd get used to it after four years here, but here I am wondering where did September go.

Enough small talk then, let's start with the Presidential stuff. These past two weeks have been all about the elections (you might have a seen a poster here or there). However, my VPs and I did have a meeting with our Dean, Dr. Pearl Sullivan, last Friday. The Dean is a very intelligent person, with a lot of great ideas and opinions that resonate with me as an engineering student. Our meeting really showed that we're on the same page on a lot of subjects, which is always good news. The Dean will be at our next council meeting on Wednesday October 16th. So come out if you want to hear what she has to say, and ask her any questions you might have for her. But until then, here are some things that we talked about at the meeting.

Orientation Week

The Dean was super impressed with O-Week this year. The week went great without any major hiccups. She even said EDCOM looked great this year! For the experienced leaders out there, you know that's a big deal. So on behalf of the Dean, I want to thank all the leaders for being so great and wonderful. A special shout out to Chris, Christina, Elizabeth, and Lisa for being an amazing FOC team and showing the Dean, and everyone, how to run O-Week like pros.

E7

Can't have a meeting with the Dean without talking about new buildings. The next planned building for Engineering will be Engineering 7 (E7). The Dean will most definitely bring up E7 updates at the meeting so she'll have tons more details. Anyways, it seems like it'll be a while before we have E7 as the faculty still needs to raise a significant amount of money to fund the construction. Apparently the floor plan for E7 is done, but we haven't had the chance to take a look at them yet. Hopefully we'll get to see them really soon, maybe at the council meeting.

Student Space

This was an issue that I personally wanted to raise with the Dean. When I did first year class visits a couple of weeks ago, I noticed that the rooms were so overfilled that students were sitting on the stairs and floor. That's not right. The Dean agrees with me, and explained that the reason behind the large number of first years is because the administration office underestimated the number of people accepting offers to Waterloo Engineering. Mind you they have been underestimating for three years now so it might be time to reevaluate the numbers. But anyways, the Dean understands where we're coming from, and wants to have classrooms in E7 to accommodate the students. She also said that some programs, like Mechatronics, would have to be split into two cohorts real soon. These sound like good steps moving forward, and I hope that she'll continue working on this problem.

Education

One interesting topic the Dean brought up in the meeting is the education we are currently receiving. I was pleasantly surprised to hear that Dean wants to shift our education to be more practical. The education system right now seems to encourage memorization of the course material, and regurgitating the material during exams sometimes. She really wants move away from that, and try to reshape the courses so that we are learning the material and the skills that is needed out there in the industry. I don't know how or how long will it take for her to bring about this change, but I hope that we can support her and get it done.

As I mentioned previously, if you want to hear more from the Dean, come out to the next council meeting on October 16th at CPH-3607.

That's all I have for now.

Cheers.

Yasser

Where the Money's Going

PETER ROBERTSON
VP FINANCE

During the latest EngSoc meeting we elected this term's Sponsorship Committee. Congratulations are in order for: John Adeyemo, Yuki Ji, Michal Kononenko, Travis McElveny, Clarisse Schneider, and Kal Sobel! Stay tuned for the Sponsorship proposal deadline, which will likely be sometime in late October/ early November. We have $9000 to allocate to Sponsorship proposals!

We also appended the ECIF Committee to replace an at-large BSoc member who unfortunately could no longer sit on the Committee. Congratulations to Victoria Debrincat for being chosen to represent BSoc, along with the previously-chosen Clarisse Schneider, until April 2014! As always, ECIF Applications are open and we are looking for ideas on how to best help the Engineering student population. Applications must be submitted online and can be found in the left menu of the EngSoc home page (www.engsoc.uwaterloo.ca). The ECIF Committee will be meeting later this term to decide on allocations.

For anyone who ordered coveralls this term, look for an email from myself in 4-6 weeks letting you know where and when you can pick them up!

I'd like to take this opportunity to thank both Joseph Dykstra and Melissa Ferguson for running for VP Finance. You both did an outstanding job with your campaigns and I think EngSoc would be lucky to have either of you. Congratulations to whoever wins (the winner will be announced at Semi Formal, tomorrow night) but more importantly congratulations to both of you for representing EngSoc so well. I hope that the next elections feature candidates as professional and deserving as you two.

Finally, once again I'd like to extend an invitation for anyone to contact me via email (*vpfinance.b@engsoc.uwaterloo.ca*) or in person. You are most likely to find me in the back corner of the Orifice, working away. And speaking of the Orifice: keep your eyes peeled for some upgraded technology, either already arrived or on it's way ...

We've Got Your Back

CATHERINE DECLARO
VP INTERNAL

Happy October everyone!

I hope all of you have been enjoying the beautiful colours of fall and of course, the lovely events and services that are being held by the Engineering Society! These past few weeks have seen some great things, from Coffee House, to the Engineering Athletics sessions, to Resume Critiques; there really is something for everyone! September wouldn't have been this awesome without our lovely directors and volunteers so I want to give a big thank you to everyone who helped out!

With midterms just around the corner, you're probably one of the many students getting stressed out. Lucky for you, EngSoc has a great way to relieve all your stress! After midterms, we will be having a PostSecret Week. Everyone will have the chance to write a secret down and submit it anonymously. The following week, a collage will be made of all the secrets. To get more information on this event, like our page on Facebook (UW Engineering Society) or follow us on twitter (@EngSoc)!

If this doesn't sound like your thing or you're looking for more support, there are many more services offered by uWaterloo. The engineering faculty offers three types of counselling: personal, study skills, and career planning. There's no charge to registered students, staff, and faculty, and it is confidential and voluntary. Engineering Counselling also offers workshops to help students through academic difficulties. If you're interested, you can contact the Engineering Counselling Office at (519) 888 - 4761.

Outside of engineering, the University offers Counselling Services. They offer free individual and group counselling to facilitate personal and social growth and assist with life difficulties. Health Services also offers Mental Health Services, who aims to help students lead a healthy and balanced life. These are just a couple of the many services on campus to help students like us! For more information, you can visit Counselling Services at *uwaterloo.ca/counselling-services/* and Mental Health Services at *uwaterloo.ca/health-services/mental-health-services.*

Relax, take it easy, and enjoy!

Outreach and Conferences

KRISTINA LEE
VP EXTERNAL

Hello,

It's almost been a month of school!

Not a whole lot has happened on the VP Ex side of things in the past two weeks. Here are an overview of what's happening in the next few weeks:

Scholarships

For more details or the application form please email vpexternal.b@engsoc.uwaterloo.ca

First year students! Here's an opportunity for you to get a $1000 scholarship from PEO. Criteria:

- You must be in your 1st year of engineering
- You must have attended high school in the Grand River Chapter area, defined for this purpose as the counties of Waterloo and Wellington plus parts of Oxford and Halton including the cities of Guelph, Cambridge, Kitchener, and Waterloo

Conferences

Please apply online through the Engineering Society website. Deadline for applications are at the end of the month.

PEO- Student Conference (November 15-17)

Location: Downtown Toronto, ON

Delegates will meet other students in Ontario and discuss public policy, environmental issues and the direction of the profession. This is a great conference for professional development and to learn more about the PEO.

National Conference on Women in Engineering (November 22- 25)

Location: Vancouver, BC

Delegates will discuss concerns and issues for women in engineering and meet others from around Canada.

Community Outreach

Please contact vpexternal.b@engsoc.uwaterloo.ca if you are interested.

Explore Engineering at the Museum (October 26)

Help introduce science and engineering to elementary school students. There are a variety of events planned and we need volunteers!

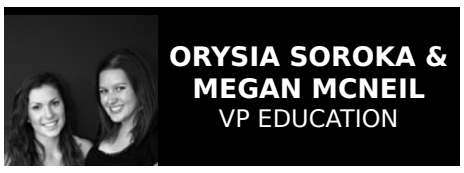
Charity

GRILLED CHEESE!!!

Make sure you stop by the CPH Foyer every Tuesday between 11:30 and 1:30pm. They are delicious and cheap!! Only $2. All the proceeds go to Kulemela Investments, a social investment fund that allows Canadians to invest in growing African agriculture businesses.

If you'd like to chat stop by the Orifice or shoot me an email (*vpexternal.b@engsoc.uwaterloo.ca).*

Education News



ORYSIA SOROKA &
MEGAN MCNEIL
VP EDUCATION

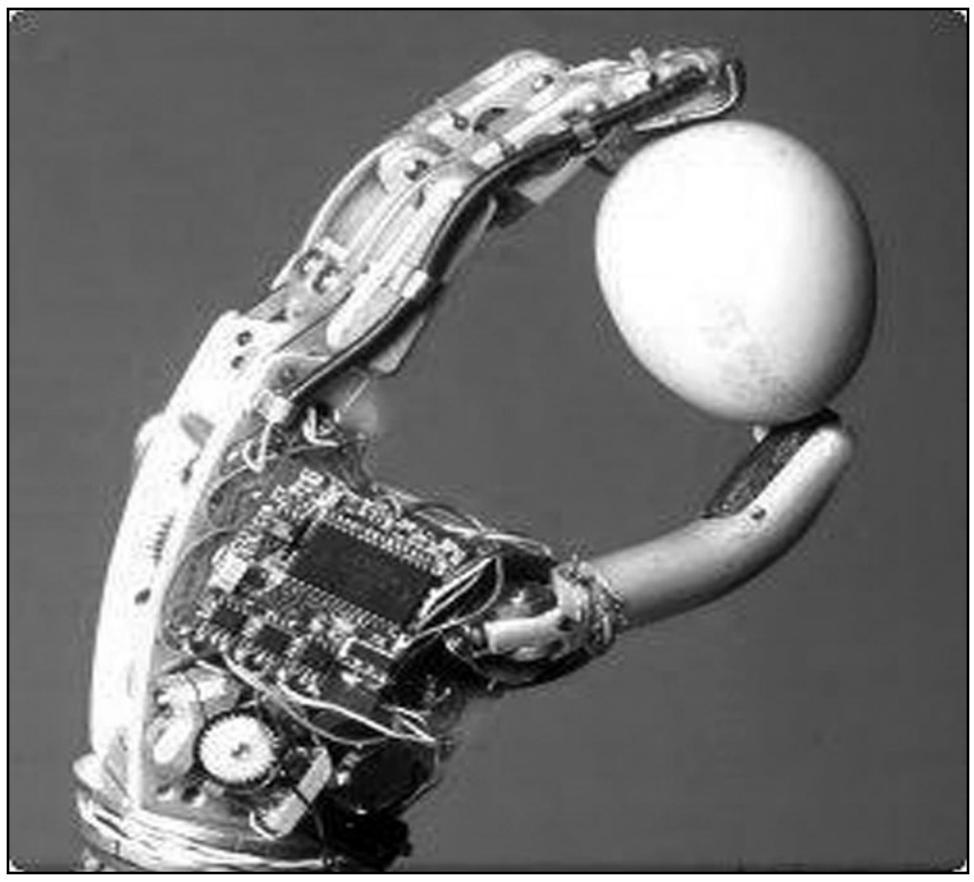
Hi Everyone! The term is in motion, the first two rounds of jobmine have passed and interviews have started. This can be a stressful time and before anyone gets too overwhelmed I'd love to introduce and explain the amazing services the University of Waterloo offers! I highly recommend looking into Counselling Services if you have any mental health needs, no matter how small you might think they are. They will help you with issues ranging from substance abuse, relationships, anxiety, depression, stress and so much more.

In terms of updates, the Engineering Faculty is planning on rolling out a new program – Biomedical Engineering! It will be very similar to the current Systems Design Engineering program, with a more medical and biological spin. If everything continues to go as planned and nothing is delayed, it should be ready to go for Fall 2014. They plan on accepting 40 students to be able to keep a close eye on the program and ensure its success.

With new programs, more students and two streams for multiple programs, the idea of 8 month work terms is becoming a more popular topic. I am sending out a survey to all engineering students and I strongly encourage all of you to complete it, so that the engineering faculty will have a better sense of how you, the students feel. Do you wish your program had the option for 8 month work terms? How do you feel about potentially switching cohorts as a result? Do you think the longer work term would provide you with more opportunities to prove yourself to your employer? If you have any more ideas or thoughts on this topic that cannot be expressed in the survey, please email me and I will be sure to pass on the information.

Lastly, Larry Smith, an economics professor famous for his lectures and respected by students in all faculties is starting a new lecture series called, "So, you want to be a star?". The lecture series is about entrepreneurship, and is meant to inspire students in the workplace. The first lecture will be taking place on October 23 at 5pm in the Theatre of Arts, ML. If you are interested I highly recommend registering and attending.

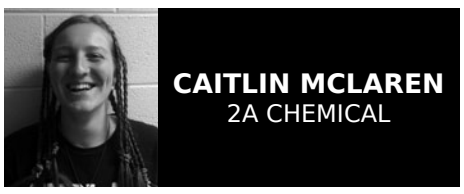
Remember, if you have any questions regarding your academic life feel free to email me or speak to me whenever I am in the orifice. Keep up the good work!



University of South Carolina

A biomedical hand is one of many possible applications that the new Biomedical Engineering program can create.

Teaching Excellence Initiative - Christine Moresoli



CAITLIN MCLAREN
2A CHEMICAL

Dr. Christine Moresoli has been a faculty member since 1998. Her research is mainly in filtration and food processes. The Iron Warrior is interviewing her as part of an ongoing series of interviews with various faculty members. Read and enjoy!

Tell me about how you got to where you are now.

My path consists of small steps. I got my Bachelor's from McGill University. I think I decided to go pursue grad studies because I wasn't able to find an industrial position that interested me. I decided to go into fermentation, because biotech was big in the early 1980s and there was a lot of promise. Then, after my masters, I felt that fermentation was difficult to control, so I started to go into smaller-scale enzyme kinetics, and I also wanted a change of environment, so I contacted different schools in Europe. I got an offer from EPFL, in Lausanne in Switzerland, and then I wanted to know what I was getting into, so I went and visited them. They also wanted to know who I was, so I spent one day touring the labs, meeting the people, and deciding which of the two projects I would select. In the end, I went and did my PhD in Switzerland, and it was a wonderful exerience. At the end of my PhD I decided I wanted to come back to Canada, and I obtained a position at Agriculture Canada as an engineer working for 5 scientists on their research and looking at the engineering aspects of their research. After two years I felt I wanted something different; the time commitments and the position did not allow me to have my own research projects. They could not offer me a research position, so I felt that an academic position would allow me to develop my own research while contributing to training; I applied to the University of Sherbrooke. I got the position and enjoyed the challenges and the independent work. In the mid-1990s, finances in universities weren't very good and Sherbrooke was affected. I started looking outside for more challenges, and I contacted Waterloo. That's how I moved to Waterloo in 1998, and I've been here ever since. I've always been teaching first-year courses and because of my time at Agriculture Canada, I got interested in the food industry, and then I modified the food processing elective in Chem Eng, and I've been teaching those two courses predominantly.

What does your research focus on?

Now my research is multifold; it's primarily materials, membrane filtration, and the food processing, mainly thermal operations, where we combine modeling with experimentation. Thermal operations are like baking: what kind of heat transfer you have, how does bread dough become bread, how does the structure form, and how you get rid of the water. How do real large-scale industrial baking ovens work? They are long tunnels, and the processes and thermal phenomena taking place are very different from those in your home oven. Now, I'm more into pasta and the drying of pasta- so it's lower-temperature and we're looking at what the impact is when you add health-related ingredients, like flax, to your pasta. How is the drying affected and how does it affect the taste and texture? What do you need to do to make a pasta that the customer is really going to enjoy? For example, flax contains a lot of oil- it can go rancid. The texture of the pasta also very much depends on how it is dried- we try to dry it slowly so it won't be damaged as the moisture escapes. That's the food-related work- we're also looking at biopharmaceuticals and we're also part of a large collaborative research network where we're looking at monoclonal antibodies. They are used in cancer therapy. We're looking at the final stage, when you want to purify those and make sure that they are safe for their application. I also initiated some work on making use of plant materials such as wheat proteins, to make edible coatings and and soy by-products to make composite materials for automotive applications. We've also worked for quite a few years now on membrane filtration applications in the productions of drinking water. We work with GE Water and Power and the Municipality of Peel, which has a very large membrane filtration system.

What are your teaching methods, and why do you use them? How were you taught in school?

In my classes, I try to get students to figure things out for themselves. When I was at McGill, the teaching was very traditional- that is, very much information delivery. I don't mean to say that the teaching was bad- some of the people had a lot of passion in their teaching delivery, and it was stimulating. Still, I try not to do that. I try to get the students more engaged, and I believe it really helps. For example, in my food processing course, I use new food products in stores to show students the real-world applications of the concepts.

What can you say about the University of Waterloo as an institution?

What's really good about it is the coop and all the resources offered to students, like the first year engineering office. That's what attracts a lot of the students. The research side isn't as well known, but it's changing. Institutes are established and research resources are expanding. For Chem Eng, it's a lot better to have this new building. At any rate, it's a huge improvement over DWE.

Thank you for talking to us.

My pleasure.

Victoria Faraci

Dr. Christine Moresoli has been with the University of Waterloo for 15 years.

Point Vs. Counterpoint

POINT

Should governments attempt to regulate the use of 3D printing?

COUNTERPOINT

JOSHUA SMITH
1A NANOTECHNOLOGY

Before I continue with this argument I just want to state the fact that I am completely against 3D printers being regulated by the government, but they do make some valid arguments on why they should be regulated. 3D printers as most of you know are just machines that print three dimensional objects using some form of polymers. To most people that would seem really cool and in reality, it would be really expensive. Times have changed from when 3D printing cost a couple thousands of dollars to create one object when it is possible to own one's own personal 3D printer and created objects beyond their wildest imaginations at the comfort of your home. Currently the cheapest 3D printer can be bought for 100$ from Kickstarter. With such a printer, the world is your oyster and many devastating things can happen.

First, the creation of weapons can happen with 3D printers. Imagine all of the different weapons that have been created since the beginning of time. It includes things like the knife, the sword, the axe, the javelin, the gun…you get my point. Many of those weapons can be fabricated through the 3D printer and if the correct polymer is used, those plastic objects that you can buy at the dollar store can be printed by oneself and used to commit crimes of atrocious nature. It is even possible to build a gun with a 3D printer!! If weapons could be made in such a fashion, terrorists would have no problem taking over the world by 2014 and a global tyranny can ensue.

Another thing the government is worried about is a 3D printer's influence on piracy. Due to the fact that the it is in its early stages of infancy, somewhere down the future, 3D printing might not only be limited do polymers but any material can be used and processed by such a printer which would lead to even more outrageous things. Imagine if the blue print of the Bugatti Veyron was leaked onto the internet; with a 3D printer that could process any material, you could see thousands of knockoffs within the first month and car dealers could run out of business within the year.

This process could repeat itself for the thousands of different products in varying industries and due to the fact that the products are not regulated, anyone who does invest in items created out of printers might suffer unfortunate injuries. They may include broken bones and near death experiences with no one really at fault because there are no regulations for creating such objects; therefore there is no one to really blame but yourself. The population could literally destroy itself and the economy through the use of this object.

You may find me to be a rambling sort of person, but in reality what are the downsides of regulating 3D printers? No one really uses it yet because it is still too expensive. Why not just regulate it early before they do cause real damage? No one wants to hear on the news that weapons of mass destruction can be created out of the comfort of your own home. That piece of news would cause utter chaos and disharmony, and empty blame and threats would plague the government in each society and possibly even cause uprisings. Why should we deal with all that when simple regulations and rules can be created for such a technology still in its infancy before all of this happens and avoid a possible national crisis on the day it is possible to manufacture weapons of mass destruction.

Recently, the United States New York Council Member Lewis Fidler introduced a new bill to regulate 3D printed guns in New York. This would make it illegal to use a 3D printer to create any part of a gun unless the person is a licensed gunsmith. This leads to the debate on whether 3D printing should be regulated.

I am terrible writer so please bear with me and my non-coherent and almost insane ramblings. This opinion piece has only one thing, my opinion and my opinion is that the regulation of 3D printing stifles the creative energies of people and thwarts the efforts of innovators everywhere. The main issue with 3D printing and the issue that concerns people who want to regulate 3D printing is to 3D print guns. Even if 3D printing was regulated to stop 3D printing guns, there are other weapons that can be made out of household items. Things like pipe guns, pipe bombs, pipe weapons, pipes used as clubs, and just mixing bleach and ammonia. These are things that no one should do but there is not much you can do to prevent people from doing it. So many weapons can be made from pipes that we should just regulate the use of pipes. You know what, this article has just become pro-regulation of pipes. I think pipes should be regulated, there are so many violent ways that pipes could be used. If we do not regulate pipes, people will go around making guns out of pipes and bombs out of pipes and clubs out of pipes. Pipes are dangerous, #pipes2014.

Now that this new media has been invented, artists and inventors have a new dimension to use to create and make their ideas and dreams a reality. By regulating and preventing certain usages of the 3D printing, we only end up preventing amazing new ideas from

BETHANY YUNE
1A CIVIL

appearing. When the photocopier was invented, people thought that would be the end of the publishing industry as people could just photocopy whatever they wanted. This can also be applied to tape recorders (you young'uns, ask your parents) and downloading things from the Internet (you parents, ask your young'uns).

The cost itself to buy a 3D printer just to print a gun would range from $1500 to $8000. After being able to buy a 3D printer, you would need to find a plastic that could withstand the force dealt by the gun after being fired. Finding the materials would be difficult and said material with the appropriate material properties would cost even more. With all the costs associated with using a 3D printer to print a gun, it would be more economically sound to just buy one illegally.

People are afraid of infringing on copyrights, creating things that are used by large companies like McDonalds or Beats Headphones. Imagine if you could print your own Beats headphones - well you can't because anything you print would have better sound quality than Beats. Anything can be made that is copyrighted, to regulate it would just cause unnecessary trouble sometimes for people trying to create art. Copyright laws prevent people from making their own Coach handbags or Nike shoes, but that does not prevent Chinese sweatshops from making fakes. Using 3D printers to make fakes would not encourage people to make counterfeits but to print out new and original things like cool designs, jewelry and statues of things that are not appropriate for Point-Counterpoints.

Joseph Flaherty

Would regulation maintain safety or stifle innovation?

High Voltage: Electric Fishes Switch Between AC/DC

JESSICA KEUNG
2A CIVIL

Two electric fish from the Amazonian Rainforest share many characteristics except for their current. The Brachyhypopomus walteri uses alternating current and the Brachyhypopomus bennetti uses direct current. These two types of knifefish were often mistaken for one another but graphs of their electric organ discharges (EOD) show otherwise. The Brachyhypopomus walteri has a longer, thinner tail that produces positive and negative waves while the Brachyhypopomus benneti has a shorter, thicker tail that only produces positive phase EODs.

These fish can communicate with their EODs by producing weak electrical discharge and electrolocate with special receptor cells in their skin to detect electric distortions in the water. The Brachyhypopomus benneti has a larger electric organ and produces the monophasic direct current while the Brachyhypopomus walteri has a more average organ (size doesn't matter, fish) producing an alternating current.

The lead author and curatorial affiliate at the Cornell University Museum of Vertebrates John Sullivan says, "The most striking differences between these two similar species have to do with their electric organs and their electric organ discharges." Researchers have recorded the sounds underwater made by the electric fish. The Brachyhypopomus walteri produces a sound like "pop pop". This is done to help cloak the fish from predators. The Brachyhypopomus benneti rarely exhibit their electric organ discharge because it is only a positive monophasic pulse so the direct current cannot be canceled out. The Brachyhypopomus benneti is the only fish in the Brachyhypopomus family to have a monophasic phase for their electric signals. Researchers find this quite peculiar and have suggested that it is to mimic the electric eel, which has a powerful charge for stunning prey and protecting itself. The mimicry of the electric signals from the Brachyhypopomus benneti closely match that of the electric eel and makes the fish less desirable for predators.

One characteristic that both fish share is that even when caught, parts of their tails have been bitten off but they do regenerate. For the Brachyhypopomus walteri and all fish with biphasic current, the negative phase comes from their tail. Shockingly, the electric fish with the biphasic current suffer from a severely altered EOD after injuries. Researchers speculate that this provides a direct explanation for the difference in tail shape and size, where the Brachyhypopomus benneti can maintain communication and electrolocate in spite of tail injuries because of their monophasic current (DC).

Plastic Found on Jupiter Moon

NINA FENG
2B ENVIRONMENTAL

Scientists who study space often seek to find the numerous similarities and differences between Earth and other planets. While astronomers have been studying hundreds of exoplanets of varying degrees of similarity to ours, there is still a lot to be discovered in our own solar system. Just recently, NASA's Cassini spacecraft detected propylene molecules in the lower atmosphere if Saturn's largest moon, Titan. This is the first definitive discovery of the organic compound on a planet other than Earth.

Propylene (also known as propene) is a 3-carbon unsaturated compound with one double-bond, with the formula C3H6. Chains of propylene form the polymer polypropylene, the plastic used for reusable containers, textiles, packaging, and the new Canadian banknotes. The finding not only contributes to the human understanding of the chemical make-up of Titan, but also sheds light on the chemistry of the Earth in its early days.

Titan is a rocky and icy moon that contains large quantities of frozen water. It is larger in size than the planet Mercury. Titan is the only natural planetary satellite known to have a dense atmosphere, consisting primarily of nitrogen and hydrocarbons such as methane and ethane. Its 'methane cycle' forms rain, lakes, and rivers of liquid methane comparable to Earth's water cycle. Before the discovery of propylene, other 3-carbon molecules such as the heavier, saturated propane and the lighter propyne had already been found in its atmosphere.

The Cassini-Huygens mission was launched from Earth over 16 years ago, and has since been collecting data from Saturn's system for about a decade. It consists of the Cassini orbiter and the separable Huygens probe, named for the Dutch astronomer who discovered Titan, Christiaan Huygens. The probe landed on the surface of Titan in 2005, and is the first landing of human technology in the outer solar system, and most distant landing ever. The mission serves to determine the behaviour, composition, origin, and geological history of the components of Saturn's system, such as its moons, rings, and the planet itself. The trace amounts of propylene were detected, in parts per billion, by Cassini's Infrared Spectrometer (CIRS), designed to measure and analyze the composition of Titan's atmosphere.

The discovery of propylene on Titan adds to the knowledge that humans have spent millennia gathering in the attempt to understand the world, our origins, and the interconnectedness of the universe. It also serves to show that there is still so much that can be discovered within both our own solar system, and the entirety of the known universe.

Study Finds Biological Factors for Different Sleep Patterns

CAMERON SOLTYS
1A MECHANICAL

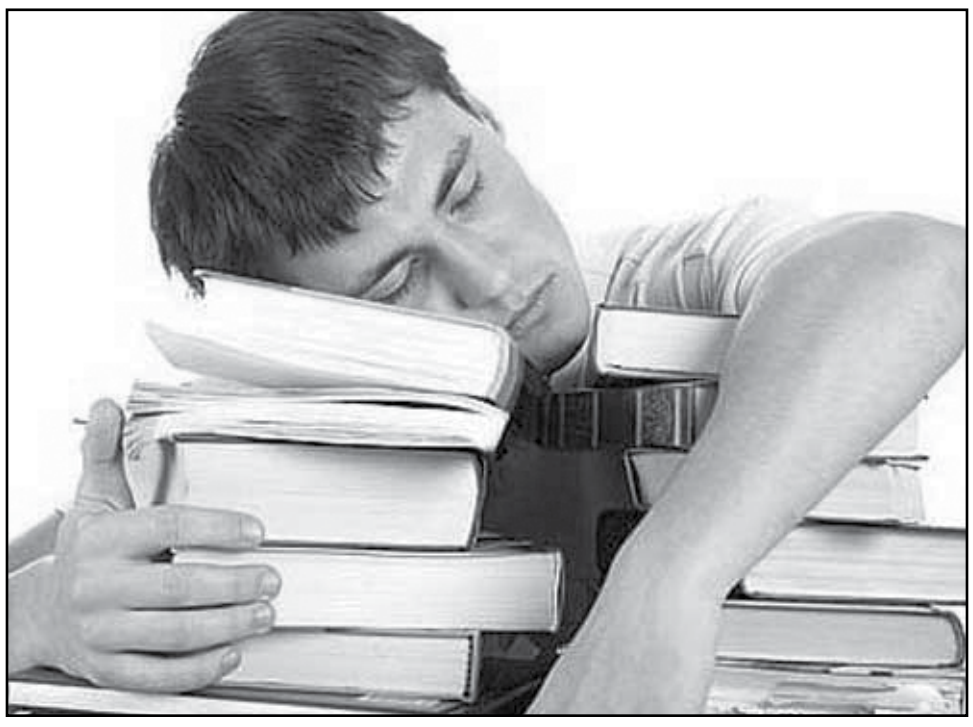
Think back to the last time you got to sleep on your own terms; no post-midnight cramming session, no 8:30 classes the next day. It was probably quite a while ago, but try and remember when you went to bed. Was the sun just setting, or was it nearly rising? In other words, are you an early bird or night owl?

Scientists have been finding evidence which supports the idea that people can be "early birds" or "night owls" since the late 19th century, dubbing these people "early chronotypes" and "late chronotypes" respectively. But new research into chronotypes has pushed our understanding of the phenomenon even further.

In an article published in Science Direct, German scientists analyzed the brains of 59 men using a Diffusion MRI and separated them into early, intermediate and late chronotype groups based on their natural sleeping pattern. They found that the white matter—the tissue in the brain associated with communication between different regions of the nervous system—in night owls was less substantial then that of early birds, especially in areas associated with depression.

The researchers further found that late chronotypes were the most likely group to use legal substances such as alcohol and cigarettes and their sleeping cycles fit poorly with "conventional social schedules". They therefore recommend that "ideally, work schedules... should fit with chronotype-specificity to reduce suboptimal or even erroneous performance at work..."

While it would take much time for such a recommendation to be implemented—if it is implemented at all—we can all hope that universities will be among the first adopters and that a good night's rest will become more than just a dream.



blog.eventbrite.com

A new study provides further proof there is a biological difference between early birds and night owls

Curiosity Finds Liquid Water on Mars

NANCY HUI
3B CIVIL

On September 26, 2013, NASA announced that the Curiosity rover had discovered liquid water on the surface of Mars. The water is not freely accessible, like on Earth, but is bound to other minerals in the soil. 2% of Martian soil, by weight, is water.

Curiosity made this discovery by drying small soil samples in an oven to 835 Celsius, which removes water and volatiles from the sample. Probes then measure the composition of the fumes coming off the samples. In addition to water, sulphur dioxide, carbon dioxide, oxygen, and perchlorates (which are toxic to humans) were also released from the soil.

A similar process is used on Earth to measure water content in soils in geotechnical engineering.

Evidence of water was first detected on Mars by the probe Mariner 9 in 1971, which imaged geological features created by erosion, including canyons and river beds. No actual water features were detected.

The absence of liquid water on the surface of Mars was confirmed in 1997, when the Pathfinder probe measured temperatures on Mars and found that it ranged from -8° Celsius to -78° Celsius: too cold for liquid water to exist on the surface, unless it was mixed with salts which would lower the freezing point. Furthermore, the daily pressure was found to be 0.007 atm, which would cause ice and water to rapidly sublimate or evaporate unless insulated by soil.

In 2003, the Odyssey probe found that Mars had an ice content of 0.5 kg ice per 1 kg soil near the poles, using gamma ray spectrometry, chemically bound to minerals below the planet surface.

Editorial Responses to Online Commenting

JACOB TERRY
3B NANOTECHNOLOGY
T CUBED

One of the largest online commenting systems in the world is getting an overhaul over the next few months. YouTube is changing their system from automatically showing the most recent comments at the top to a new algorithm based on popularity, replies, and Google+ connections. The idea behind this in Google's view is to dissuade users from leaving comments that are unnecessarily negative or don't promote conversation. The algorithm is also being supplemented by mandatory Google+ integration, so all comments will now be attached to a true name instead of a user handle. This is already optional for users to implement right now, but would be required once YouTube converts the website to the new system.

Popular Science recently opted to turn off comments entirely on their site, as a vocal minority of readers were propagating unhealthy views on scientific discipline and alternative science. They felt this was emblematic of the wider view today, particularly in the United States, that scientific research is only merited by the strength of the debate on each side of the argument, and not by the fact that the research and studies have been reviewed and verified to be one of the most accurate assumptions that we can currently make. Popular Science still aims to have comments open on articles that they believe will lead to "vigorous and intelligent discussion".

Local events where comments have gone sour and unhealthy are often on videos or posts released by the University or its departments. The Elon Musk video, released as a tongue-in-cheek, light-hearted poke at his comments while demonstrating the quantity and mental quality of women in the Faculty, originally received supportive comments before reaching Reddit, which has seemingly become one of the largest repositories of cynical and bitter commenters on the Internet. The uWaterloo subreddit in particular has had a habit of posting things they dislike about Waterloo to the cringe subreddit, a forum self-described as "the place for those videos you see that are too embarrassing to watch all the way through." Once posted to both subreddits, opinion on the piece rapidly decreased as a flood of negative and often personal comments about the video unleashed across the subreddits and the YouTube comment box.

Vox Media, a newer company that runs the well-received sites *Polygon* and *The Verge*, spent much time carefully determining how to run their comment system to avoid attracting the negativity surrounding the comments sections from other sites covering similar news. On the video games side, particularly from the view of a Nintendo gamer, *IGN* has underwent a massive conversion in the last ten years from a fairly representative and friendly video gaming coverage site to a hostile environment where it's hard to enter a comment section and not notice highly negative or cynical comments towards the author or the games described in each article. *Polygon* has thus far managed to avoid that, with most articles managing to foster a conversation between those who are excited in the product or are skeptical because of proven past experiences or fair uncertainties. The harshest articles are often on ones about *SimCity* or Electronic Arts (EA), due to the extremely rough launch and questionable business decisions pushed by EA in the past. *Polygon* also has very quick and conversational moderators, who will banish those who leave intentionally unhelpful comments and open conversation with those who appear to be negative but with reason.

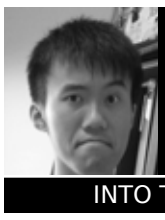
Google Inc.

YouTube is making fundamental changes to the way it's comment section works

The Verge has had less success with this, perhaps due to the fierce nature of technology wars. Many editors of *The Verge* hail from Engadget, which grew a reputation for having a fierce and divided readership that grew to leave such negative and unhelpful comments that the editor at the time (Joshua Topolsky, who now runs *The Verge*) posted that the comments would be shut off until they had time to weed out the hurtful commenters and let everyone calm down. *The Verge* launched with seemingly intelligent debates in the comments, but open any article on mobile phones and you will notice the many comments that split themselves between somewhat intelligent and entirely useless. Perhaps it has more to do with the types of people that comment on mobile phone articles, but if they found a method to remove the unhelpful comments more effectively it would be a win for editors of technology sites across the Internet.

The way websites deal with their commenting systems varies, but most try their best to keep the discussion insightful and helpful, to the point where it should be complimenting the article instead of detracting from it. The opinion of the readers can be very useful for the authors or other readers, particularly when it debates a questionable point in the original article, but should always be civil and useful for others to read. Some sites appear to be successful in making the switch to more insightful comments, but it will take time to determine what the correct approach is in the end.

Primordial Hydrogen



BRIAN SO
2A NANOTECHNOLOGY
INTO THE NEW WORLD

Recently, astronomers have detected vestigial matter left over from the Big Bang, cold streams of primordial hydrogen, powering a distant star-forming galaxy in the early universe. The profuse flow of gas is believed to be crucial for explaining the state of the universe 10 billion years ago, when galaxies were madly forming stars. This discovery was made by a team led by Neil Crighton of the Max Planck Institute for Astronomy and Swinburne University, who made use of a cosmic coincidence: a bright, distant quasar that acted as a "cosmic lighthouse" which illuminated the gas flow from behind.

Systematic survey of absorption systems is made with observations by the Large Binocular Telescope, and data taken from the W.M. Keck Observatory's HIRES echelle spectrograph installed on the 10 meter Keck I telescope on the summit of Mauna Kea, Hawaii. The foreground galaxy was discovered by Charles Steidel, Gwen Rudie (from the California Institute of Technology) and collaborators using the Keck Observatory's LRIS spectrograph on the same telescope.

Currently, cosmologists believe galaxies like our Milky Way were formed from a vast reservoir of pristine hydrogen in the intergalactic medium, which permeates the vast expanses between galaxies. Ten billion years ago, when the universe was one-fifth it's current age, early proto-galaxies were in a state of constant extreme activity; they were forming new stars at nearly one-hundred times their current rate. This rate of star-forming required a steady source of cosmic fuel. Simulations have recently been able to show how galaxies are formed and fed: gas funnels onto galaxies along thin "cold streams" which, like streams of snow melt feeding a mountain lake, channel cool gas from the surrounding intergalactic medium onto galaxies, continuously topping up their supplies of raw material for star formation.

The researchers have taken advantage of quasars, the most luminous objects in the universe which are powered by the infall of matter onto a supermassive black hole. By finding that rare case in which the primordial gas near a foreground galaxy is aligned with a quasar, the light from this quasar will pass through the primordial gas. This provides astronomers with a specific set of absorption lines, from which they can determine the chemical composition, density and temperature of the gas.

From this, the team of astronomers led by Neil Crighton has found the best evidence to date for a flow of pristine intergalactic gas onto a galaxy. The galaxy, Q1442-MD50, is so distant that it took 11 billion years for its light to reach us. The primordial gas resides just 190000 light years from the galaxy.

The discovery of this system is part of a larger survey for quasar sightlines which pass near galaxies, which is coordinated by Joseph Heenawi, the leader of the ENIGMA research group at the Max Planck Institute for Astronomy.

Avishai Dekel (Hebrew University, Jerusalem) was instrumental in theoretically and numerically establishing the current model of cold-flow accretion onto galaxies. While he was not involved on this research, he commented on the results. "This is a very interesting finding," Dekel said. "It is consistent with the theoretical prediction, based both on galaxies by cold streams from the cosmic web. The low metallicity makes this case for inflow more convincing that earlier detections."

Earthquake Creates Island off of Pakistan

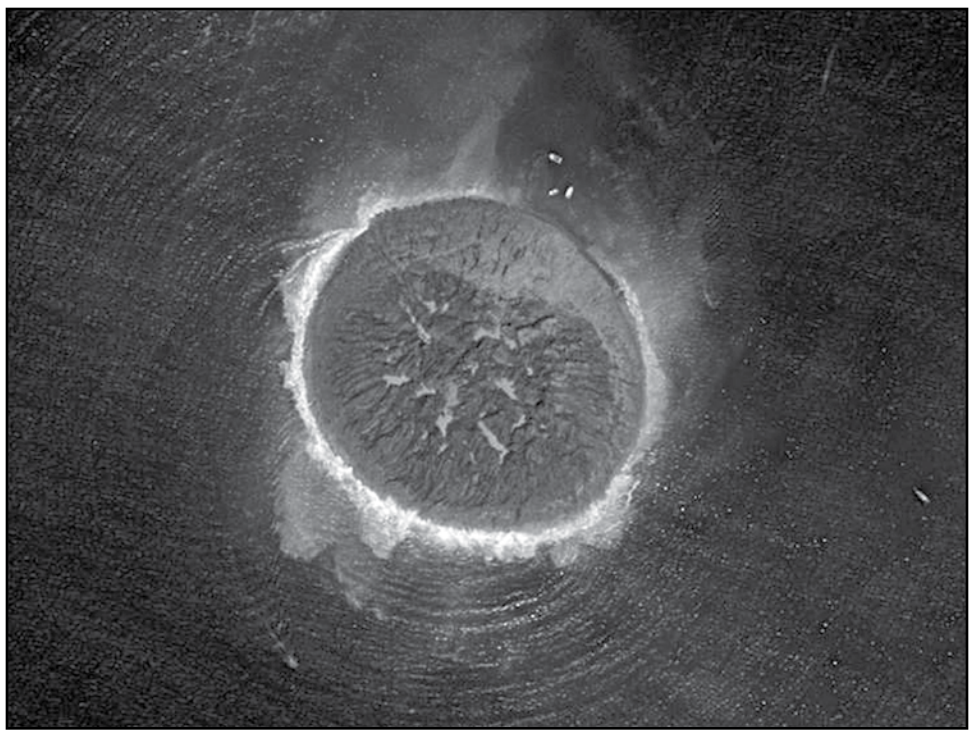
CAITLIN MCLAREN
2A CHEMICAL

The province of Balochistan in Pakistan suffered a magnitude 7.7 earthquake on September 24. Over five hundred people are dead and many more injured; the tremors were so powerful that they could be felt as far away as Delhi.

However, one of the strangest effects of the quake was the appearance of a new island off the coast of the city of Gwadar. Such phenomena are not unusual in the wake of earthquakes, and usually disappear in a short time. The island, now called Zalzala Koh, appears to be emitting methane gas from fissures in the ground.

Scientists are not yet sure whether the island is the result of a mud volcano or the result of liquefaction. A mud volcano is the result of underground gassy mud finding a release and spewing like a volcano; a crack from an earthquake can provide exactly such a release valve. However, the island could also be formed from saturated sediments; an earthquake can make seafloor move like liquid, causing the water in the mud to escape suddenly, forming an island.

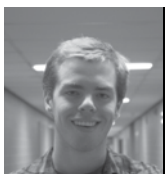
Either way, the soft mud of the island is expected to last less than a year before it erodes away. In the meantime, scientists, journalists, and even tourists are travelling to Zalzala Koh to see and study it before it is gone.



Reuters

An Earthquake hit Pakistan on September 24, killing hundreds while also creating a new island.

The Greensboro Mishap



SPENSER GOOD
3N MECHANICAL

1961 America was a place big on dreams, hope and national pride. America had long ago left the Second World War behind them, and had since built the world's most powerful economy, military and was the free world's undisputed leader. The only threat to their existence, or so everyone thought, was the mighty communist empire, the USSR, that was participating in a nuclear arms race with the USA. Unknown until close to a month ago, the entire eastern seaboard of the United States was almost destroyed by a nuclear warhead. This was not a result of enemy fire; however, if the weapon were to have blown up it would have been the most catastrophic instance of friendly fire in history that would have changed the world and undoubtedly, the image of 1960s America.

On January 23 1961, Major W.S. Tulloch of the United States Air Force departed on a routine Atlantic Airborne alert mission in his B52G jet powered bomber from an air base located in Goldsboro, North Carolina. The mission would be Tulloch's last however, as his plane began to leak fuel at an alarming rate. On his attempted descent to the air base, he lost control of the plane. The men in the plane ejected before impact, two men were killed while five survived the accident. The more monumental issue, however, was not the safety of the men in the plane, but the fact that the plane held two 2.5 megaton MK. 39 nuclear bombs. Each of the bombs had a capacity 250 times more powerful than the bomb that ravaged Hiroshima and effectively ended the Second World War.

One of the bombs fell harmlessly to the ground, largely disintegrating on impact without danger of explosion. The other bomb had a more monumental descent. Of the four safety switches on the bomb, three were faulty and failed to stop the bomb from completing several stages of arming itself, including releasing its parachute, the final step before the bomb detonates. Luckily, a single low voltage switch on the bomb prevented a catastrophe with far reaching effects. Lt. ReVelle, who participated in recovering the bomb after it landed, was quoted as saying. "As far as I'm concerned we came damn close to having a Bay of North Carolina. The nuclear explosion would have completely changed the Eastern seaboard if it had gone off." Instead, the bomb landed without effect or much fanfare in a tree, standing upright as an omen to take further precautions in the future. If the bomb had exploded, experts believe the fallout would have reached populations centers stretching from Washington D.C. to New York City. Tens of millions of fatalities likely would have occurred.

At the time ,the US government insisted there had never been any threat to the public. In a time where there was greater trust towards those in authority, most people likely went on with their lives as if nothing had happened. Sadly, the near miss did nothing to dampen the pace of nuclear development for military purposes. We will never know how the world would have changed if that single low voltage switch had not held strong, but a United States of America with its own Chernobyl covering the entire Eastern seaboard is hard to conceive. What is even more disturbing is how many other near misses were likely covered up by the Cold War government. At the very least, the Greensboro incident serves as a lesson for mankind that we are responsible for own fate, and in the future we can only pray that a single low voltage switch is never again the only safeguard protecting the lives of millions.

US Air Force

On January 23 1961, a nuclear warhead nearly detonated in Goldsboro, NC after a bomber malfunction

The Fine Art of Interrogation

ELIZABETH SALSBERG
2A NANOTECHNOLOGY

THE NETWORKING ENGINEER

Welcome back network gurus! I hope the contact search has been going well. If you're still stuck with JobMine, hang tight—networking is your first escape before graduation so pay attention!

Once you have arranged a meeting with your new contact, you need to draw up a list of good questions to ask. I emphasize the word "good" here because there it is not worth your time (not to mention your contact's) to ask questions to which the answers could just as easily have been Googled. Remember you only have 20 to 30 minutes—maximize them.

Start off by doing some research on the field and, more specifically, on the company your contact works for. Make sure you know what division or section of the company your contact is a part of, and try to get at least a general understanding of what their section does. One of your first questions should be something along the lines of "What do you do as (state position here)? What aspects of your job do you like/dislike?" This is important because it gives you a more personal connection with your contact. Most people are happy to talk about themselves and their experience, so take advantage of it!

Write down what they say. This is key, especially as you accumulate more contacts. A few months or even years from now, you'll want to know who from which company said what.

The second "personal" question deals with the person's career path. This is your chance to show you've done some research about the person (LinkedIn profiles are useful for this!) Take the following example: "How did you get started at Company X after finishing your Masters degree at Y University?" Again, this is designed to get them talking.

Another absolute must is a question about the economic status of the field. "What kind of opportunities are there now? Do you anticipate there being more/less opportunities in the future? What do you wish you had known before getting into this field?" This is a great way to get an honest answer about what you might want to get into. Though sometimes the answer may be hard to take, at least you'll find out without wasting tons of time looking for opportunities that may not be there.

Once you've gone through these key questions, the balance of the interview time is really up to you. There are a few additional items that you should address before your 20-30 minutes expires. The first is making sure you thank the person for their time. A quick thank you e-mail a day or two later is also good for this. Add the person on LinkedIn if you can as well—I will cover the use of LinkedIn next issue so stay tuned!

The last and most important item is, of course, to get any new contacts you can from the one you are speaking with. Perhaps the person you were just speaking to knows or doesn't think that there are opportunities in their company (you've already asked them this, right?) but maybe they know someone who may. And there you have it: your next contact.

Breaking Bad

NANCY HUI
3B CIVIL

TAKE FIVE

Well, last Monday I watched "Felina": the finale of Breaking Bad. It was a great finale, but only an average episode of the amazingly gutsy drama. It didn't feel right that the ends were tied so neatly, especially when every action that Jesse and Walt took led them deeper into increasingly complex consequences and threats. Was there ever a moral of Breaking Bad? It's like asking if Buffalo Bill had a self-improvement mantra. But after five seasons it's been drilled into my head: expect the worst. Your actions have consequences. It is strange to know that there will be no more onscreen consequences for anyone at the end of "Felina".

Here are my personal high points from the saga of Heisenberg, meth king of Alburqurque.

... and the Bag's in the River

After an eventful first meth cook in an RV, Walt and Jesse find themselves with a prisoner who needs to be dealt with.

The pilot might have set the series up with some memorable imagery - I doubt I would have made it to the Season 5 finale if not for the pants fluttering out of an RV window to settle on the desert - but this episode cemented the nature of Breaking Bad. It is a show with consequences. Enemies don't go away until you kill them. Dead bodies don't disappear unless you dissolve them yourself.

Dead Freight

Jesse, Mike, and Walt plan and execute a train heist to steal ten thousand gallons of methylamine. Mike insists that they must leave no witnesses but Jesse claims that there's another way to do it.

The energy of this episode is amazing. The heist itself is high-tension, tightly-scheduled bit of art conceived by none other than Jesse Pinkman (his previous ideas included building a battery to power a stranded RV out of the desert). The whole episode is a serviceable standalone mini-thriller. But Walt and Jesse should both know by now that blood follows Heisenberg wherever he goes.

One Minute

Hank finally loses it and beats Jesse up, who gleefully threatens charges with the help of Saul Goodman. While Hank deals with his loss of professional credibility, two bald men target him for revenge in a supermarket parking lot.

Remember how The X-Files had "Monster of the Week" episodes that featured Mulder and Scully hunting a creature that had the upper hand? The near-mute "cousins" stalking Hank, who are actually brothers, trigger in me the same reaction as a handful of centipedes or closely spaced holes: they are eerie, and trail the most gruesome destruction in the series.

Unpleasant antagonists aside, it is hilarious to watch Jesse power-trip over Hank, who finally deals with consequences of his unprofessional behaviour.

Half Measures

Jesse tries to neutralize some rival drug dealers.

There is a lot going on in the episode "Half Measures". Hank is partially paralyzed in the hospital, Jesse and Wendy the hooker try to poison rivals with ricin, but nobody seems to be succeeding in getting anywhere, because, as Mike says, "half measures" are never enough. To prove that, the episode pulls together a multitude of brilliant little moments that go nowhere until Walt's Pontiac Aztek rams the plot out of the park.

Ozymandias

Walt tries to negotiate with Jack's gang of neo-Nazis for Hank's release, in the desert where Walt's barrels of money are buried. Later, Jesse becomes a meth-cooking slave for the Nazis.

AMC Networks Inc.

The Breaking Bad finale on September 29 drew 10.3 million viewers

This episode has the best Breaking Bad melodrama of any episode, with fractious family relationships, teary accusations, and a knife fight! Gone are Walt's pretentions of maintaining a family as he becomes a baby-stealing fugitive. Seeing how Jesse always gets put through the emotional blender in this show, it is satisfying to see Walt's empire and family irreversibly disintegrate. Not because of schadenfreude - but how many times have we seen Walt recover control of a situation with an ace up his sleeve? Of course he would eventually fail, in an emotional confrontation as spectacular as his rise to power.

Five Great Places for Dates

MYLES TAN
4A SYSTEMS DESIGN

Hopefully you've had the chance to check out some of those great eateries close to campus! This issue's theme is date spots! They say university is one of the greatest chances you'll have in your life to meet great people. Take the time to get to know them, listen to their stories, learn about their hopes and dreams - your university years will pass quickly! Here are five spots which are undoubtedly the best in Waterloo for just that.

Symposium

A great cafe/restaurant located at King St. and Erb St. in Uptown Waterloo, this place has an intimate, comfortable vibe. Topping their daily specials is Thursday's $40 date night, and Sunday's 2-for-1 cake slices.

Princess Cinema and Cafe

Head uptown to King St. and Princess St. and hit up Princess Cafe for one of their unreal paninis. Then, cross the street to the original Princess Cinema to catch one of the many films which screen in their vintage theatre. Go online to check the schedule or find one of their flyers which are distributed around uptown that has their monthly screening schedule.

Waterloo Park

Just south of campus, follow the Laurel Trail down past the residences and parking lots into Waterloo Park. On a sunny day, you can wander around the animal farm, walk the boardwalk across along Silver Lake, wander around the Perimeter Institute, and sit and chat under the gazebo in the flower garden.

Marbles

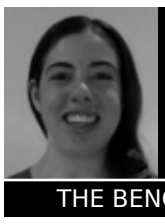
Tucked away just south of uptown, Marbles is a great casual dining restaurant with a warm atmosphere. They serve a variety of meals and have a decent vegetarian/vegan/gluten-free selection as well. It's a great spot to end up after a walk up and down the Iron Horst Trail, which starts just a few blocks down at Allen St. & Caroline St, and goes all the way down to Victoria Park in Kitchener.

Lotus Tea House

Lotus Tea House is tucked just off King Street in uptown Waterloo. It is owned and operated as a part of a Buddhist organization, which runs their temple just next door. It has a fittingly zen atmosphere which is perfect for a party of two. They serve all vegetarian (and some vegan) meals at reasonable prices, and you have to try a pot of tea from their authentic collection.

That's all for now!

The Scoop on Realignment



ELIZABETH SALSBERG
2A NANOTECHNOLOGY

THE BENCHWARMER REPORT

Following the labour-plagued, shortened 2013 season, the NHL has a new surprise for us this year: Realignment. Some people say that the league proposed this because someone suddenly realized that Winnipeg should really be in the West and that Detroit should really be in the East, but of course the 'why' is not what really counts here. Understanding the new rules around realignment are key for the avid or emerging hockey fan, so behold all you need to know about the realignment and how it's going to affect your favourite hockey teams.

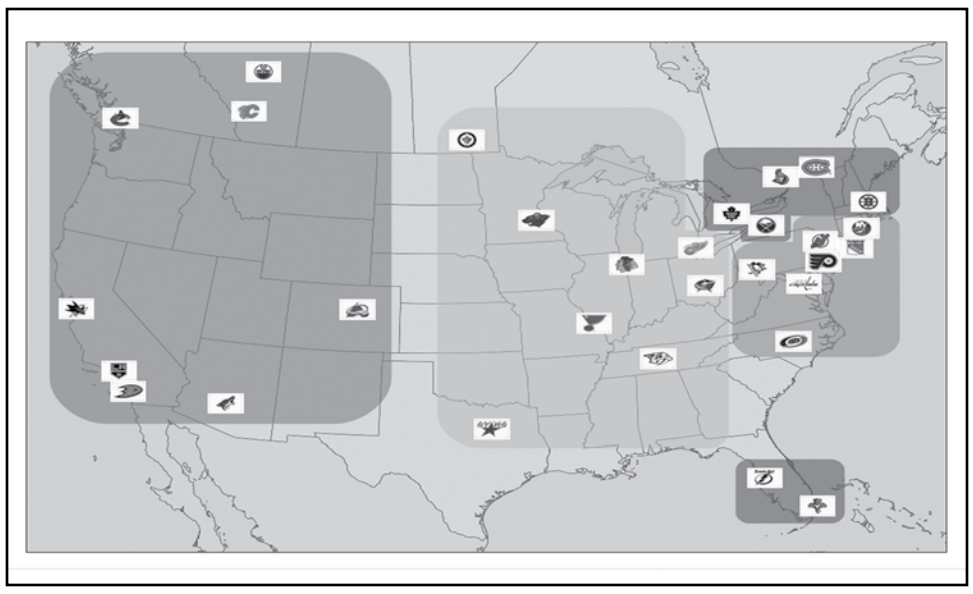
As per usual, the NHL will be divided into two conferences, the East and the West. Effective this season however, there will be 16 teams in the East and 14 in the West. In each conference, there are two divisions, in the East we have the Atlantic and Metropolitan divisions and in the West, there are the Pacific and Central divisions. The top three teams in each division will make the playoffs, the other four spots will be filled by the two teams with the next-highest amount of points in each conference regardless of division. This means that a particular division could have five teams qualifying for the playoffs while the other one may have only three.

These new rules create even stiffer competition to make the post-season: Top-three in a division with 7 (Western divisions) or 8 teams (Eastern divisions) is no easy task—the teams are very well spread out this year, making for some seriously exciting hockey!

A few major changes that I may have hinted at earlier… Detroit has moved into the Atlantic Division, which is looking more and more like the American League East of Hockey with fellow 2013 playoff teams Boston, Ottawa, Toronto and Montreal. Expect Tampa Bay to be dangerous this year too—this will be a very fun and exciting division to watch.

In the West, Winnipeg (you guessed it) has moved into the central division with some sticky competition including the defending Cup champions, the Chicago Blackhawks. They will have the privilege of not only playing in their own time zone, but also of playing against some top-quality teams such as St. Louis and Nashville.

The lowly Columbus Blue Jackets also came East joining the Metropolitan division,



Brandon Worley

This season the NHL has realigned its Divisions and Conferences

where they will contend with the beyond-loaded, underperforming powerhouse Pittsburgh Penguins, Ovie's Washington Capitals, the Philadelphia Flyers and that phenom-goalie team, the New York Rangers.

Canadian Western teams Edmonton, Calgary and Vancouver will have their work cut out for them in the Pacific division. Expect San Jose to come strong as always and don't forget the ever-patient LA Kings, winners of the Cup in 2012. Anaheim also has quite a strong team and made the postseason last year, so keep an eye on this division if late night hockey is your thing.

Well friends, there you have it: The complete guide to realignment. Best of luck to all your fave teams this season—it's going to be a great one!

Uses for Human Waste

NINA FENG
2B ENVIRONMENTAL

LEAFY THOUGHTS

Humans tend to produce large quantities of waste from our bodies. Much of it is disposed of immediately, which is inefficient in a way. Feces and urine are flushed down the toilet to be treated and recycled. Hair is thrown out after it has been cut off. We already put animal waste to good use, yet the use of human waste still sounds more far-fetched. The thought of using human feces for fertilization somehow sounds more disgusting than using cow manure. The thought of wearing sweaters made of human hair sounds quite bizarre in comparison to sheep's wool. People will buy cute notebooks at WriteStuff made of panda or horse poop, but if similar products could be made from human poop (assuming it contains enough fibre), the market would be much smaller. However, the practice of using human waste is being employed around the world, though not as widespread (perhaps for good reason). The following are three of the most common forms of waste, and their uses. If you're ever feeling down, remember these and maybe you'll feel ever so slightly better. Even your poop can be worth something.

Hair

Human hair may seem like strands of dead protein sprouting from our heads, used to look pretty and maybe keep our heads warm. However, it also happens to be the dominant source of the amino acid L-cysteine, which is used industrially as a food additive, often used in treating dough for breads and pizza. As in, much of the bread we eat actually contains a substance which was extracted from human hair, usually sourced in China. Bird feathers or hog hair are used as secondary sources. Once upon a time, it was also used to mimic soy sauce, with barber shop hair being gathered and processed into the ubiquitous condiment…but that was eventually banned.

It has also been found that human hair is exceptionally efficient at absorbing oil, but repelling water. Hair mats are now being used to help mop up oil spills. After the BP oil spill, many environmental organizations held events where donated human hair was stuffed into panty hose creating 'hair booms' to be used in that clean-up. 1 kg of hair can hold 2 L of oil, making it a natural material that can sustainably be used in such clean-ups.

Feces

Human excrement can be used in a number of ways. It, too, can be a component of fertilizer, although the risk of cholera and other diseases is higher. However it can be composted. When mixed with plant matter such as yard waste and left to be naturally broken down by bacteria and other decomposition agents, the end result is a nutrient-rich soil that can be safely used to aid plant growth.

Another potential use for excrement is in the creation of breeding habitats for certain types of flies. You may have noticed flies swarming turds, trying to lay their eggs. This is because fly larvae flourish in feces. Afterwards, some species of fly larvae can be processed into animal and fish feed, or fuel.

Finally, certain companies have begun to use human feces as building material. Blocks of compressed poop can be mixed with ceramic additives and fired into a building material that can be used in homes, flooring, and walkways. You can literally shit bricks.

Urine

At excretion, urine is completely sterile and pathogen-free, making the risk of disease through its use quite low. Urine can be very effective as a component of fertilizer. It contains nitrogen (a constituent in plant structure and in chlorophyll), phosphorus, and potassium. The depletion of the nutrients in soil is a world-wide issue, with dustbowls being created with over-farming. Soil loses fertility and moisture with food consumption, which must absolutely be replenished if economic growth and environmental sustainability are to be preserved. Human urine can help in this replenishment, as it is quite an abundant resource with each person producing 1.0 kg per day, on average.

Urine can also be purified and consumed on a small-scale. (If you're like Bear Grylls you can maybe skip the purifying part). NASA has developed a machine for astronauts to use to recycle their urine into drinking water. There aren't currently many compact systems for urine purification now, but if the technology can be developed, it may be a viable source of water, especially in places or situations where water conservation is crucial.

Lastly, as urine is mostly water, it can be used to generate electricity. Recently, four teenaged girls from Nigeria developed an electrolytic system that could separate the hydrogen from the water in the urine, push it into a generator, and produce 6 hours of electricity per litre.

While one might argue that these uses for urine are not the most efficient, it is undeniable that urine could be put to a better use, rather than being flushed down a toilet to be recycled at a treatment facility.

Humans have spent the last few centuries harvesting almost everything possible from the Earth and its flora and fauna. It's only natural that we've begun to harvest our own 'emissions' for some sort of use.

Tips for Safe Cycling

KEVIN LIANG
4A CHEMICAL

BIKE SAFETY

You can bike anywhere in the Waterloo Region. Bike lanes stretch the majority of University Avenue from Fischer-Hallman to King. Keat's Way, Columbia Street, Westmount Road, Fischer-Hallman Road, Parkside Drive, Phillip Street, to name a few, are all paved with bike lanes with more planned for the future. With complaints of poor GRT service and car ownership prohibitively expensive for students biking is a very attractive option for commuting to campus. The number of occupied bike racks on campus is further evidence of the popularity of cycling to school. Despite these staggering figures, many cyclists in the Kitchener-Waterloo region do not feel safe riding on major roads. This column will help those who cycle regularly boost their confidence the on road and hopefully encourage wary pedestrians to join the cycling community.

New cyclists often opt to ride on the sidewalks, which are designed for pedestrians. This practice is not only frustrating, but also becomes a safety concern for pedestrians, cyclists, and drivers. Sidewalks are simply not designed with for cyclist. Pedestrians are not expecting cyclists coming up behind them. Drivers are not expecting cyclists to enter an intersection from the sidewalk.

The safest place for a cyclist is in the bike lane. This might come as a shock to some people as the physical barrier between 2 tons of metal and 170 lbs of flesh is removed when a cyclist dismounts the curb. The bike lane is where drivers and pedestrians expect cyclists to be. When drives are turning they do not look 10 meters down the sidewalk to see if a bike is coming. They look where a pedestrian would be: right at the intersection. Regardless, intersections are a dangerous place for cyclists. The 'right hook' is when a cyclist going straight through an intersection is cut off by a vehicle turning right. Cyclists must keep an eye on turn signals and read the body language of the vehicles they're coming up behind. Look at their front wheels. Is it turning? Has the driver seen you? Knowing when to proceed straight and when to slow down for the driver will become second nature after enough time on the road.

Cyclists should also ride as close as practicable to the right edge of the road, but must ride far enough from the curb to maintain a straight line while clearing debris, potholes, sewer grates, and parked car doors. Cyclists may occupy any part of the lane when safety warrants it. Never compromise your safety for the convenience of a motorist behind you.

Sometimes cyclists will find that the bike lane is completely block by other obstacles, such as buses or construction. In this case cyclists must 'take the lane.' This is when a cyclist merges into the middle of the traffic lane. To perform this maneuver safely: shoulder check, signal, shoulder check again, and merge when safe to do so. This is completely safe and legal when performed correctly. Taking the lane is also warranted when no bike lane is present and the lane is less than 3 meters across. Riding to the side of narrow streets can be very dangerous as drivers often do not give enough space for the cyclist as they pass. Forcing the driver to change lanes greatly increases the space between cyclist and vehicle.

Inexperienced riders might regard taking the lane as a dangerous and unnecessary solution. The mere act of shoulder checking might scare off new cyclists, swerving during each attempt. I recommend practicing shoulder checking in side streets where traffic is light, first at low speeds, and gradually speeding up when comfortable. Some cyclists use small bike- or helmet-mounted mirrors as a solution. These do help but do not fully replace shoulder checking. Just like in cars, mirrors introduce blind spots and might give cyclist false information about the road's clarity. Shoulder checking is a very valuable skill for the urban cyclist and does not come without practice.

Although it is not required for cyclists over 18 to wear a helmet, it is still highly recommended. I do not see the point of not wearing one. It's like not wearing a seat belt. A very small inconvenience can potentially save your life. I especially seeing helmets hanging from handle bars. It's as if they have the ability to foresee an on-coming accident, move their hand off their handle bars, grab their helmet, put on the helmet, strap it in, and brace for impact all in the split second before they hit the ground. You already own the helmet, it's right there, put it on!

A white light in front and a red light in the back of a bike is required by the City of Waterloo if you are going to be riding between 30 minutes before sunset and 30 minutes after sunrise. Not only does this greatly increase the cyclists' visibility to other motorist, it also improves the cyclists' ability to see the road. There is a $20 fine for anyone caught violating this rule.

A cyclist must follow all the same rules and regulations as other motorists. This includes stopping at stop signs and red lights. Because of the effort for a cyclist to accelerate after a complete stop, it is often debated in the cycling community whether a rolling stop would suffice. I'm not going to suggest the pros and cons here. Just know that there is an $85 fine for each violation.

Many advocates for cycling cite environmental, health, and economic benefits as major proponents to promote cycling as a mode of transportation. However, none of these are the reason I bike. I do it because it is fun, and it sure beats cramming into a crowded bus in the morning.

Drake – Nothing Was the Same

ALEX TOTH
3B CHEMICAL

ALBUM OF THE WEEK

"The one that I needed was Courtney from Hooter's on Peachtree/I always felt like she was the piece to complete me/Now she engaged to be married what's the rush on commitment?/We were going through shit name a couple that isn't." Rap isn't the same as it was ten years ago. Hell, rap isn't the same as it was in 2008, and the main reason for that can be traced back to one person: Aubrey Drake Graham. He took the foundation laid by Kanye West's 808s and Heartbreak and took its ideas to their logical extreme, stripping away almost all notions of what was considered rap's mainstream at that moment. He was sad, wide-eyed, confused and sappy, the exact opposite of what people thought it took to become a rap star. He knew stripper's real names and cared about how they were getting home that night. On his debut album Thank Me Later, the leadoff track ("Fireworks") employed Alicia Keys to sing the chorus of the song, which was about his breakup with Rihanna. And only a track later is "Karaoke," sparse and sung, where he laments about how his fame is causing women to leave him. The second track. On his first album. Now, as Drake releases his third LP, Nothing Was the Same, he's grown more confident with himself, and even more wary of everyone else. With Kanye vacating hip-hop's throne to reside as an allegorical hermit on rap's Mt. Olympus, and Jay-Z seemingly content to coast through every one of his music related ventures, Drake is more than content to swipe the throne that "is for the taking" as he threatened on last year's "Stay Schemin'."

However, that doesn't mean he's lost any of the sensitive, selfish persona he has cultivated since his breakthrough in 2008. Which takes us back to the first line of this review, from the seventh track on NWTS, the gorgeous, Jhene Aiko assisted "From Time." It has all the hallmarks of a Drake, the bitterness, the sadness, the girl's real first name. Yes, there really is a Courtney from Hooters on Peachtree, and this single line made her put all of her social media on lockdown. Drake has done this before ("Cece's/Bria's Interlude") but he's never had such a wide audience for his pettiness. Instead of using his largest album to boast ("Started from the Bottom" nonwithstanding) or surround himself with friends in high places, he throws rocks from his high post at people who have no way to even the score. Does this make him a selfish jerk? Probably. Does that mean it's bad music? Not in any way. Drake and his resident producer Noah "40" Shebib have made some of the most effortlessly beautiful music of any release this year, with Drake sharpening up his rapping skills to keep up. "Tuscan Leather," the album's opener, sees 40 flip a Whitney Houston sample over and over while Drake raps with no chorus for six minutes: "This ain't nothing for the radio/but they still play it though/'Cause it's that new Drizzy Drake/that's just the way it go." Twice through the song, the beat drops out and reinvents itself, effectively making this a three-part suite. The mid-song style changes are pervasive throughout the album, from the next track, "Furthest Thing," to the stunningly melodic bonus track, "Come Thru."

NWTS is an insular album, with Drake and 40 being the only two main contributors. There are nearly no features on the album, and two of them are from little-known R&B prodigies Sampha and Aiko. The other feature on the album is Jay-Z, the only name of note, and he serves little purpose beside having his name on the tracklist. He shows up on the last track "Pound Cake/Paris Morton Music 2" and delivers possibly the worst verse of his career, at one point rhyming "cake" with "cake" innumerable times and another where he compares the colour of his car to the whiteness of Katy Perry's face. Drake absolutely runs him over, and sounds like he isn't even trying at that. While Jay-Z is on the edge of being a has-been Drake "just spent four Ferraris all on a brand new Bugatti and did that shit 'cause it's somethin' to do." He is alone on the top, makes sure he lets everyone knows that no one can touch him.

This brings us back to the songs, and all the underlying signatories which make this a Drake album. Much of the time he isn't even rapping, he's singing, he's talking. He sings about much of the same things as he did on "Karaoke," only this time he deserves to. On "Furthest Thing" he "hate[s] that you don't think I belong to you/just too busy runnin' shit to run home to you." He tries his hand at some bragging, on the eerie and outstanding "Started from the Bottom," as well as "Worst Behaviour." But it doesn't hold up upon close inspection, and the songs work because of 40's outstanding production. The best song on the album may be the second last, the Sampha-assisted "Too Much." Here, Drake is in full rap mode, reminiscing about his path to superstardom and the friend's that he's lost along the way. And then, in the second verse, he goes after his family, how they distanced themselves from him, how is his mother and his uncle have given up on their dreams. It's Drake's most personal song ever, and his most resonant as well. And that, I believe, is the underlying reason Drake has done so well in spite of all the criticism he faces. He creates music that people can relate to; despite the fact that he's more famous than most of us will ever dream of. He's still upset about that girl five years ago; who he thought was the one. He's paranoid, like he's always been, about his inability to form relationships and how his actions ruin them. He makes terrible decisions and is overcome by guilt. He loves his family, and yet they still let him down sometimes. Sometimes, he's on top of the world, and others he can't figure out how to release his demons. He's relatable, complex, selfish, loving and vulnerable. He treats his records like windows into his mind, instead of just putting on a persona. He's done something that very few other rap stars have managed, becoming a bona fide superstar by just being himself.

Aubrey Drake Graham
Drake's new album - Nothing Was the Same

Vinyls - Spinning Back from the Past

VINCE MAGAS
2A MANAGEMENT

HIT REPLAY

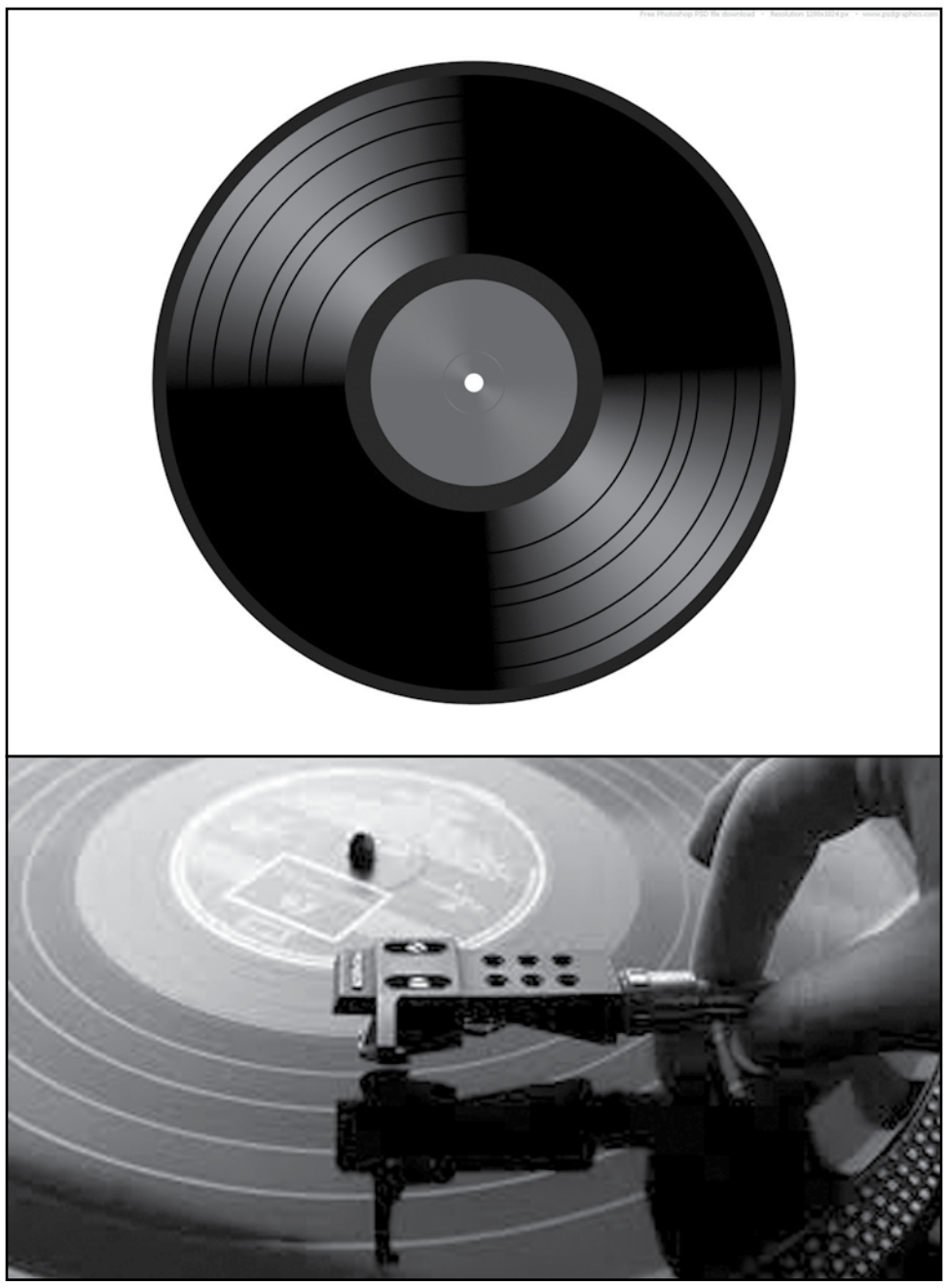
The digital revolution! The finest of revolutions, dominated by "1"'s and "0"'s, a revolution worth speaking of! The only revolution to bring upon pirates of the internet sort, movies of the streaming sort, countless mad vloggers, and best of all music to your fingertips with a click! But wait! What's this? A rising wave of people are getting off their computers and heading to their local music stores to buy large circular objects reminiscent of CDs (Just head out to your local Conestoga Mall HMV and see!). That's right folks, vinyl records have made a glorious return from the past. Analog fans, reminiscent audiophiles, vintage-sound lovers, and hipsters unite! Vinyl records are trending once again!

So what are vinyl records you ask? Commonly known as a "record" or a "vinyl", the name comes from their material polyvinyl chloride. Although the process of how vinyl records are made have changed over time they still have the same basic structure. A vinyl record is a disc (often black in colour) containing a spiral grooved surface, often starting at the edge of the disc and ending at the center. Vinyls vary in diameter, most often found in 12'' (LP or Long-Playing format), 10'' (EP or Extended-Playing Format) or 7'' (Single format), and are played at varying speeds often being either 331/3rpm or 45 rpm.

The earliest forms of vinyl records have existed since the late 19th century, existing alongside their cylindrical cousins the phonograph cylinders. By the turn of the century, vinyl records increased and popularity and ultimately dominated the entertainment market by the late 1920s, proving to be better in quality and reliability than phonograph cylinders as years went by. In the many years that followed, various versions of the vinyl record appeared. Vinyl records of various diameters, play speeds, materials and styles entered the consumer market appealing to a wide variety of audiences. Vinyl records varied tremendously, from vinyls that played from the inside out, coloured vinyls (often depicting its genre), varying – non circular shapes (for example a heart shaped version of the Beatle's single "Love Me Do"), and even vinyl records filled with dyes and coloured fluids. For over 65 years vinyl records controlled the consumer market, and was the main form of music storage.

Even after the introduction of 8-tracks, cassettes and reel-to-reel tapes, vinyl records kept their edge in the market. It was only in the late 80s shortly after the introduction of compact disks (commonly known as CDs) that the vinyl records suddenly dropped in popularity. In addition to being large in comparison to CDs, they also cost more to produce. By the mid-90s vinyl records have faded to obscurity and existed only in the world of collectors, DJs, and analog music enthusiasts.

But wait! Aren't vinyl records back in the game? Yes they are! A few years ago vinyl records began to re-appear due to yet another sudden demand! Vinyl records are once again gaining popularity, especially among indie rock lovers and the like. Many artists nowadays are also opting to release new albums in vinyl format, along with the common CD and digital download (take for example AFI's Burials which is available to pre-order on vinyl!). Vinyl records in recent years have definitely made a significant come back with sales nearly doubling in the last three years. Only time will tell if they will playback their glory days into the 21st century!



Fred Mills/Jonah Miller

After largely being obsoleted by CDs in the Eighties, recently Vinyl has started to make a resurgence in the market.

Top Wayz to Handle Celebrity

WADE WILSON & EDWARD BLAKE
4Z HANDSOMENESS

With interest in Wadeward at a fever pitch, your mentors in the media have been having trouble dealing with the trials and tribulations of fame: making us think things over, having to swallow being let loose, putting us where things are hollow, et cetera. We went down the usual path of destruction: drugs, meaningless sex, and selling out were our only salvation. Fortunately, we have since learned to have more inner peace and serenity than Steven Seagal, and we hope to share these secrets with our famous friends in the AMA club. For you nobodies (i.e. losers who are about to stop reading), you can stop reading at this point, this week's article is for Barack and company: our list of the top ways to handle celebrity.

Be Direct with the Paparazzi

When you're Topz-famous, everyone wants a piece of you. We have been dealing with incessant attempts to call us for interviews, receiving e-mails, and even texts on our personal numbers asking how we're doing. The worst is how the press has managed to wrangle our mothers into pressing us for juicy gossip. We dread the headlines that will no doubt surface shortly about Wade and Edward going home for Thanksgiving and still not having girlfriends. Or take the other day when we were at Campus Pizza this joker was all like "hey what would you like on your pizza, sir?" and we're all like "DUDE! I'm just trying live my life! I'll autograph a receipt for you but then you gotta get outta my grill. Also, to answer your goddamn question, halal beef and pepperoni, please." The worst, however, are the shutterbugs. Just the other day, we were out in the park, doing our thing: spanking the monkey, training it to be better at helping the disabled. After that we were jerking it, because we're big fans of Jamaican cuisine. But the second we started masturbating low and behold, all the paparazzi came out of nowhere to take pictures and calling their bosses at that tabloid trashrag "the police". After we graduate, we're moving to Sweden.

Join a Hip Religion

An important element to maintaining inner peace when famous is religion. You need people to think you're cool and deep by appearing spiritual, but what religion do you join? Unless you want to be a Mel Gibson we don't recommend joining one of the mainstream organizations. Instead, you need to keep it fresh. Buddhism may have cut it in the 90s and early 00s for Richard Gere and Lisa Simpson, but that scene has become way too mainstream. You could become Muhammad Ali-cool by joining a radical, segregationist, anti-Semitic, black-supremacist "sect" of Islam which actual Islam has completely distanced itself from. But even Louis Farrakhan knows where the true cool lies: through the adoption of Dianetics and teachings of L. Ron Hubbard. Yes, many of our friends in the celebrity community have adopted the truth of Scientology because there is nothing cooler than a … you know what, there is literally nothing more than can be said about Scientology than what you've already heard. Unless you haven't heard Louis Farrakhan, who said that through Scientology "You can still be a Christian; you just won't be a devil Christian. You'll still be a Jew, but you won't be a satanic Jew!" Of course, here at Topz (With a Z) we like to stay ahead of the curve. Yes, the cool religion we are adherents of was founded by a great man named Jim Jones. It involves an awesome vacation and free juice! Oh yeeaahhh!

Keep the Groupies at Bay

Before we were famous, it seemed that everywhere we looked there were just a bunch of dudes. All the pretty ladies would hide their faces and turn away in disgust. But now that we've arrived, all the pretty ladies hide their faces and turn away in shyness. Yes, it seems that not a night goes by where the only people courageous enough to hang out with us are our famous friends (i.e. each other). Although, you should see the way that women are all over us the second they see us pull out the young money cash money, then give it to them to give to their friend Pimp (weird name, we think it's a Korean thing).

Spend Money

Being famous is difficult, and sometimes the only way to relax is to spend money. But after tuition, rent, groceries, marijuana (#420bluntz), Phil's Grandson's Place, and mugger, you start having a hard time on where else to spend those fat stacks. The secret is extravagance. We only buy our clothes imported from exotic countries like Bangladesh, Sri Lanka, and Thailand. Next time you feel like Panda King, treat your inner gourmand to Mr. Panino instead. This extends to the social scene as well: you can't be caught cheaping out when courting the ladies. This is why we stopped using chatroulette and exclusively call phone lines advertised on late-night TV. Just don't forget to record the call, so you can listen to it again when you're out of minutes on your phone.

Say NO to Drugs

When you're a bigshot bollystyle celebrity drugs become a constant temptation. Just this morning, someone in class offered us an acetaminophen pill, or a "tolly" as its known on the streets. It's frankly astounding how casually people are about popping a tolly around you once you're famous. They assume you're just another coked out starlet like Meryl Streep or Helen Mirren. Now we're no stranger to wild nights. We've had enough Bacardi Breezers over the years that we have to take off our shoes to count them. In fact, we even smoked a marijuana cigarette once. But now that we're role models, these days are behind us. Yes, all Wade and Edward need to have a good time are restful sleeps, a healthy diet, and a morning pick-me-up with a big cup of fresh Colombian cocaine.

Unless you are as famous as us, don't expect to need to use all these tips. Don't be jealous, it's a hard life that we wouldn't wish on our worst enemy (especially when the Iron Warrior censors your last fucking issue), because they don't deserve it. Don't get caught up in your lack of stardom, all good things must come to an end eventually ... actually fame is the exception. I'm going to live forever and learn how to fly high.

Sudoku

#2013-12

ALEXANDER LEE
2A NANOTECHNOLOGY

Hard

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

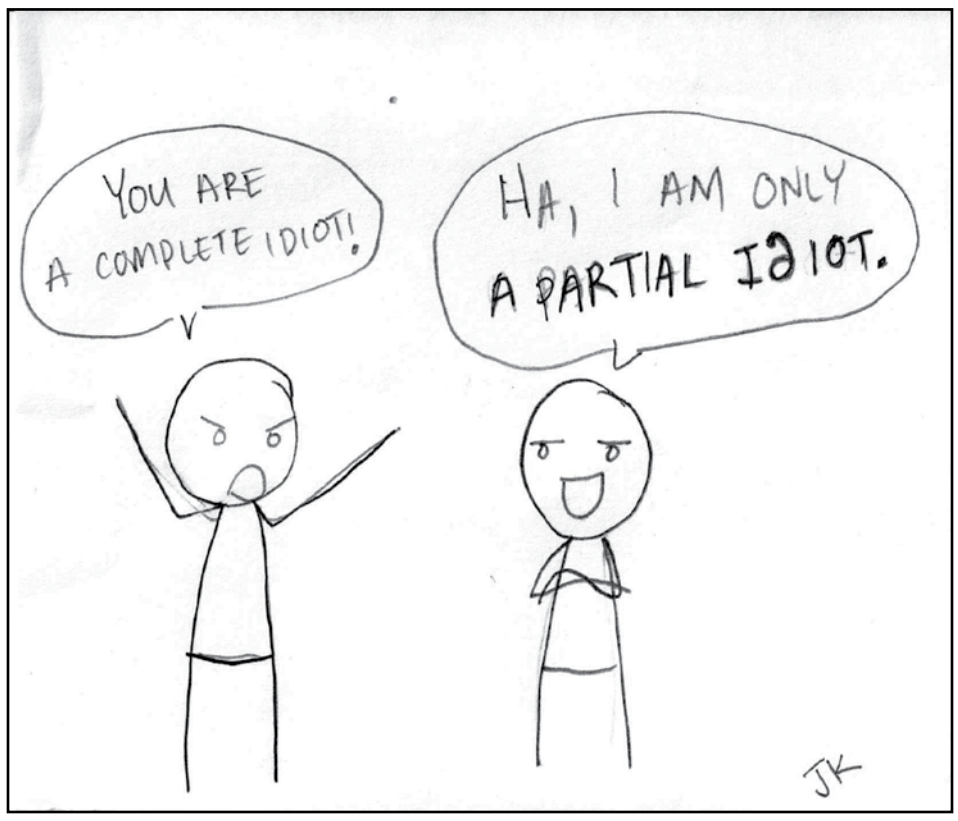
Very Hard

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

Comics

The Pig's name is Jesse Oinkman

JESSICA KEUNG
2A CIVIL



Jessica Keung

Jessica Keung

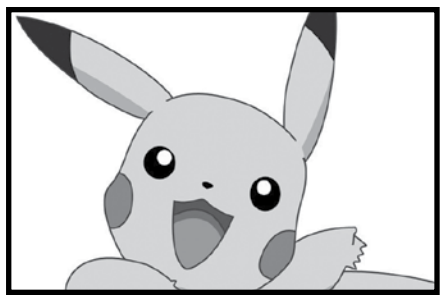
THE IRON INQUISITION

Alex Lee, 2A Nanotechnology

"What would you do if it were your last day on Earth?"

"I would go skydiving without a parachute... or pants...or clothes."
Matt Weston, 2A ECE

"I Would Cry"
Andrew Choi, 2B Mechatronics



"I would jump off a cliff."
Li Yen Yang, 2B Mechatronics

"Jump off a plane."
Dennis Liu, 2A Nanotechnology

"I would prepare my trip to SPACE!!"
Jessica Keung, 2A Civil

"Save the world from greed and misery and throw a dance party with balloons."
Ewelina Luczko, 4A Environmental