Note: This document is hosted here for archival purposes only. It does not necessarily represent the values of the Iron Warrior or Waterloo Engineering Society in the present day.

THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY

VOLUME 28 ISSUE 8 | WEDNESDAY, JUNE 27, 2007

Point - Counterpoint: Should Canada Allow Two-Tier Healthcare?

Page 5

http://iwarrior.uwaterloo.ca

$150M ENGINEERING EXPANSION TO BEGIN NEXT YEAR

ERIC MIGICOVSKY AND BAHMAN HADJI
3A SYSTEMS DESIGN AND 4A COMPUTER

"Hey, do you want to meet later, around noon at the Student Design Centre in E5?"

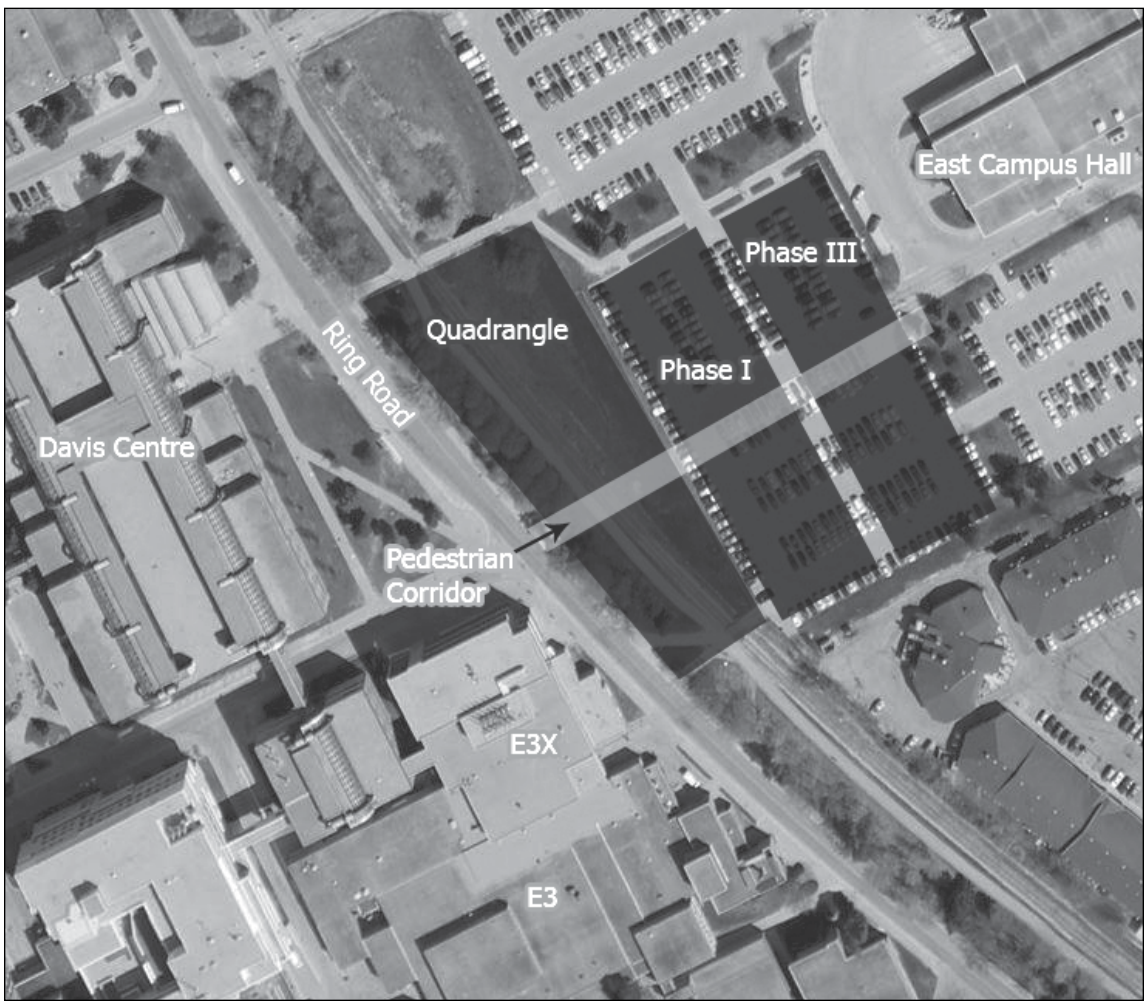
That is something students could be uttering just three years from now. New buildings are going up all around campus, and the Faculty of Engineering has decided not to be left out. Over the next four years, assuming the approval process goes as expected, construction will begin on three new buildings in addition to the planned Quantum-Nano building. An estimated 150 million dollars will be spent on the expansion project, which will add the much-needed floor space to help fulfill the Faculty of Engineering's Vision 2010 plan.

The project will be done in three phases, one building at a time. The first building, to be called Engineering 5, was approved by the University of Waterloo Board of Governors Building & Properties Committee this past April after having gotten the initial required approvals in March. Construction is scheduled to begin in early 2008 with a target completion date of January 2010.

The Faculty hired Dr. Ron Venter, former Vice-Provost at the University of Toronto, as an independent consultant. His mandate was to perform a study of the Faculty's current and future spatial requirements against the Council of Ontario Universities' space standard, which formulaically quantifies the amount of space required based on the number of students, faculty, and staff. At the moment, Engineering has access to roughly 38,000 net assignable square metres (nasms) of space. The unit nasm describes usable space, such as labs, lecture halls, and offices, but excludes space like corridors, walls, and washrooms. All assessment was completed without taking the Nanotechnology program into consideration, since the needs of the program will be met by their new building to be situated north of the Biology 2 building.

The Iron Warrior recently had a chance to sit down with Dr. Venter and Dean's Office Operations Manager Sue Gooding to find out more about how the Faculty developed this massive construction plan, and get a general idea of what campus will look like after the plan is completed.

In order to fill demand and satisfy the Faculty's Vision 2010 plan, the study concluded that Engineering would realistically need to add 22,000 nasm, bringing its total space up to 60,000 nasm. For comparison, E2 contains 7900 nasm while E3 (excluding E3X) has 7400 nasm spread over a large base footprint.



A rendering showing the approximate look of the east side of campus after the completion of the three-phase plan. Note that the link from Phase I to E3 and the link between Phase I and Phase III have been omitted.

Around Engineering, one of the obvious problems is the sheer volume of corridors necessary to link the various generations of buildings together. It takes a long time to navigate between classes, offices, and libraries. "Engineering Buildings on the Waterloo

See BUILDINGS on Page 4

Waterloo Hosts National Nanotechnology Conference

YUSUF BISMILLA AND OM PATANGE
2B NANOTECHNOLOGY

The University of Waterloo hosted the fourth annual NanoForum Canada for three days from June 18th to June 20th. Professor Tong Leung from the Department of Chemistry along with the National Institute of Nanotechnology (NINT) organized the conference. Attendees consisted of government officials, researchers from various universities, as well as national research organizations.

The various individuals presented their latest work through lectures and poster sessions to discuss nanotechnology. Nano is often defined as a technology consisting of sub-100nm (1nm is 10^{-9} m) features which exploit phenomena occurring due to the size scale.

Among these presentations was Dr. Carolyn Ren from the Department of Mechanical and Mechatronics Engineering here at the University of Waterloo. Her lecture, entitled "Transport Phenomena in Micro- and Nanofluidic-based Lab-on-a-Chip Devices", detailed the effects on liquids when forced through micro- and nano-sized channels.

The aim is to develop a palm-sized chip which combines several biochemical assays; in other words, a lab-on-a-chip. The talk outlined the progress on modeling microfluidic channels and issues related to pushing fluid through a channel. At such small diameters, enormous amounts of pressure are required.

See PRESENTATIONS on Page 12

Attendees mingle at Tuesday's poster session at the Davis Centre.

Letter from the Editor

The Fascinating World of Academia

BAHMAN HADJI
EDITOR-IN-CHIEF

I've become very interested in the world of academia recently. Pursuing further education was not on my mind as I began my undergraduate studies, but after four years, I've come to learn that the more you learn about your field, the more you become interested in it. Ironically, as you learn more, you realize that you don't know all that much. So, the prospect of doing research at the graduate level seems all the more exciting to me as I start taking my first few actually technical courses.

I had a chance to attend a Ph.D. thesis defence (open to the public and routinely advertised in the Daily Bulletin, bulletin.uwaterloo.ca) for the first time on June 19th. When I told a friend of mine that I was going to a Ph.D. defence, he jokingly wondered what is actually involved: "Do they put the thesis on a table and have the candidate fight off the professors trying to capture it?" Although humorous, what he said was a surprisingly well-fitting analogy to what happens at a defence.

Attaining a Ph.D. is no easy feat. A person with a Ph.D. degree is considered a Doctor of Philosophy, the title of those who complete the highest academic degree possible. The prerequisite is the completion of a master's degree in a similar field, which itself is a postgraduate degree that takes from one to three years and requires both coursework and research culminating in a thesis. The master's degree thesis, however, can be on work that has already been done, and the thesis presentation is not nearly as grueling. The requirements for a Ph.D. degree, however, are more staggering: It usually takes between four to six years *after* the completion of your master's to complete your Ph.D., mostly due to the more specialized research, which must be independent, original work. In Engineering, you usually have to have a physical result to show for it (like a prototype proving the idea).

The turning point for most Ph.D. students is the Comprehensive Examination. At the Waterloo ECE Department, the Comp, as it's more commonly called, comes no later than sixteen months after registration in the Ph.D. program. Prior to the Comp, the student is known as a Ph.D. student, having dedicated their time so far to completing the coursework requirements for the degree and coming up with a thesis proposal. The Comp Committee is supposed to examine the thesis proposal and decide whether to approve it, and if the student has enough technical background to complete the degree.

Once a student has passed the Comp, they officially get the title of Ph.D. candidate. Their remaining years will be spent doing research, usually going through several rounds of prototyping and ultimately documenting their work in a final Ph.D. thesis, the size of which is usually hundreds of pages.

The Ph.D. Committee is made up of five members: three faculty members from within the candidate's department (one being the candidate's thesis supervisor), one faculty member outside of the candidate's department, and one external examiner, who is usually a faculty member at another university who specializes in the field. The Ph.D. candidate on June 19th was David Rennie, a friend and former TA of mine for ECE 332, who also got his undergraduate (Electrical '01) and master's degrees from Waterloo. His area of research was analog mixed-signal design, focusing on high-speed clock and data recovery circuits.

The internal members of Dave's Committee were Professor Manoj Sachdev, his supervisor, Professor Raafat Mansour, and Dean Adel Sedra (who is also considered a Professor in the ECE Department). The internal-external member was Professor J.D.D. Martin from the Department of Physics, while the external examiner was Dr. Tadeusz Kwasniewski, Professor at the Carleton University Department of Electronics, whose specialty includes clock and data recovery circuitry – the exact same area as Dave's thesis.

The defence started at 9:30 am and was attended by one of Dave's former undergraduate classmates and several other graduate students from within the Department. Dave began with a 30-minute presentation which provided the motivation for his work, what he encountered during his research, and his findings and conclusions. He had had six different chips sent to be fabricated, which is usual because a candidate goes through several iterations of an idea before getting it to work. The focal points of his research were two different types of on-chip calibration circuits.

While I was able to understand some of the material presented, the more interesting part of the defence began after the presentation. The Committee was allowed to have the first of two rounds of questions, starting with Dr. Kwasniewski. He started off with a compliment saying he enjoyed reading the thesis, after which he began a critical analysis lasting 45 minutes. The questions that he asked ranged from doubting the uniqueness of the research to other related material. To me, it was very tense to be in the room and watch as someone's years of work was unrelentingly picked apart.

After Dr. Kwasniewski was done, Professor Martin, Professor Mansour, and Dean Sedra followed, each keeping it fairly short, with more specific questions pertaining more to the thesis document itself. Professor Sachdev then briefly took his turn. The second round of questioning followed and took a lot less time, with Dr. Kwasniewski focusing more on the document over issues like captions not being descriptive enough and references not being consistent. After the Committee was done, the floor was opened up to the remaining observing audience for questions. Then, after almost three hours, the audience and the candidate were asked to leave the room so the Committee could make a decision.

I asked Dave while we were waiting outside what would happen if they outright rejected his thesis. His joking response was that the general reaction from Ph.D. students who are rejected (who, apparently, don't really exist, as the Comp and the preparatory Seminar weed out weak candidates) would be to jump through the window on the third floor of EIT. He also mentioned that overall, Dr. Kwasniewski was actually pretty fair with him, and could have been a lot more challenging.

Dave was called back in while we waited outside, shortly after which Committee members began to leave the room. Dave eventually came out to tell us that he passed while only being asked to make minor revisions to his thesis (the type that take a week – the worst case scenario are revisions that require more research which can take up to an additional year). Dave, myself, and three others went to the Graduate House afterward for lunch over a celebratory bottle of champagne (free on the day of a candidate's defence). For Dave, the day capped off almost eleven years of academics at the University of Waterloo (six of which were spent doing grad school).

It was really fascinating to be present at the Ph.D. defence, not only because it was a friend's accomplishment and the material was interesting, but also because of the process it involved. I definitely recommend attending a defence while you are here, especially if you are interested in attending graduate school.

Corrections

Jeffrey Aho's opinion piece on Greek organizations in the June 6 issue stated that Sigma Chi had organized the Out of the Cold fundraiser. In fact, while Sigma Chi members participated in the event, they were not the main organizers.

David Morris's article about the PDEng Student Forum in the June 6 issue erroneously stated that UW-ACE lacks audio and video components. The UW-ACE system can accommodate audio and video content within its courses, at the discretion of the course developer.

The Iron Warrior regrets these errors.

CPH Construction May Disrupt First-Years

THE IRON WARRIOR
NEWS BUREAU

As *The Iron Warrior* reported last month, The Multimedia Lab (CPH 1346), which is home to many first-year classes, remains closed for the Spring term due to the planned renovations to add a second story on top of it. The new space will accommodate more office space for faculty members and graduate students as well as a conference room to meet the space needs of the growing Department of Management Sciences. The Department is currently based on the fourth floor of Carl Pollock Hall and is expecting its first class of undergraduate students in the Fall with the start of the Management Engineering program.

The addition of the new space was taken into account when the Lab was initially built in 2000 in what was the CPH quadrangle, meaning the extra structural support already existed when it opened in 2001. The June 5 University of Waterloo Board of Governors meeting minutes indicate that the addition is not due to be complete until January 2008. However, this date refers to the completion of the entire construction project, and would not mean that the Lab itself would be unavailable for that whole duration.

According to the Office of the Dean of Engineering, during the months of July and August, the preparatory work on the roof will be finished and Engineering Computing will have the 120 new computers into the Lab, loaded and ready for use by the beginning of Orientation Week 2007. Construction would then get underway to build the CPH addition above the Lab, which would be of minimal disturbance – mostly noise – to classes held underneath in the Fall term.

THE IRON WARRIOR

The Newspaper of the University of Waterloo Engineering Society

Editor-in-Chief
Bahman Hadji

Assistant Editors
Jaclyn Sharpe
David Morris

Layout Editor
Jaclyn Sharpe

Copy Editor
Harout Manougian

Photo Editor
Mike Seliske

Advertising Manager
Jaclyn Sharpe

Circulation Manager
Alec Merkt-Caprile

Web Editor
Faraz Syed

Staff Writers
Jeffrey Aho
Rory Arnold
Chris Beneteau
Yusuf Bismilla
Eric Blondeel
Devin Cass
Kevin Cedrone
Joseph Collins
Dane Corneil
Yuvraj Goel
Ali Kamalipour
LowRider
Harout Manougian
Angus McQuarrie
Eric Migicovsky
Daniel Miller
David Morris
Andrea Murphy
Evan Murphy
Colin Oliver
Om Patange
Mike Seliske
Jay Shah
Jaclyn Sharpe
Ruth-Anne Vanderwater

Contributors
Brandon DeHart
Tyler Gale
Mike Giannikouris
Hilary Lockie
Levi McCulloch
Kiri Neufeglise
Todd Radigan
Michael Sue-Kam-Ling

Off-Stream Editor-in-Chief
Faraz Syed

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

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

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

Mail should be addressed to The Iron Warrior, Engineering Society, CPH 1327, University of Waterloo, Waterloo, Ontario, N2L 3G1. Our phone number is (519) 888-4567 x32693. Our fax number is (519) 725-4872. E-mail can be sent to iwarrior@engmail.uwaterloo.ca

PDEng Failures to Cause Delay of Graduation

Affected Students Receive Letters from Associate Dean Loucks

JACLYN SHARPE
3A MECHANICAL

Largely unnoticed by most students, a defining moment in the history of the Professional Development for Engineering Students program (PDEng) has occurred. For the first time, students are receiving letters from Wayne Loucks, the Associate Dean of Undergraduate Studies, informing them that they will not be able to graduate with the class with which they are currently studying because they cannot meet the PDEng degree requirements by 4B.

All students admitted who began their studies in the Fall of 2004 or later must complete five PDEng courses as part of their graduation requirements. The courses are to be completed within the six available work terms, and cannot be taken while on a study term.

The affected students are all part of the first stream of students to take PDEng courses, the 4-stream graduating class of 2009 (currently in 3A). These students have yet to complete the first PDEng course, PDEng 15. It is possible to take as many as two PDEng courses concurrently, but the 3A class only has two work terms left, meaning students can only finish at most four of the five required courses before 4B. This is the first term that any students have been far enough along in the program to have an impact on their graduation.

Only a handful of students have received letters this term; however, the number of students affected is expected to increase. Any of the 8-stream students from the class of 2009 (currently off-stream after having completed 3A) who do not complete PDEng 15 this term will find themselves in the same situation when they return in the Fall. Also, after the Fall work term, any 4-stream '09 students who have not passed the first three courses will be unable to meet graduation requirements in their one remaining work term.

A possible cause of the failures is that many students in the first wave of PDEng refused to believe that the Faculty of Engineering would stand behind the new program and enforce it as a graduation requirement, and thus were not concerned about putting in the effort to try passing. The administration's stance on the issue has been unwavering, however, and students cannot claim to have been uninformed of the consequences.

Though the PDEng administration has taken steps to try to contact and work with students, Associate Director Jeremy Steffler said that some students remained unresponsive to emails, leaving them unable to offer any assistance. He stressed that no students who put in an honest effort from the beginning to meet PDEng requirements should be in this situation, as the PDEng administration has been dedicated to helping students who need extra help to complete the courses successfully.

Students who have fallen behind in PDEng can try to catch up by getting a course overload form by contacting the PDEng administration, which allows two courses to be taken on a work term as long as one is a repeated course. Student who would like to try this, however, must keep the following in mind: If you thought taking one PDEng course was tough, you won't like taking two at once. The vast majority of students who attempt two courses end up failing one or both, according to Steffler.

For more information on the PDEng program, visit www.pdeng.uwaterloo.ca.

POETS Patio Gets New Awning

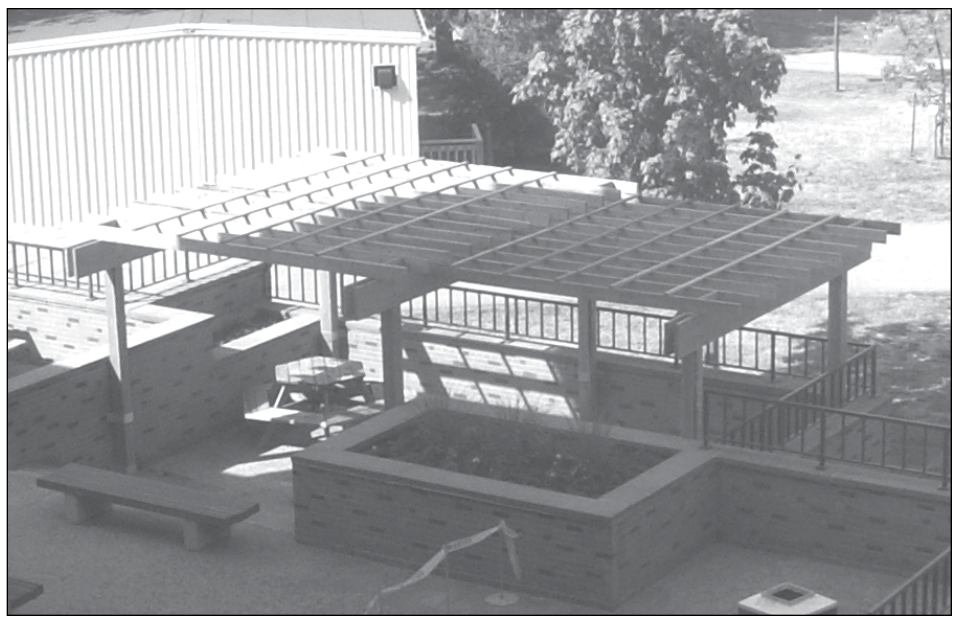
MIKE SELISKE
1B COMPUTER

The POETS patio is a little cooler these days, both in its appearance and its actual temperature, due to the addition of a large cedar awning constructed last week. The awning is the result of the graduating class of 2004 graduation gift and was chosen due to the high traffic of Engineering students through POETS and the benefit they will receive from more shade on the patio.

As a tradition, each year the outgoing Graduating Committee donates a gift to be enjoyed by the future Waterloo Engineering students in ways such as entertainment, building improvements, or upgraded technology. Most gifts are implemented within a year or two of the class's graduation, but the proper disposal of asbestos from the second floor of Carl Pollock Hall and the removal of the portables outside POETS, there as a result of the temporarily lost space, delayed the 2004 gift until this Spring term. Since the building of such structures must be handled by the UW Plant Operations, once the request is made it is in the University's hands to get the project done, which sometimes takes longer than expected.

Previous years have made significant improvements to POETS, such as motorized blinds donated by the 2005 class and a new announcement TV, POETS projector, and external hard drive donated by GradComm 2006. The 2007 gift is still being decided on but it is sure to be a great addition to Waterloo Engineering.

The POETS awning will be a welcome addition to the Engineering students in school during the summer and makes the POETS patio the place to be in these hot months.



The awning donated by the class of 2004 casts shade on the POETS patio.

Sedra Considered for Reappointment

Dean of Engineering Nominating Committee Report

LEVI MCCULLOCH
3A MECHATRONICS

The Dean of Engineering Nominating Committee has been formed, comprised of faculty, staff, and students. Your graduate and undergraduate student representatives are Frederic Bosche (fbosche@engmail) and myself (lrmccull@engmail) respectively. The current Dean, Adel Sedra, whose first term comes to an end next June, is being considered for reappointment. The Committee would like to hear your comments on his possible reappointment or the deanship in general by July 13th.

My hope is that our next Dean (whether Dean Sedra is reappointed or a new Dean is chosen) will continue to lead the Faculty as a role model and inspire the undergraduate students to strive for the ideals the profession of engineering demands us to meet, while maintaining a sense of humour and congeniality.

So take out the pen and paper and grab me in the hallway, or e-mail me and send me your input. What are your thoughts of Dr. Sedra's deanship? What characteristics do you think make for a good Dean of Engineering? What characteristics do you think make for a bad Dean? I'm your voice and I need things to say. Often within the levels of bureaucracy, the direct feedback from students can get filtered, so think of me as your band-pass filter focused on making your feedback get amplified and heard for this big decision that needs to be made!

Student Design Centre Planned

BUILDINGS
Continued from Page 1

campus appear to sprawl with too large a low-rise component. As new structures and add-ons have materialized a stacked feeling has been created; while the buildings are connected together, these links are often inconvenient for pedestrian traffic. I call this the corridor syndrome," explained Dr. Venter. "In order to limit this feeling, future buildings should not just be additions to existing buildings, but entirely new structures that make good use of space and provide for an enhanced Engineering identity to benefit the student experience."

While the development of new space is the prime objective, this expansion should also allow for the consolidation of each department's administrative services and student support, so that each one is easily identified and has a defined presence within the complex of Engineering buildings. Only the Department of Chemical Engineering is essentially consolidated in one building, namely DWE, which was the first Engineering building built on the current campus to house the first Engineering discipline. The rest of the departments, subsequently introduced, are scattered through E2, E3, CPH, DC, and EIT, and do not have an easy roadmap from parking lots to the respective Chairs' offices, causing difficulty for visitors. "Even when you are visiting ECE in the new and attractive EIT Building, the first thing you encounter when you walk into the building is a dinosaur!" commented Dr. Venter, referring to the fact that part of ECE resides on the top two floors of the Centre for Environmental and Information Technology (EIT) building, shared with the Faculty of Science's Earth Sciences Department and their museum on the ground floor. According to Dean of Engineering Adel Sedra, the new space will be divided up among some departments, but there will be a domino effect where vacated space will be renovated and distributed as well. The Chairs of each department have worked with the Dean to make a plan for their department, having been given the option of moving into these new buildings or taking over space left by other departments moving out.

The overarching plan calls for three major buildings, each with a budget of some $45-50 million, to be constructed in three phases. Due to the lack of space within Ring Road, it has become necessary to begin expanding outward. Consideration was given to North Campus and the parking lots south of University Avenue, but the choice was finally made to develop eastward. Parking Lot B, between East Campus Hall and the Davis Centre, will play host to two of the new buildings, which will be built in Phase I and Phase III. The second building, however, will be located inside Ring Road. The concept is still in development, but it will be built in close proximity to DWE, and may be located partly underground between DWE and RCH, and built up from there, with a possible link to Physics and proximity to the Tatham Centre. The Board of Governors directly selected Shore, Tilbe, Irwin & Partners as the primary architects of the three-phase plan. Their work includes EIT, as well as many other buildings for universities and colleges across Ontario.

The ideal timeline for the entire three-phase project calls for a building to be completed every year starting in 2010, with E5 opening in January 2010, the Phase II building in September 2011, and the Phase III building in December 2012.

Phase I (Engineering 5):

This phase of construction will be in the form of a 6-storey building, named E5, in what is now Parking Lot B. The plans call for a building running north-south and parallel to the train tracks, situated immediately north of the University Plaza. The first two floors of the building will comprise the ground floor plus a mezzanine area, featuring public spaces and a 1,900 nasm "Student Design Centre". This area will serve as a lab and workshop space for student teams and groups, as well providing space to showcase the achievements of past designs. The remaining four floors will be split: The Electrical and Computer Engineering Department will get two floors, while the Mechanical and Mechatronics Engineering and Systems Design Engineering Departments will get one floor each. Departmental space will consist of offices for professors, faculty members, graduate students, research laboratories, meeting rooms, and potential undergraduate teaching and lab space. The Centre for Intelligent Antenna and Radio Systems, a facility for leading-edge electromagnetic research, is also planned for the ground floor. It will feature an RF anechoic chamber (a room designed to suppress reflected electromagnetic waves) and will be funded partly by a grant from the Canada Foundation for Innovation.

The "biggest headache" of the plan, according to Venter, revolves around how to sensibly and attractively connect E5 back to campus. "It would have been amazing to link to CPH [at the north wing of the third floor], but unfortunately, that link is too far architecturally." Instead, an overhead walkway from E5 to E3 will bridge the gap over the railroad track. The walkway must be high enough to allow a train to clear, so it must be at the third or fourth floor level. However, the nonexistence of a corresponding third or fourth floor in E3 makes this an architectural challenge, with a tower and elevator combination being one possible solution.

Phase I has been approved by the UW Board of Governors Buildings & Properties Committee. The cost of this phase was estimated at $48 million, funded through a variety of sources including $18 million from the Province of Ontario for graduate enrollment, and $12 million from the University's operating income. $13 million is also hoped to be raised through fundraising efforts from alumni and other contributors. The Waterloo Engineering Endowment Foundation is also expected to contribute a large gift towards this building as part of their 10 million dollar principal milestone celebration and due to its focus on the student teams.

E5 will have a pedestrian corridor through the ground floors in the centre hopefully connecting directly to the service roadway to the south of the Davis Centre, thus serving as the new eastern gateway to campus. A beautiful quad is also planned in the future for the area between E5 and DC, which the plan hopes will be a new central meeting area for students from all faculties. The existing water drainage system next to the train tracks across from DC has the potential for being turned into a pond in the middle of this meeting area.

Phase II:

The second phase of the Engineering expansion plan seeks to provide new space resources for the Chemical Engineering Department and administrative space for the Dean's Office, as well as other University activities under consideration. This building will be situated inside Ring Road, in close proximity to DWE and RCH. Dr. Venter suggested that the tunnel linking those two buildings be used to access additional underground classrooms adjacent to RCH, with the potential for placing Phase II directly above, possibly even connected to Physics or the Tatham Centre. Assuredly, the focus of this building would be to address the needs of Chemical Engineering and Faculty administration. However, due to its central location, this building should also house multi-use classrooms similar to RCH, as noted above.

Loss of greenspace could possibly develop as an issue with this location. The minutes from the UW Board of Governors meeting on April 3rd reflect this potential problem, stating that one Governor was unhappy. The presenters' response was that capital expansion is necessary to support growth and that UW is working with Urban Strategies Inc., the architectural planning firm involved with this project that also worked on the 1992 Campus Master Plan, to improve quadrangles, making them more pedestrian-friendly and with a better sense of green space.

Phase II has not been approved yet, but will be put forward to the Board as construction begins on Engineering 5.

Phase III:

The final building called for will be constructed just to the east of what will be E5, completing the eastern expansion of the University and filling Parking Lot B. Less details are known about this development other than the fact that it will be linked to E5, and will be almost identical in structure (six storeys) to its twin building, except for the student design centre and the anechoic chamber. It is anticipated that the departments occupying E5, ECE, MME, and SYDE, will expand over to the adjacent floors in the Phase III building after it is completed.

When asked if the new buildings will mirror or be styled in the image of any current structures on campus, Dr. Venter noted: "There are no two buildings [on campus] that really resemble each other. If you go to Queen's, all the buildings are stone. . . . At Waterloo, it's too late to try to make everything look the same, but that is a strength. The challenge is to make sure everything flows, fits in, and is consistent with the overall campus plan and the associated landscaping, so that you can say 'that looks interesting with good functionality'. So, clearly the buildings will look different." In order to preserve greenspace on campus, designs will increasingly "look skyward", and the two buildings outside Ring Road will be in the form of multi-storey structures.

Questions were also raised by students interested in the potential for creating 'green', environmentally-friendly buildings; specifically, whether or not the new buildings would aim for a Leadership in Energy and Environmental Design rating. A LEED rating indicates that measures such as garden roofs, eco-friendly toilets, and solar panels have been implemented. Dr. Venter mentioned that it would be infeasible to fully pursue a LEED certificate because studies have shown that in Canada, due to cheaper energy in comparison to Europe, it would take an extremely long time span to recoup any initial costs. "The buildings will benefit from passive solar technologies and will be green-friendly, handicap-friendly, and student-friendly; we will seek to shadow a silver LEED specification but will not formally seek the LEED certification."

If all goes well, this means that in six years the Faculty of Engineering could come close to doubling in physical size as a result of this expansion plan and the Quantum-Nano building. This will provide some much-needed breathing room, with the the Faculty's constant growth and its increase in enrollment as a result of the new undergraduate programs that have been created over the past six years.

Dean Sedra on State of PDEng, Love for Teaching, Future Plans

BAHMAN HADJI
4A COMPUTER

I had the opportunity to interview Dean of Engineering Adel Sedra last month for an exclusive two-part feature in *The Iron Warrior* on his deanship. The first part appeared in the June 4 issue. In the conclusion, Dean Sedra gives his thoughts on the state of the Professional Development for Engineering Students program (PDEng), his love for teaching, his plans for the future, and this newspaper.

PDEng was introduced as an Engineering undergraduate degree requirement starting with students admitted in 2004. The program calls for students to complete a total of five pass or fail courses during their six co-op work terms before graduation in order to develop the professional skills that engineering students need. It aims to improve communication skills, foster leadership abilities, and promote professional ethics. Many students agree with the Dean's view that the goals of PDEng are noble. But the program has been criticized by some students as having been rushed and inadequately planned, especially for the inaugural class, now in their 3A term.

Sedra expressed the fact that the program is run in a way so that students can be reached anywhere on the work term and can use the workplace as a "living laboratory". But he is mindful of the complaints about students being overworked. "I remain very concerned about the amount of work that students have to do," he emphasized. "The idea is that students should not be spending more than one evening a week on PDEng." The relatively high failure rate has also been concerning to the Dean. "You shouldn't need to do a lot. It's a pass or fail. We didn't want students to spend time trying to get 96%. The idea was to do the exercises and get the satisfactory answer."

Whether the average student spends more than one evening a week on PDEng is unclear, making it difficult to judge if the problem is widespread. "We get contradictory feedback," the Dean explained. "We survey the students, and we find that it's not bad overall. But then we get individuals complaining that they're spending a lot more time."

While he fully supports the program, the Dean's focus is on making sure it not overbearing for students. "It should be no more than about an evening a week, and if it's more, we should fix it," he said. Part of the problem is that PDEng was an innovative program, so there were no textbooks from which to teach. The material was developed and revised as feedback came in from the program's outside mentors. Delivering an entire course online is another complication that Sedra recognized.

"There have been some difficulties putting it in place," Sedra stated. "We are now at the time when we will do a review of the program and try to improve and see where there are rough edges." The review that the Dean is about to commission had been planned anyway because PDEng is a new program and the last course in its sequence will be taught for the first time this coming Fall.

Since his arrival at Waterloo, Dean Sedra has taught a third-year ECE course on microelectronic circuits in the Winter term, this past term being his fourth time. When asked about the difficulties of teaching while being the Dean, Sedra joked that the challenge is more for his Administrative Assistant, Linda Lyman, who has to keep him free for three hours every week.

"I personally love it and get a tremendous

See TEACHING on Page 7

Should Canada Allow Two-Tier Healthcare?

Point

RORY ARNOLD
3A MECHANICAL

Imagine your doctor just told you that you will need cataract surgery. "No big problem," you think to yourself, "It's only a 45-minute surgery – I'll be good as new in no time." You then find out that there is an 18-month waiting list to get the surgery. The good news is you don't *need* the surgery; the bad news is you'll be blind if you don't get it. This is just one chilling story told by the actual patient in Stuart Browning and Blaine Greenberg's documentary on Canada's healthcare system, "Dead Meat".

Why is there such a long wait for a simple and quick procedure? Because Canada refuses to adopt a two-tier healthcare system where an optical surgeon can open his own private practice with a specialized operating room and specialized equipment. Canada is one of three countries which prevent their citizens from paying directly for healthcare, the other two being Cuba and North Korea.

We don't have to look far for a healthcare system that works (as much as Michael Moore will tell you otherwise). Our neighbours to the south have a system that is clearly superior to our own. Let's look at the facts. In a survey of American and Canadian hospitals 21% of Canadian hospital administrators admitted it would take longer than three weeks to administer a biopsy to test for breast cancer, while less than one percent of their American counterparts claimed it would take that long. Over 50% of Canadian hospitals said seniors would be required to wait over six months for hip replacement surgery, whereas nowhere in the surveyed areas of the United States would it take this long.

The average physician in Canada sees 3143 patients a year whereas an average American physician would only see 2222. This means patients can spend more time with their doctors and get a more in-depth analysis and a better diagnosis. The same study said that 30% of Americans spend longer than 20 minutes with their doctor, whereas only 20% of Canadians do. The benefits don't just take place in the doctor's office: The average length of stay in an American hospital is 5.4 days while in Canada it is 7.1. This means the patients can go home and recover while their bed is opened for more patients who need it. Going home once you are well enough has the added benefit of being in familiar surroundings, which will help in the recovery process. In a survey of American and Canadian seniors, Americans were generally more satisfied with their healthcare system.

It is not only the Americans that put us to shame. In June 2005, the National Post reported that the Supreme Court ruled that Sweden, Germany, and the UK all have two-tier systems and provide services that are superior and more affordable than Canada. Universal healthcare does not mean more amenities either, as Canada has 4.5 MRI machines per million people while the average of other first world countries is 7.9.

One of the most important reasons for allowing a two-tier healthcare system is that it will allow doctors to open private practices which will mean a bigger paycheque for them as we pay them directly and not the government who in turn lets it trickle down to them. This will keep more doctors in Canada. The Canadian Medical Journal Association published a study that one in nine doctors leave Canada for the US directly after graduation; this is equivalent to two of our medical schools training only American doctors. Statistics Canada reports that in 2003, 1.2 million Canadians did not have a family physician. Think of how much smaller this number would be with two more graduating classes of doctors each year.

In general, Canadians want to pay for their healthcare. Ekos Research Associates reported in a 2002 survey that if given the chance, 70% of people would pay $1000 to have a family member jump to the top of the list for heart bypass surgery. Companies such as Surgical Tourism Canada provide packages where in a matter of weeks you can be under the knife in a state-of-the-art hospital and get up to four weeks of recovery time in a five star hotel.

"Canada is one of three countries which prevent their citizens from paying directly for healthcare, the other two being Cuba and North Korea."

We already have one form of private healthcare in Canada, but unfortunately you need four legs to be a patient. We would have to wait over a month for CT scans, three months for an MRI, and three weeks for an ultrasound, whereas the waiting list for a veterinarian's MRI machine is only three days long. Veterinarians also provide other services that come with private healthcare such as low prices, extended hours, and specialties. In 2004 the median wait time for a Canadian just to be referred to a specialist was almost 18 weeks.

Some people fear that private healthcare would bring higher costs. This is not the case however. Many companies provide health insurance, which is a lot better as they often include limited coverage on routine eye exams, prescription drugs, and dental work, three very basic services that OHIP does not cover. In fact, a two-tier system would lower the cost of healthcare, as it would bring in competition, which results in lower prices. It would also make hospitals much more profitable as private companies are usually run better than crown corporations.

Of course, even if you can't afford private healthcare, there are free clinics, or you may have to wait a bit longer than others, but seeing as we already have wait times that are beyond ridiculous, two-tier healthcare deserves a shot.

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

Counterpoint

DANE CORNEIL
3A SYSTEMS DESIGN

Universal single-tier health care is not only a Canadian institution, but also the most efficient and ethical system of health care available to us. A two-tier system would be costly to implement, and raises the danger of a deteriorating public health care system and an unethical gap in basic human rights between the rich and the poor.

In any discussion of the possibility of two-tier health care, one issue must always be addressed: Is a two-tier system morally acceptable to Canadians? As polls have consistently shown, the answer is no. The right to medical treatment, based on need rather than financial situation, lies at the heart of the argument. A two-tier system would mean that two people facing the same health-related emergency would have a difference in level of care, defined primarily by their ability to afford private care.

A capitalist economy ideally rewards those who generate wealth with an increase in opportunities. The question in this case is whether improved health care belongs in that category of opportunities (i.e., is health care equivalent to a new car, or the ability to travel?). Health care, however, is not a reward; health care is a right. And while wealthy individuals may deserve to be rewarded in many ways, they do not deserve a longer life than the rest of the population.

A proponent of the two-tier system may argue that it would have no negative effect on the quality of public health care, but rather would reduce the burden on the system. However, establishing a private system would remove one of the greatest assets of our health care system: the wealthy. High-income earners are the group best equipped to deal with the problems they see in society, simply due to their greater pool of resources and clout within the political system. If there is a problem with wait times at the local hospital, a well-off individual is more likely to have the local MP's ear (or be the local MP). A blue-collar worker, on the other hand, is unlikely to have the time to launch a grassroots campaign. Creating two separate health care systems would leave the public system without this vital feedback loop.

Of course, this is all just speculation. To know how two-tier health care would really affect Canada, there needs to be a case study. Australia is a perfect opportunity: It has a similar health care system to our own, with the distinction of allowing private care. Citizens are encouraged to obtain private insurance, rather than rely on government-funded Medicare (individuals making more than a set income who do not have private insurance are taxed more heavily).

What are the results? They aren't pretty. Instead of saving the taxpayers' money, the government has had to bail out the private system in order to keep it going, at a cost of $2.2 billion a year.

Wait times, a common complaint in the Canadian system, were not helped by the private tier. In fact, wait times in Australia actually increased as a result of private insurance. Studies there have shown that, as more care is provided by the private sector in a region, wait times for patients in the public system increase. The same effect was observed in England and New Zealand, which have similar multi-tiered models; both countries appear to have longer wait times than in Canada. These findings support the hypothesis that a parallel private health care system will damage the public system by diverting resources and professionals from the public system. A private system will decrease wait times for those who can afford private insurance, but it will do so only at the expense of those who cannot afford this luxury.

This agrees with a study completed here, in Manitoba. Until 1996, patients waiting for cataract surgery in Manitoba could choose to have the surgery in a private facility for an additional fee (although the surgery cost was still covered by the provincial health plan). Researchers at the University of Manitoba compared wait times between three groups of patients: those paying for the private facilities, those using the public facilities whose surgeons worked only in public facilities, and those using public facilities whose surgeons divided their time between public and private facilities. They found that the median wait time for private care patients was four weeks; for public care patients, the wait was ten weeks for patients with public-only surgeons, and *28 weeks* for patients whose surgeons worked in both systems. Thus, the introduction of the second tier had a direct and negative effect on patients in the public system, as it did in Australia, the United Kingdom, and New Zealand.

A recent Supreme Court of Canada ruling struck down a ban on private health care in Quebec, agreeing with a patient (who was on a year-long waiting list for a hip replacement) that the ban infringed on his right to life, liberty, and security. Based on the facts, one has to wonder whether the Court considered the rights of citizens in the public system, who will be forced to endure longer wait lists in order to meet the needs of those who can afford private care.

Are there other successful single-tier health care systems? Interestingly enough, Cuba provides an example. Like Canada, it has chosen to ban all private health care. Despite the fact that the country is often an economic and political disaster, and spends only $251 per capita on health care (compared to Canada's $2669 and America's staggering $5711), the health care system was ranked by the World Health Organization as 39th best in the world, comparable to the U.S. (37th), Australia (32nd), and Canada (30th). That a country in such a poor financial situation is able to pull off public health care successfully suggests that any problems with our own system may not be based in the model, but rather in the details of how we implement it.

Introducing a parallel private system to our health care model is simply a bad idea. There are, undoubtedly, issues with our health care system that need to be addressed. However, assuming that a private system will make these issues disappear is purely wishful thinking. Instead, it will exacerbate many of them, and introduce problems we didn't have in the first place. Worse yet, it will mean that the Canadians have concluded that the rich deserve better treatment than the poor. That's one pill we're not ready to swallow.

GENE 119 and the De-emphasis of Upper-Year Mentorship

KEVIN CEDRONE
4A MECHANICAL

For most students, university means living away from home and self-policing work, study, and leisure habits with complete independence for the first time. Adapting to the change in the amount, type, and difficulty of work between high school and university can be tough. The First Year Engineering Office has a number of measures in place to help smooth the transition for first-year Engineering students. One of the most well known is GENE 119. GENE 119 is a problem seminar intended to give extra help to students invited by the First Year Office based on their performance on the math prep test during Orientation Week, or on their midterm exams in 1A and 1B. The format of this session changed last Fall term, prompting mixed reactions from veteran GENE 119 tutors including yours truly and *The Iron Warrior* editor-in-chief Bahman Hadji. Professor Ajoy Opal, Director of First Year Engineering, sat down with me on June 1st to discuss the format change, which puts individual emphasis on first-year subjects while arguably decreasing the aspect of upper-year mentorship and tutor-student rapport traditionally possible between students of the same discipline.

Professor Opal's statistics indicate that around 300 students were invited to GENE 119 sessions each Fall term and about half that in Spring and Winter terms, which is an important issue. "300 students would represent 25% of the total student body coming into first year," he said. Attendance used to be strong at the extra-help sessions, according to Opal. "About four or five years ago, we used to have 80 to 90% attendance."

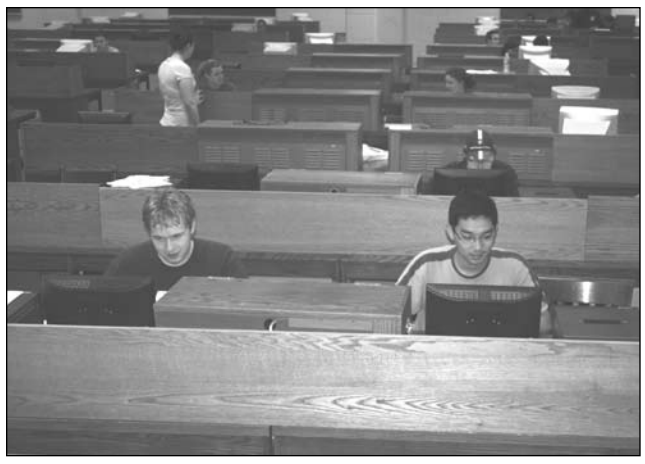
These numbers apply to the old format of GENE 119, where every department and each stream would have at least one dedicated upper-year tutor covering the big three first-year courses, calculus, physics, and linear algebra (in 1A), during one two-hour session per week. Bigger departments like Mechanical, ECE, and Chemical, which have two streams, would have two or more sections with their own tutors. First-year chemistry was covered by Chemical Engineering tutors in chemistry-only sessions open to any first year student. Tutors were supplied with their students' names along with assignment solutions for the courses assigned to them and were responsible for helping the students through assignment problems in a rather informal open Q&A kind of session. This gave the upper-year tutors a chance to make a little bit of money in providing academic assistance and mentorship to first-year students invited to GENE 119.

The past few years have seen attendance rates drop and the percentage of students invited by the First Year Office increase. Speaking of attendance numbers as recent as last year, Opal recalled, "We used to invite approximately 300 students, and we got maybe 100 of them showing up." This trend of decreasing attendance necessitated a change, but there were other factors as well, as he explained. "More students needed help than the set that we invited for just the GENE 119. . . . Now we would say that roughly 40% or 50% of the students probably need help."

Professor Opal attributes the drop in GENE 119 attendance partly to the Tutoring in Residence program at the Mackenzie King Village and Village 1 residences, where a large number of first-year students reside. "As a result of the residence tutoring, at the original format for GENE 119, we saw a loss in the attendance." It is tough for any tutoring program to beat the convenience of the six-time per week Tutoring in Residence program. "Because of this drop in attendance and the larger number of students whom we felt would benefit from getting this extra help, we decided to open it up to everybody," he continued. Now, all students, whether invited or not, can attend GENE 119 sessions.

The Tutoring in Residence program, which is a collaborative program run by the Department of Housing and Residences and various faculties, is not targeted at Engineering students specifically. But most first-year calculus and algebra courses are similar enough to be handled by those sessions. "We also decided to try it out the same way, the same format [as residence tutoring]. Another reason for doing that format is that the residence tutoring is not available in UW Place [another on-campus residence]. UW Place has no tutoring available for students in the evenings for the time being," he explained. So, by changing the format of GENE 119 to a per-subject session held in the WEEF Lab (E2-1310), Professor Opal reasons that all students have easy and convenient access to the same kind of per-subject tutoring regardless of their residence.

In contrast to the small classroom setting of the old format, where tutors had a list of their students' names and pictures and took attendance at each session, the new format has two tutors share a one-session subject open to students of all departments in a large room such as the WEEF Lab. A few sessions are run concurrently each night and each subject is covered twice a week to fit everyone's schedule. While the new format undeniably provides access to more algebra, calculus, physics, and chemistry help, the one-subject sessions are less convenient, requiring students to visit several sessions instead of just one catch-all session. Professor Opal responds, "I think they should be able to cover three or four courses in two sessions in a week. The same set of courses is covered in two sessions per week. In some sense this is a benefit over the old system, that they do have two chances a week to cover each course." Of course, there is no guarantee that every student will need help in every course every week.



The WEEF Lab during a GENE 119 session.

As a TA with several terms of experience with GENE 119 and the Office for Persons with Disabilities as well as a work term as a First Year Engineering (WEEF) TA, my main concern with the new format is the loss in upper-year mentorship and student-tutor rapport. With the old format, the tutors got to know the students personally, and students were able to solicit advice and help in general engineering areas relating to workload management, co-op, and even courses not explicitly within the scope of GENE 119. In my experience, it helps students stay motivated if I tell them how and where the seemingly arcane details of a linear algebra eigenvalue proof reappear in a more applicable, useful setting later on. It helps to have an open discussion of which topics are important, core, come-back-to-haunt-you fundamentals and which are more or less designed to "temporarily challenge your way of thinking". This rapport between the GENE 119 tutor and the students makes it easier and more likely for them to ask for help.

"There were some benefits of the previous format, which was to develop a relationship with your group of students only, which fostered a peer mentorship, not only just in the academics but in other places too," admitted Opal. "There is a trade-off, but the benefit is better [with the new format.]" He expects that the First Year Engineering Office will continue to run GENE 119 in the WEEF Lab with the new format for another year, having open sessions with more than one course being covered each day.

Professor Opal also has a number of suggestions for first-year students, and I will have a full story on his advice in the special Orientation Week issue of *The Iron Warrior* in September. In the meantime, the First Year Engineering Office is there to help and the new per-subject GENE 119 sessions are one way that they are trying to do that. "If there's ever a situation where you can't get help for a particular course, come see me, and I'll make sure you get help," he said.

You can make an appointment to see Professor Opal through the First Year Engineering Office, located in CPH 1320. As for the now-deemphasized mentorship and upper-year contact, first-year students should consider involvement with student teams and groups like *The Iron Warrior* and the Engineering Society.

Lunch with a NASA Astronaut

DANIEL MILLER
4A COMPUTER

A few months ago, I had the good fortune to be working at MDA Space Missions when a group of astronauts from NASA stopped by for a visit. For those of you who haven't heard of MDA, they are best known for building the Canadarm and Canadarm2, used on the space shuttle and International Space Station, respectively. The astronauts were there to tour MDA's facility and participate in a press conference. Thanks to a fellow co-op student (who asked one of them to sit with us in the cafeteria), I got a chance to have lunch and make awkward small talk with Mike Foreman, a US Navy Captain and NASA astronaut.

While I knew it took a lot of time and patience to become an astronaut, I had no idea how long. Captain Foreman told us that he had first applied to NASA back in 1985, and had applied again roughly every two years until he was finally accepted in 1998. At the time he began applying, he already had a distinguished military career behind him, having started at the US Naval Academy in 1975. Also, while many of NASA's pilots and mission specialists are military men and women, Captain Foreman also holds bachelor's and master's degrees in aerospace engineering, making him an ideal candidate for the astronaut program.

Even after going through the lengthy selection process and years of training, Captain Foreman has not yet been to space. However, he and five other astronauts will be part of the upcoming STS-123 shuttle mission to install the Special Purpose Dexterous Manipulator, or SPDM, on the International Space Station. Designed and built by MDA, the SPDM will attach to the end of the space station arm, and will be used for tasks that require precise maneuvering of smaller components. The mission is currently planned for February 2008, although shuttle launches are often changed due to a number of factors.

If I've learned anything from this experience, it's that opportunities are all around us. So, my advice to you is to take a chance. Next time you see an astronaut, ask if he or she would like to have lunch with you.

Daniel (centre) and two fellow co-ops with the Canadarm, in the clean room at MDA.

How to Get a Job, Part 3

The Art of the Interview

ANGUS MCQUARRIE
4A COMPUTER

I've watched a lot of people go for interviews, and I've done a handful myself. Broadly speaking, there are two types of interviews. The first are so-called 'soft' interviews, where the employer is more interested in seeing how you would fit in with the team that already works there than what your specific skill set is. The assumption is that whatever you'll need to know, they'll teach you. The reason they come to Waterloo is that they believe that Waterloo co-ops are good at learning these things quickly. The second type of interview is a 'hard' interview. During these, you're often asked tricky and esoteric questions pertaining to the idiosyncrasies of some abstract theory of your degree.

I believe the latter is more difficult, because it requires you to know the material stone cold; there's no way you can fake that knowledge (and attempts to do so are usually extremely transparent). I'm not even going to attempt to help you with those, and my only piece of advice is to ask around regarding the company and the type of interviews they give. If you believe you're in store for a hard type interview, study for the interview the same way you would for a final exam, and know that material.

Soft interviews, however, are not typically easy either. No amount of studying will prepare you for these either; the only way to really prepare is to practice. Fortunately, there are some things you can keep in mind in general:

1) You absolutely cannot be nervous. If you are not particularly interested in the job, this will help, but then you probably won't be interested in taking the job even if you get the offer. My approach is, rather, to believe myself to be the right candidate for the job, and with that assumption in mind, see the interview more as an opportunity to demonstrate to the interviewer that the job offer should really belong in my hands. While this attitude may assuage your nerves, it is vitally important that you don't appear arrogant. Being arrogant in an interview is the worst possible thing you can ever do. Don't think of them judging you, think of it as an explanation of why you are the best candidate. Finally, your tone of voice should be similar to that as if you were explaining to someone the route you take to get to the grocery store.

2) There are questions you will almost always be asked. There are other questions that are very frequently asked. Lists of these questions exist everywhere, including on the profile section of emurse.com, the resume tool I mentioned in an earlier article (If you're really keen, you can pre-answer these questions on your profile). You should have the trappings of an answer to these questions prepared, although not verbatim, as you do not want to sound as if you had rehearsed these answers in anticipation.

3) Be interested in the job! You should not appear as if you are leeching the brain of your interviewer, but you should seem extremely interested. If your interview also contains technical sections, ask what the correct answers are, and why those occur. Ask about the particulars of the job, and think about the implications of what they tell you. Then ask about those implications. Employers are much, much more interested in hiring people who are genuinely interested in working for them, because people who are passionate about their work are much better workers.

4) Ask questions. Talking a lot allows you to dominate the conversation; asking questions allows you to control it. You want to steer the dialogue into directions where the employer is excited about what they're talking about (because they're passionate about their job), but also allow you to interject with points that subtly show you to be a good fit for the role. Perhaps you have some little item you'd like to insert into the conversation. You can steer the conversation into a place where you can inject your tidbit by asking questions.

5) Be interesting. There are things about you that are weird and unique, and the employer will remember you for those (assuming they are not disgusting or otherwise inappropriate for an interview; for example, perhaps you play Cello in your spare time). Find ways in which you can express these weird and unique qualities so that they will remember you. Make sure these qualities are positive. See point 4.

6) Watch your body language. I've seen people do interviews, and been totally unable to hear the dialogue, but you can tell from their body language that they are nervous and highly uncomfortable. Practice sitting in front of a mirror. Watch for nervous habits you might have. See point 1.

7) Watch your interviewer's body language. If you're trying to make light-hearted jokes in the interview and they aren't reacting, take a different tactic. If you're overly serious and your interviewer is laughing and smiling to herself about jokes he or she is making, have the courtesy to smile and nod your head. Acting in a manner that is significantly different from the manner in which your interviewer acts will force you to come off as creepy, and this is not the unique trait for which you want to be remembered. See point 5.

Hopefully some of those tips will help you. The reality of the situation is that you need to practice interviews in order to get to be good at them. If you're at least able to secure yourself interviews, but have little success in them, analyze your behavior in those interviews and try to pick up on the common factors that are present in interviews for which you are not offered the positions. You're all Waterloo students. You're smart, and I've got faith that you'll figure it out.

My next installment will be about things to do during a work term to help improve your ratings, enrich your co-op experience, and perhaps even get an offer before you leave.

Founders of Engineering

Edwin Howard Armstrong: Electrical Engineer, Inventor of FM Broadcasting

JAY SHAH
1B MECHATRONICS

When was the last time you listened to or turned on the radio? Chances are you make use of the radio pretty often, maybe without realizing it. That being said, when was the last time you thought about the history and people behind the development of the radio? For now I'll assume you haven't really thought about this, but I don't blame you. We have busy schedules – there often isn't time to take a break and think about the history behind the conveniences that have made our day-to-day activities possible.

The world we live in has sometimes made it hard for engineers to thrive and really push the limits of science and technology; one such example can be found in Edwin Howard Armstrong's life, the inventor of FM radio and broadcasting. I'd like this article to honour his contribution to engineering and everyday convenience, and recognize some of the hardships that he went through, which continue for many others even to this day.

Armstrong was an electrical engineer born in New York City in 1890. In addition to some of the most advanced inventions of the day (such as regenerative circuitry and various signalling systems), Armstrong created Frequency Modulation (FM) and patented it in 1933. The FM radio at the time had so much potential that companies thought it might replace AM radio technology, partly because of its low susceptibility to atmospheric noise. But RCA (Radio Corporation of America), Armstrong's employer, shockingly started to push the FCC (Federal Communications Commission) to create regulations around FM radios to make them a difficult-to-use technology. Over the next decade the FCC moved the FM radio spectrum to a completely new frequency range, making all of Armstrong's FM technology useless.

As if things weren't hard enough for Armstrong, RCA decided to claim the invention of FM radio, and won a separate patent to the technology. A patent fight between Armstrong and RCA ensued, which was in addition to several other patent suits in which Armstrong was involved. RCA won the court battles and left Armstrong legally unable to claim royalties on FM technology. He also lost his other patent lawsuit for his earlier work in regenerative circuitry to AT&T (a supporter of FCC's decision to move the FM radio spectrum), which is commonly believed to be a result of the Supreme Court of the United States misunderstanding the facts.

In this midst of these patent battles, one must remember that World War II came around, in which Armstrong allowed the use of his FM technology royalty-free to the military which greatly aided in achieving victory. After the war, Armstrong started working towards getting new receivers and transmitters that could work in its new frequency range assigned by the FCC. However, while he was working on this, RCA was producing FM receivers based on his patents without paying him anything. As a result, more legal battles followed, but by the time the suits were resolved, Armstrong's licensing and patents had all expired.

On the verge of bankruptcy, Armstrong had an argument with his wife, which caused her to leave him. Due to emotional pressures from all sides of his life, he took his own life on January 31st, 1945 by walking out of a 13th story window. Ironically, his wife continued the lawsuits and was able to win all the suits regarding patent infringement, which were worth millions of dollars.

To crudely summarize, Armstrong was a brilliant engineer and inventor who was pushed to his emotional limits because of corporate greed. Who knows what other inventions Armstrong could have come up with if his time was fully devoted to his interests, rather than pursuing patent infringements and facing constant humiliation by courts that decided he didn't have claims to his own inventions.

Hopefully that provides a brief glimpse into the complexity of the people and history behind technology that we use everyday. A question I ask that you reflect on is whether or not 'the system' as a whole is getting better. Are the intellectual property laws really working, or do they just detract time from some of the greatest minds to accomplish as much as possible? Is it all about the money or which company can 'shut down' another company? How much of this is corporate politics? Is it within our reach to change the system and make it more efficient and purposeful?

Rest in peace, Edwin H. Armstrong.

Dean Not a "Bureaucrat Who Pushes Papers"

TEACHING
Continued from Page 4

satisfaction out of teaching. And besides, it also connects me to the students," he stated. "Frankly, Deans and department Chairs should teach, because . . . if they don't, the students think the Dean is some sort of bureaucrat who pushes papers, when our main business is teaching. . . . I talk to faculty members about the importance of teaching and it would seem phony if I would not teach myself." Of course, having administrative help is important as well, as he recognized the tremendous help that Professor Jim Barby, who co-teaches the course, provides by handling all issues related to scheduling, labs, and tutorials. Sedra unfortunately does not expect to have the time to teach a fourth-year ECE course on analog circuit design in the coming year, though he left the door open for future years when he may have more time.

One of Sedra's biggest accomplishments during his career has been the co-authoring of *Microelectronic Circuits* with Kenneth Smith, his former colleague at the University of Toronto. The textbook is published by the Oxford University Press and is currently in its fifth edition. It has become one of the best-selling in the world and the standard for undergraduate engineering courses on the topic. A sixth edition is planned, the year-long work for which will commence in July 2008, after Sedra's first term as Dean comes to an end.

Sedra stated that there is a good chance he will be here after the end of his first term. The Nominating Committee for the Dean of Engineering has recently released the fact that they are considering him for reappointment. If reappointed, he expects to balance his duties with co-writing the new edition of his textbook for the first year. He also has plans for his future after deanship, hoping to do more teaching and consulting work. At only 63, his near 40 years of experience in academia make him an expert on higher education.

Though he enjoys consulting, teaching is his first love, going back to the time he accepted the position of Assistant Professor at the University of Toronto on the spot before his Ph.D. defence in 1969, without inquiring about salary or other details. "When all is said and done, I enjoy teaching and thinking about difficult, new concepts, and new ideas down to the level of acceptability for undergraduate students," he said.

He also discussed the topic of Engineering Society newspapers and their importance to the image of the Faculty of Engineering, since it is distributed to and read by more than just undergraduate students at the university. Most other schools have Engineering student newspapers that are a mix of crude jokes and pranks, like the University of Saskatchewan Engineering Students' Society's *RedEye* and the University of Toronto Skule's *Toike Oike*, a publication Sedra knows well after having spent 37 years at U of T, but of which he does not have a fond memory.

The Iron Warrior, in contrast, has focused on being a serious newspaper since its inception 27 years ago and the Dean is pleased about that fact. "I think the paper is terrific. I like your emphasis on news and the fact that it's a serious paper addressing serious issues. I hope your readers appreciate what you're doing for them," he told me.

(Genius) Bowling for Dollars

DANIEL MILLER
GENIUS BOWL
DIRECTOR

Many of you already know about Genius Bowl, and that's excellent. For those who don't, here's a brief summary. We get a bunch of teams together, put some trivia questions up on the overhead projector, and let you go at it. Oh, and did I mention there are *cash prizes* for the top three teams? That's right, you could win literally *dozens* of dollars! There's also a spirit award for the team with the best costumes. So come on out and play some trivia for money (and your name on the fancy new Genius Bowl trophy)!

Now, a lot of people I talk to say something to the effect of, "Oh, I'm no good at trivia." First of all, the contest is done in teams of six, so don't feel like you have to know everything. Even if you don't know the answer to every question, I think you'll still find it's a lot of fun, especially when you're playing with a group of your friends. Secondly, you're probably better at it than you think. Questions often come from pop culture, so they're fairly accessible to everyone. Also, not all the questions are killer hard (although hopefully at least some of them will be). Besides, every experience you've ever had in your life has contributed to your trivia knowledge in some way. Maybe you grew up in a different country. Maybe you have a particular hobby, like needlepoint or jai alai. Maybe your boyfriend or girlfriend is a history buff, and you've gleaned a few factoids just from being around them. These are all things that might help you answer a question or two that has stumped the rest of your team.

Here's a fun fact: The word "trivia," according to my professor in Ancient Roman Society (and confirmed by Wikipedia), comes from two Latin words – "tri," meaning "three," and "via," meaning "road." Trivia thus referred to the meeting place of three roads. People from neighbouring towns would often get together at these locations to gossip or make small talk. Hence, the word "trivial" came to represent bits of unimportant or inconsequential information. Now that you know all about the etymology of trivia, you're ready to play.

The event details are as follows: Thursday, July 12th, at 6:00 pm, in DC 1351. The whole thing usually takes less than two hours. Teams are made up of six people, though you're welcome to bring extra players and have them swap in between rounds. The team sign-up sheet will be in the Orifice soon (most likely the week before the event). I hope to see you all there. Oh, and if you happen to see the vandals who stole the old Genius Bowl trophy, invite them to come so we can win it back!

The Complete History of Genius Bowl

B-Soc	A-Soc
Spring 2004: 2B Computer '07	Fall 2004: 3B Computer '06
Winter 2005: 2A Mechatronics '08	Spring 2005: 4A Computer '06
Fall 2005: 2B Mechanical '08	Winter 2006: 3A Chemical '08
Spring 2006: 3A Mechanical '08	Fall 2006: Mary and the Boys
Winter 2007: 4B Software '07	Spring 2007: Find out on July 12th!

Engineers Without Borders to Hold Events Marathon July 7

07-07-07 Campaign Culminates

DANE CORNEIL
3A SYSTEMS DESIGN

You might have heard (or guessed) that Engineers Without Borders will be holding some sort of 'event' on Saturday July 7, in honour of the 0.7% Pledge. What you may not know is that this won't be just any event: EWB is gearing up for a cross-Waterloo 20-hour marathon of events that will also involve local businesses and university students from across Canada.

First off, a recap: the 0.7% Pledge refers to contributing 0.7% of Canada's Gross National Product to foreign aid. This mark was first set by Lester B. Pearson in 1969, and has since been met and surpassed by many developed countries, but Canada continues to stagnate (and actually backslide). The goal has been committed to several times by Canada, the most recent being in June of 2005, when the House of Commons unanimously adopted a motion to honour this commitment. However, a timeline for doing so has never been set, and it looks like Canada is set to renege on its promises yet again, despite the fact that the money is desperately needed to run projects that will make a difference in the lives of the extreme poor.

The goal for the day is to remind the government that we care about keeping our promises. Things will start out in the St. Jacob's Farmers' Markets at 7:00 am, where we'll be talking about 0.7 and presenting projects that EWB has done overseas (many of which are funded by Canadian foreign aid).

While we're in the markets, there will also be a 0.7% Bike-a-Thon taking place throughout Waterloo. Beginning at 10:00 am, participants will ride in the shape of a '7' through the entire city, raising awareness about the goal. If you're interested in joining in, let us know through e-mail (the address is at the end of the article).

At 3:00 pm, EWB will be moving on from the markets, and setting up at the SLC at 7:00 pm. In partnership with Warrior Weekends, you can have the chance to (metaphorically) meet 0.7% with a giant 0.7 target and water balloon slingshots, as well as 0.7% piñatas.

At 7:07 pm, you can join with university students across Canada to record a message to Prime Minister Stephen Harper and the Canadian government, urging them to set a timeline for achieving 0.7%. The messages from across the country will be put together and posted on the Internet.

Events will continue to run at the SLC until 10:30 pm, but that's not the end of the night. From 1:00 am to 3:00 am, EWB will be back on the Bomber Green running a late-night BBQ.

That's a lot of things going on in one day, but you'll have to eat at some point. When you do, check out one of the businesses donating 0.7% of their profits to EWB for the day. The list includes Almadina, Seoul Soul, Phat Cat, and The Grill, and it's growing. The full list will be on our website.

If you have any questions, check the website at 07-07-07.ca (where you'll be able to find a full schedule of events), or send an e-mail to uwaterloo@ewb.ca. Hope to see you around on July 7!

The Tool: 40 Years Old and Still Ridgid

A Brief History of The Engineering Society Mascot and Those Who Protect It

RUTH-ANNE VANDERWATER
4A COMPUTER

It was forty years ago that The Tool, the Waterloo Engineering Society mascot, was forged at the Ridge Tool Company in Elyria, Ohio. The historical events leading up to the making of The Tool have mostly been forgotten over the years. However a few important details still remain. It is these events and memories that have made Waterloo Engineering what it is today.

Back in 1967, the Waterloo Engineering Society was still in its youth. It was only ten years old, and did not have a constitution, logo, or mascot. The Engineering Society President at the time, Jim Pike, along with the other Executive decided to get some of these items taken care of. A committee was formed to look into the selection of a mascot for the Society. In the end, it came down to two possibilities: a wrench and a sword. When it came down to the vote, most people knew that the wrench would win. It had engineering written all over it. It also went well with the mantra "plummers and proud of it." The Tool represented strength, it represented fortitude, and most of all, it represented the pride that Waterloo Engineers, past and present, share for being in the best Engineering school in the country.

The Tool Bearers as they appeared in 1986.

After the decision had been made to adopt a large pipe wrench as the Engineering Society mascot, Jim Pike and a few others went searching for the perfect wrench. After working in the Hamilton area, Jim found a local Ridge Tool supplier. The largest of the Ridge wrenches was selected and a letter was written to the Ridge Tool Company requesting that it be donated to the Waterloo Engineering Society. With promises to keep the wrench in "Ridge Colours," it was taken immediately to be dipped in chrome.

At this point in time, the mascot was known as "The Ridgid Tool." It first arrived on campus in a beat up 1962 Volkswagen. Its first appearance was at an Engineering Society meeting. Everyone knew it would be arriving and the anticipation was high. According to Jim Pike, when it finally came into the room it "landed on the meeting table with a thud and the room erupted into cheers." This was truly a historical moment in the young Engineering Society's life. Little did he know how much of an impact the mascot would have on the culture of the Engineering Society.

Sometime after the arrival of The Tool, it became necessary for the Engineering Society to commission a group of protectors to guard the mascot. This group of protectors, now known as the Tool Bearers, would ensure the safety of the mascot at all times and at all costs. They are also charged with only allowing those with an Iron Ring to touch The Tool (with the exception of the Engineering Society Presidents). These Tool Bearers remain nameless and silent to ensure the safety of The Tool. They are garbed in Engineering coveralls and hard hats.

There's only been one recorded episode of the mascot being in the hands of non-engineers. It was back in 1981. The Tool was front and centre at the highly revered Welcome Back Stag. The Tool was ushered away to a convoy of vehicles waiting to return it to its location of safekeeping. However, en route, the lead Bearer stopped before completing the journey and another group snatched The Tool. The Tool remained with them for a period of approximately two months. Through diligent efforts the Tool was recovered just a few hours before it was to appear at the Iron Ring Stag. When The Tool was recovered, it was encased in a 45-gallon drum of reinforced concrete. The Tool was exorcised by the application of the Blessed Brew and the steady chanting of the Plummer's Hymn. In response to this, in 1985, the Tool began to make more appearances at events. Since then, there have been no known incidents of this nature.

"It's big, it's beautiful, it's chromed... It's us!"

Just as the Tool, its popularity, and the culture it invokes has evolved over the past forty years, so have its protectors, the Tool Bearers. Specifically, the Tool Bearer uniforms have evolved over the years from plain black robes to the newer and more distinct black Engineering coveralls with black hard hats. The evolution of the uniform can be attributed to reflect more common engineering attire. Therefore the Tool Bearer uniform was changed to plain black coveralls and hard hats. The second part of the Tool Bearer uniform evolution can be attributed to an incident dating back to 1996 with the Waterloo Police. The Tool Bearers were preparing for an event behind some stores in a plaza. A member of the public witnessed this and had the impression that a store was about to be robbed. The Waterloo Police were called, and in the end the Dean's Office met with the Engineering Society Presidents about how to best change the uniform to ensure something like this would not happen again. This resulted in the uniforms having the distinct yellow Engineering letters written down the leg to identify the Bearers as Waterloo Engineers.

The Tool Bearers today: nameless, silent guardians of The Tool.

To the delight of Plummers everywhere, The Tool started making more public appearances starting in 1985.

It is clear that from the beginning, the mascot was something quite special. It has evolved from humble beginnings with little formality to a mascot that is introduced to incoming frosh every year at one of the best events of Orientation Week. It is revered by many. It's a source of inspiration to Waterloo Engineers. It has contributed to the culture of our Engineering Society. In Jim Pike's words, "It's big, it's beautiful, it's chromed... It's us!"

Keep your eyes open for more opportunities to celebrate The Tool's birthday this term. There may be a Meet the Tool Again day with possible opportunities to show your Engineering spirit through the use of purple.

The Tool was donated to the University of Waterloo Engineering Society in 1967 by the Ridge Tool Company, and was promptly chromed.

ENGINEERING SOCIETY EXECUTIVE REPORTS

Presidential Report

RUTH-ANNE VANDERWATER
PRESIDENT

So here I am, in Toronto at the ESSCO AGM. We just got back from the Jays game. And I'm trying to write my Exec Report after a very long day. So here we go....

First off, a brief update on a few things. The Constitutional amendments that were presented at the third Engineering Society Council meeting will need to be read again for the fourth meeting because we didn't meet quorum (so the "reading" wasn't an "official reading" of the motion and has to get done again). Please expect that to happen at this week's meeting. Joint Council will be at 1pm on Saturday July 14. The location is still to be determined. At Joint Council we'll be talking about issues like the Constitutional amendments, new directorships, important information pertaining to both Societies, etc. All class reps must attend or must proxy their vote to someone who will definitely be attending Joint Council. This is quite important because we need to meet quorum on both Societies to vote on the Constitutional amendments that have been brought forth. I have a class list of most of the class reps and I'm working with a few people to track down reps from a few more classes. If you haven't told Bryan Sachdeva that you are a class rep, please e-mail him at bsachdev@engmail as soon as possible (2B Chem, 3A Elec, 1B Enviro, 4A Mech, and 3A Systems, I'm looking at you).

The birthday party for The Tool at MOT was fantastic and I thank everyone who came out, who helped set up, who helped make the video, and who helped make that yummy cake. A very special thanks goes out to the POETS Managers for their hard work with the decorations, to Jim Pike (the EngSoc President who brought The Tool to Waterloo) for attending the party and last but not least, Mary Bland for putting so much work into that awesome life-sized Tool cake.

Engineering Society Executive elections are coming up. The nomination period begins on Friday, June 29, and lasts a week, followed by campaigning, which ends on July 18, with the election being on July 19. If you are interested in running for an Exec position, the CRO is Eric Migicovsky and he can answer any questions you have about the election process. Also, if you have questions about an Executive position, please feel free to talk with myself or any of the other Exec.

So next, a few new things to talk about. First up is Student Life 101. Last year at SL101, a campus student societies' BBQ was held over lunch. The proceeds were split between the societies based on percentage of volunteers. EngSoc had the most by far and got a lot of money out of this (roughly $500). I'm looking for volunteers to help with the societies BBQ. It's on July 21, probably around the lunch hour (specific details will be communicated to you once I've received them). So please, if you're interested in helping out with SL101 and helping out our Society, volunteer for this event. E-mail me with any questions you have about this.

As many of you know, Dean Sedra spoke at the June 13 EngSoc meeting about where our tuition money goes, the Vision 2010 plan and about the new space initiative. For those not there, you can read the minutes from the last meeting for a detailed discussion. However, some important highlights from the presentation are that our tuition money goes directly towards hiring more profs, improving our labs, and hiring more TAs. Dean Sedra explained that at the next Engineering Faculty Council meeting (which the EngSoc President attends, and was on June 19), he would be presenting an update on the progress of the Vision 2010 plan (which I will explain more about in a bit... keep reading). Lastly he talked about some of the new buildings and space initiatives that are being launched, which you can read more about in the cover story of this issue of the *The Iron Warrior*.

Lastly, I attending the Engineering Faculty Council meeting last week and heard a lot about the progress on the Vision 2010 plan. In short, there's been significant progress is all areas that were outlined in the plan. Highlights from the presentations at this meeting include goals to have an independent review of the PDEng program, ensuring a successful launch of the new Management Engineering program this fall, and continuing to fine tune the Nanotechnology Engineering program. There was also a discussion on a trend that's been observed about a higher failure rate in the 1B term. There will be a task force created to investigate the reasons why this term has an especially high failure rate. There were also a lot of other areas that were discussed (graduate studies, research, accreditation visits, the latest admissions data). All of this will be summarized in a report that has yet to be released (but will be relatively soon). So expect more information about this from me in a couple of weeks.

Well, I believe that's it for me this time around. Remember, it's the birthday of The Tool this year, so keep that Engineering spirit strong. Take some time to read the History of the Tool article that's been written for this issue and keep your eyes open for another extra special Tool appearance this term. And as always, if you have any questions, concerns, comments or otherwise, I'd like to hear from you. Please email me at asoc_prez@engmail.uwaterloo.ca.

VPEd Report

TYLER GALE
VP EDUCATION

I have a few new opportunities and public service announcements to enlighten your mind and soul.

Exam and Work Term Report Submissions

Midterms and work term reports have begun to trickle back. If you have a few spare seconds next time you're near a computer, there is a brand new way to submit exams and excellent or outstanding work term reports online. All you need to do is take a trip to the Engineering Society website (engsoc.uwaterloo.ca), click on the EngForms link, and fill out the Exam and Work Term Report Submissions Form. Attach your exam or work term report, hit the submit button, and you're done. Submissions are also continuing to be accepted at reception in the Engineering Society office (CPH 1327), as always.

Academic Services Coordinator Recruitment Underway

The academic services coordinator is a brand new directorship being created to manage the Engineering Society's exam and work term report databases. We are interested in filling this role for the remainder of this term, as a trial run. Particular roles include:

- Advertising for, and collecting exam and work term report submissions
- Monitoring service quality indicators (graphs!)
- Managing the online and offline databases

The Engineering Society rarely introduces new directorships. As such, this is a unique opportunity to get involved. Over time, this directorship will be phased in to replace the work term reports directorship.

Getting Your Resume critiqued

Having trouble getting interviews? There are a few ways through which you can get your resume critiqued. The Engineering Society will be holding a second round of resume critiques on Wednesday, June 27th, on the 2nd floor of POETS. The Co-op Department also provides resume support through its e-manual and workshops. For more information, visit the CECS website at www.cecs.uwaterloo.ca.

As per usual, please contact me with your questions, comments, or concerns: asoc_vpedu@engmail.uwaterloo.ca.

With all that in mind, midterms are over and it's sunny outside, so I'm going out to play. Until next time!

Interested in running for Engineering Society 'A' Executive positions?

Positions Available:

President*
Vice-President External*
Vice-President Education*
Vice-President Internal
Vice-President Finance
WEEF Director

*Candidates must be in 2B or higher to run

Nomination forms can be picked up in the Orifice (CPH 1327) starting on June 29th.

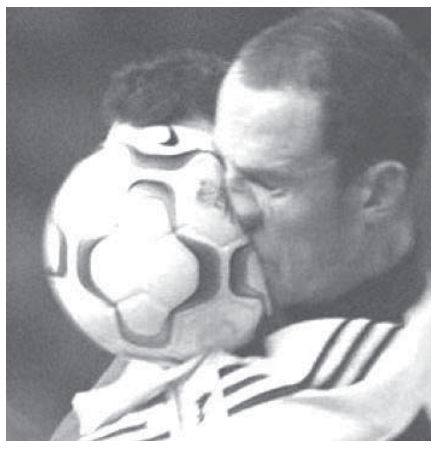
Nominations Close (Forms Due): Friday July 6

E-mail the CRO at emigicov@engmail if you have any questions.

INDOOR SOCCER

Sunday, July 22
at the CIF Gym

Teams of Four
Registration is free



email rjclark@engmail.uwaterloo.ca to register and for more information

ENGINEERING SOCIETY EXECUTIVE REPORTS

WEEF Report

BRANDON DEHART
WEEF DIRECTOR

It's been a while since you've all heard from me, and likely most of you are focusing on academics after what was (at least for me) an eye-opening midterm time. I'll make this report as brief as I can while still informing you as much as possible about WEEF and all the WEEFy goodness that goes along with it.

T-shirts are still in progress due to complications in the ordering process, but they should be available in Novelties before too long and will come complete with updated information regarding WEEF on the back. In addition, patches are now in progress and will be available around the same time as shirts will. Refund data for the term is shown in the chart on the right and contains the number of students from each class who requested to get their donation refunded. Any questions about the data can be sent to weef@engmail.

Finally, proposals for WEEF money for the term are due this Friday (June 29). Check the website at www.weef.uwaterloo.ca for the details. Please let me know if you have any troubles with the submission process as there is a new method to the madness.

	Term				
	1B	2B	3A	4A	4B
Architecture		0			1
Chemical	4	40	7	20	
Civil		42		18	
Computer	11		11	41*	
Electrical	30	32	50	31	
Environmental	2		4		
Geological	0		2		
Mechanical	10	28	30	36	
Mechatronics	15		35		
Software		4		6	
Systems Design	20		24		

* total for both on-stream classes

Total number of WEEF refunds for all on-stream classes.

VPF Report

TODD RADIGAN
VP FINANCE

To start, I'm going to get right down to business. Since we didn't have enough attendees to the last Engineering Society Council meeting, the budget and donations policy could not be voted on. Because of this, those two items need to be taken care of right away at the next meeting. It doesn't end there.

The next EngSoc meeting is also the donations meeting! Donations proposals have been accepted, and they will be presented at the meeting. So, don't forget to bring your voting pants to the meeting, you'll get great use out of them (you can thank me later). (Also, please make sure your voting pants are clean before the meeting.)

In other news, I understand that there is a secret fan base of devoted readers that enjoy my Exec reports, and may or may not be plotting global domination. I must say, I'm glad someone's enjoying reading this. This just goes to show that you can make a difference through zany writing, and stories that don't really go anywhere.

With this report, I have a special treat. It's a funny story that doesn't go anywhere, but this time it's a true story. I took the city bus to campus just the other day. The bus was driving east on Columbia, and stopped to pick up a passenger just outside of the residences. That same passenger got off the bus at the SLC as we were going around ring road. I couldn't help but think to myself that in the time spent waiting for the city bus, the person probably could've walked to the SLC from the Villages. The moral of the story is that city buses are not just for travelling around the city to places that are far away. City buses are also a great way to spend a few minutes standing and waiting, instead of walking the short distance to your destination. So, the next time you see a city bus, hop on, go for a short ride, and get off at the next stop. It's a true story.

VPI Report

KIRI NEUFEGLISE
VP INTERNAL

Well, with midterms over (for most of us), it's time for the term to finally kick back into action. So for the next few weeks, things will be busy as ever with tons of events coming up. Here's a lovely list of what you can expect:

- SCAVENGER HUNT (June 29-30)
- P**4 (July 6)
- White Water Rafting Trip (July 7-8)
- Enginuity #4 (July 12)
- Genius Bowl (July 12)
- EngPlay (July 13-14)
- Joint Council Meeting (July 14)

And this covers events right through the next issue of *The Iron Warrior*. Keep your eyes on the poster boards, mailing list, and however else we find ways to get you to come out to events!

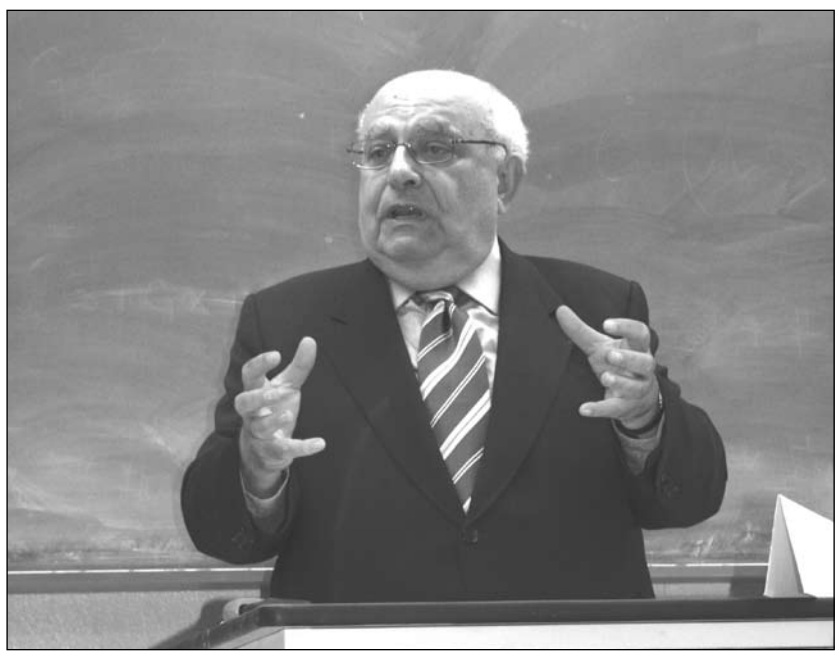
VPX Report

ANGUS MCQUARRIE
VP EXTERNAL

By the time you read this, I will have returned from the Engineering Student Societies' Councils of Ontario Annual General Meeting, which is my last conference as Vice-President External. We will have all sorts of delicious tidbits for you regarding the conference in the next issue of *The Iron Warrior*.

July is, however, almost upon us. And with July comes Canada Day. We are still in serious need of volunteers for Canada Day, so if you'd like to lend a hand, please get in contact with Sam Pinto (stpinto) or Matt Hunt (m2hunt) both at engmail.uwaterloo.ca.

Student Life 101 is also rapidly approaching, and volunteers are needed for that as well. If you're interested in being the first wave of welcoming party for the newly acquired Engineering students, please contact Sunny (sc-2ng), Nick (nhayduk), or Kevin (kjchobot) to let them know you'd like to help.



Dean Sedra addresses the Engineering Society Council at the June 13th meeting.

Upcoming Events Calendar

Monday June 25 5:30 : IW Meeting (POETS)	**Tuesday June 26**	**Wednesday June 27** GradComm Pizza Resume Critiques EngSoc Meeting #4 (CPH 3385)	**Thursday June 28** Boggan Burgers	**Friday June 29** SCAVENGER HUNT Election Nominations Open	**Saturday June 30**	**Sunday July 1** Canada Day
Monday July 2 Holiday	**Tuesday July 3** 5:30 : IW Meeting (POETS)	**Wednesday July 4** GradComm Pizza	**Thursday July 5** Boggan Burgers Frosh Mentoring BBQ	**Friday July 6** P**4 IW Issue 4 Deadline Election Nominations Due	**Saturday July 7** OEC Qualifier White Water Rafting	**Sunday July 8**
Monday July 9 Election Campaigning Begins 5:30 : IW Meeting (POETS)	**Tuesday July 10**	**Wednesday July 11** GradComm Pizza EngSoc Meeting #5 (CPH 3385) IW Issue 4 Publication	**Thursday July 12** Enginuity #4 Boggan Burgers Genius Bowl	**Friday July 13** SFF Debate Finals (CPH Foyer) EngPlay	**Saturday July 14** EngPlay EngSoc Joint Council Meeting	**Sunday July 15**

Check out up-to-the-day event postings on the EngSoc website at engsoc.uwaterloo.ca

Tour Included Giga-to-Nano Lab in E3X

PRESENTATIONS

Continued from Page 1

As such, the fluids are moved with electric fields. Using changing rates of flow, a device was proposed that is able to filter and sort individual cells based on their size. As lab-on-a-chip technologies develop, the requirement for large laboratories to conduct tests is expected to diminish, as is the amount of a sample required to conduct the test.

From industry, Xerox presenter Yuning Li showed the future of printable organic electronics. With the aim of integrating the technology with Xerox's expertise in printing, he showed the potential of printing gold and silver nanoparticles stabilized by organic groups. Typical particle diameter was less than 10nm.

It was found that these particles could be annealed at low temperatures (around 120ºC to 200ºC), comparable to plastic processing temperatures. Post annealing, the particles were found to form excellent conductive layers. By printing these into transistor patterns on a polymer substrate, flexible electronics can be created. Developing this technology opens the route towards wide spread and affordable electronic-paper, capable of displaying several colours on a flexible substrate.

A key missing item in the Canadian nanotechnology community is a consistent standard of measurement at the nanoscale. The Institute for National Measurement Standards (INMS) at the National Research Council of Canada (NRC) has devised a calibration artifact that could solve this problem for a large array of instruments used in nanotechnology, mainly Scanning Probe Microscopes such as Atomic Force Microscopes, Scanning Electron Microscopes, and Scanning Tunnelling Microscopes.

Just as the automotive industry needs calibrated gauge blocks, the nano industry needs its own gauges – the 1D grating artifact. The average pitch of a grating artifact is calibrated at INMS facilities with an uncertainty of 20 picometres, smaller than the diameter of a hydrogen atom.

"We've been traditionally dealing with aerospace, electronics. . . . Now it's time we deliver the metre to the nanoscale," said Dr. Jim Pekelsky of INMS, promoting the grating standard.

Exploration of fundamental science is also important to achieving enabling nanotechnology. James Hedberg and others presented a poster with such a theme, showcasing the Atomic Force Microscope that they constructed. The microscope operates at 50 millikelvins above absolute zero in a 16-Tesla magnetic field which is so strong in an extremely cold environment that even electrons can be made to arrange into lattices called Wigner crystals, much like salt crystals. In 1934 Eugene Wigner predicted that electrons might behave this way under the right conditions. Due to the advent of nanotechnologies, these conditions can now be produced.

AFMs are conventionally used to map the topography of a surface somewhat like a person reading Braille, with the exception that AFMs have much higher resolution. Many special considerations were required to assemble such an exotic AFM. An example of such includes using silver screws to avoid interference with the magnetic field. Customized electronics are also required to filter out noise and signal error. Future microelectronic devices could take advantage of new phenomena which may be discovered in this work.

Another presentation of basic science focused on the folding mechanism of biological molecules. In nature, the shape of the molecule determines its function. Dr. Michael Woodside of NINT presented an experimental setup that allows the elucidation of this folding process.

Alastair Glass, Deputy Minister of Ontario, Research and Innovation addresses the Nanoforum regarding the future of Nanotechnology in Ontario.

The molecule that Dr. Woodside discussed was a single-stranded hairpin DNA molecule where the strand bunches up and forms hydrogen bonds with itself, similar to a twisted string. This molecule is attached to two beads. These two beads are positioned using optical tweezers or, as Woodside alluded, "tractor beams". The beads are carefully moved back and forth in opposition, stretching and relaxing the DNA molecule.

The energy required to break and reform bonds in the hairpin structure is used to construct an energy map of the entire folding and unfolding process. Being a relatively simple system, a precise folding mechanism was reported for the hairpin DNA. Having conquered this system, Woodside intends to tackle more complex biological molecules. This research has the potential to answer questions about the biochemical mechanisms that allow all living things to have life.

Included at the Forum were tours of the University of Waterloo's facilities for nanotechnology fabrication, the Giga-to-Nanoelectronics (G2N) Centre. Located on the north end of the E3 extension facing the Davis Centre (E3X), G2N's clean room facilities are usually only seen from the outside of the building. Included in its facilities are various methods for deposition, lithography (etching surfaces), and material classification.

While tour attendees were not allowed into the clean rooms due to an insufficient number of "bunny suits", they were able to see them from an observation hallway. There are several clean rooms, of level 10,000 – which dictate the number of particles below half a micron per cubic feet of area. The typical level outdoors is around one million particles per cubic foot.

The rising of the nano industry in Canada can be seen by the formation of several organizations over the past several years. Recently launched was the creation of NaNO, the Nanotechnology Network of Ontario. It aims to provide a hub for industry and researchers alike to collaborate on pushing Canada and Ontario towards the forefront of nanotechnology research.

The next NanoForum will be held in June of 2008 in Alberta. For further information visit the NanoForum website at www.uofaweb.ualberta.ca/nanoforum.

Architectural Personality Quiz

Which Famous Architect and Building Do You Most Resemble?

ANDREA MURPHY
2B ARCHITECTURE

Answer the following multiple choice questions and tally up your points to find out which Architect and famous building you are! (You'll definitely want to Google your answer.)

1) One of your professors has a habit of calling you by the wrong name, you…
a) Protest immediately and correct him (1pt)
b) Write a polite and formal letter to him informing him of his mistake (3pts)
c) Smile and nod (4pts)
d) Roll with it, use it as your nickname (2pts)

2) Where do you study?
a) In your basement apartment, alone (4pts)
b) In the Dana Porter Library, amongst the book stacks (3pts)
c) In the Bomber, while sipping a beverage with your friends (1pt)
d) In your loft apartment with a small study group (2pts)

3) How do you get around?
a) In your flashy new car (2pts)
b) In the car that you got off your grandparents (3pts)
c) You walk everywhere (4pts)
d) It doesn't matter what your car is, you'll blare the music anyway (1pt)

4) You arrive home after class, and you're starving. What do you eat?
a) The lasagna your mom made for you labeled with today's date (3pts)
b) Order pizza and call the guys (1pt)
c) Head out to the newest hippest restaurant in town (2pts)
d) You make yourself a sandwich and turn on the TV (4pts)

5) Which of the following electives are you most likely to take?
a) Love and Friendship (4pts)
b) The History of Rock and Roll (1pt)
c) English Literature (3pts)
d) Latin Dancing 101 (2pts)

6) What kind of chicken wings do you order?
a) You don't like chicken wings because they get your fingers sticky (2pts)
b) Honey garlic because you know they're not going to burn your mouth (4pts)
c) Regular BBQ because you just can't go wrong with BBQ (3pts)
d) Suicide hot – your middle name is danger (1pt)

Answers:
6-10 points: Extroverted and Imaginative: Frank Gehry - Disney Concert Hall
11-15 points: Smart and Sexy: Santiago Calatrava - Turning Torso
16-20 points: Traditional and Simple: Frank Lloyd Wright - Falling Water
21-24 points: Introverted and Thoughtful: Le Courbusier - La Chapelle de Ronchamp

Caption Photo of the Every-Other-Week Contest

Winner: "Periscope to cope with sea level changes due to global warming fears after *An Inconvenient Truth* is played in POETS."
– Kevin Cedrone, 4A Mechanical

Runner-up: "NewTech: Listening in on lectures without being in class."
– Johnson Tse, 2B Mechanical

Runner-up: "Quantum physics experiments on a very small budget."
– Charles Mavity, 1B Systems Design

Congratulations to the winner of last week's Caption Contest, Kevin Cedrone, who submitted the winning caption for last issue's photo, seen to the left of the captions above. Kevin was the happy recipient of a vintage University of Waterloo floppy disk holder (ideal for all the Mech students who still need to use them in their labs).

You don't want to miss out on this issue's prize, so send your submissions for the photo at the top of this page to IWcapcon@gmail.com! The winner will receive another super random prize. Please be sure to include your name, program, and term.

Sandford Fleming Foundation

CONGRATULATIONS
TECHNICAL SPEAKER COMPETITION RESULTS

WINNER of $500
Pallavi Ray of Chemical Engineering

Runner-Up prize of $250
Rana Tehrani Yekta of Civil Engineering

SANDFORD FLEMING DEBATES

The Sandford Fleming Debates will be held from 11:30 – 1:00 on July 9, 10, 11 in E2 Room 3324 with finals on July 13 at noon outside POETS in CPH. If interested in participating, please register your team with Prof. Jeffrey at sajeffre@engmail.uwaterloo.ca.. There is a prize of $300 for the two individuals on the winning team and the runner-up team will receive $250 each.

Funding for these awards comes from engineering student contributions and depends on them for continuation

E2 3336, ext 84008, sff@engmail
www.eng.uwaterloo.ca/~sff

Minutes to Midnight, or Minutes to Mediocrity?

YUVRAJ GOEL
3A MECHANICAL

Linkin Park has definitely been one of my favourite hard rock bands. I was a big fan of their music back in high school, and I still listen to their first two CDs. There used to be something about Linkin Park's music that was instantly likable a few years ago. Maybe it was the melodic, powerful, chord-driven choruses, the tight rapping in the verses, the ultra-cool riffs, or just the overall energy of the songs. This energy is conspicuously absent from their new album, Minutes to Midnight. The disc is a departure from what made the band great, while holding on to the things that stopped them from being legendary.

The band's lyrics, for example, still focus on despair and self-doubt, which is just no longer appealing as their core fan-base moves out of adolescence. They've only made two changes to their lyrical style: They're now complaining about what is going on in the world without suggesting any solutions, and they've also thrown in a lot of swearing. These changes didn't really do much for me, but then again, the band didn't become popular due to its lyrics.

The lead singer Chester Bennington does deliver some melodic and powerful vocals in places, but nothing out of the ordinary. Mike Shinoda is still decent at rapping, mostly due to his clear enunciation and somewhat improved rhyming. For reasons unknown, he is the lead singer on one of the songs. As for the remaining band members, it's pretty hard to comment on their performances since the production generally has a synthetic, pop-like feel to it. Brad Delson does have one guitar solo towards the end though, and it's passable.

Musically, the band has moved away from nu-metal in the direction of soft rock and pop. There is a bit more variety in the songs, and some of the anger is still there, but it's just not music that you can rock out to. These new songs are pretty watered-down, and the little aggressive content they do have just kind of sticks out awkwardly. The only songs that I think Linkin Park fans might dig are 'Given Up' and 'No More Sorrow', since these are the only ones that are actually heavy. I'm surprised that even with super-producer Rick Rubin's guidance, the band was not able to come close to its previous musical success.

A perfect example of a band that has successfully matured and developed its sound with every album is System of a Down. The reason I compare System with LP is that both bands have producer Rick Rubin behind them, and both are L.A.-based hard rock bands trying to tweak their sound after the collapse of the nu-metal era. With System's music though, you still never know what to expect: They can be fiercely direct and political in one song, and eerily quiet on another. They've never compromised artistic expression in an effort to appeal to the masses. The LP guys seem to be making music they think will be liked by the adolescents of today, without necessarily making what constitutes good music. Thus, they have lost the status of 'artists' in my opinion, but I do hope they regain it in the future.

I still like Linkin Park for the awesome music they've put out in the past, but sadly there's only one thing left to say about their new album: In the end, it doesn't even matter. I give it 4 screaming blond guys out of 10.

Fresh Scones For All

KEVIN CEDRONE
4A MECHANICAL

You can spend 10 minutes prepping and 20 minutes baking a week's worth of breakfasts, all at once!

The dairy ingredients will be at your local grocery store, but you can buy all the dry ingredients you need, including the dried fruit, at the Bulk Barn at 66 Bridgeport Road East. Go on Wednesday and show your WatCard for a 10% discount. I bet this recipe for six big raisin scones comes in under $3, which is about what a coffee and a bagel will run you at Tim Hortons on your way to class in the morning.

Scones

Mix together dry ingredients:
- 2 cups of white all-purpose flour
- 4 tsp. baking powder
- 1/4 cup white granulated sugar
- 1/2 tsp. salt

Combine with:
- 1/2 cup of cold unsalted butter cut into pea-sized lumps
- 2/3 cup white milk (or buttermilk)

Optional: Fold in 2/3 cup of sultana raisins

On a floured cutting board:
- Knead the dough, 8-10 times
- Too much and the scones will be tough and chewy (not crumbly, which is key)
- Roll the dough out into 8-10" round (about 1" thick)
- Cut into 6-8 triangles

On a greased or parchment lined baking sheet:
- Optional: Brush with egg-wash and lightly sprinkle with some white granulated sugar
- Bake @ 425°F (220°C) until golden brown (17-22 min depending on thickness)

(Egg-wash: 1 egg beaten with 1 Tbsp. of milk or warm water)

I won't lie to you. In my many years of dandy baking, I "discovered" these so-called "delicious variations" after having run out of things, or idiotically buying the wrong ingredients. This scone recipe is easy, flexible, and really forgiving. Go ahead and mix it up.

Delicious Variations:
- Use other dried fruit (e.g. blueberries, cherries, or cranberries) instead of raisins
- Add 1 Tbsp. citrus zest (best with cranberries)
- Replace flour with 1 1/3 cup of flour + 1 cup of bran
- Replace flour with ground oats (flake oats ground to fine powder)
- Replace milk with 3/4 cup of yogurt + 2 Tbsp. milk

I like scones for breakfast with some jam, honey, or warmed up with butter. The savoury ones can be used for dipping in soup. They're also pretty great with coffee or tea as a snack.

Some other combinations I have been meaning to try include chocolate chips and chopped hazelnuts for a Nutella-inspired scone. I was thinking of trying crushed walnuts and maple syrup (instead of sugar). This recipe might even go savoury with a bit of garlic in the butter, some oregano, and grated cheddar. The bottom line is you can definitely find something you like. You can use this as a familiarization exercise before you dive into other delicious baking endeavours, like cookies, muffins, and bread.

The No-longer Starving Student

Instant Soup with Real Chicken

JACLYN SHARPE
3A MECHANICAL

After a long day of classes and labs, what's more convenient than Mr. Noodles? Nothing, that's what. This recipe comes a close second though, and I guarantee that it's not nearly as detrimental to your health. I actually know vegetarians who eat chicken flavoured Mr. Noodles; that's how little they have to do with actual meat. Unfortunately you can't make real soup for $0.26, but mine's got genuine chicken in it, which has to count for something, and it's still cheaper than stopping by the plaza on the way home.

To cook chicken, bake chicken thighs in a 375º oven for 45 to 55 minutes until juices run clear when poked with a fork. I recommend cooking a bunch of chicken ahead of time and freezing the pre-cut pieces so they're ready anytime you need soup.

This recipe is quite flexible, if you don't have any pasta on hand you can substitute cooked rice, or potatoes. As for vegetables, anything goes as long as you're willing to eat it. If you've got a bit more time, onions, broccoli and celery are nice, and can be added with the vegetables.

Quick Chicken Soup - 1 Serving

284mL	chicken broth	$1.30
284mL	water	$0.00
1 cup	frozen mixed vegetables	$0.26
1	cooked chicken thigh, cut	$0.56
1 tsp	Italian spices	$0.09
½ cup	raw small shells pasta	$0.05
Pepper to taste		
		$2.26

Bring broth and water to boil over high heat. Add vegetables, chicken and spices, and wait for liquid to return to a boil. Add pasta and cook until tender following package instructions (shells take about 4 minutes).

POETS MOVIE SCHEDULE

SHOWINGS BEGIN AT NOON

		Wednesday June 27	**Thursday June 28**	**Friday June 29**
		Battle Royale Donnie Darko Sky Captain and the World of Tomorrow	Guess the Link Day! Three movies: one connection. Can *you* solve the puzzle?	Pursuit of Happyness I, Robot Hitch
Monday July 2	**Tuesday July 3**	**Wednesday July 4**	**Thursday July 5**	**Friday July 6**
Holiday	Click Deja Vu Paycheck	House	Casino Royale Goldfinger GoldenEye	Saw Saw II Saw III
Monday July 9	**Tuesday July 10**	**Wednesday July 11**	**Thursday July 12**	**Friday July 13**
Man of the Year Night at the Museum RV	Reno 911!: Miami Hot Fuzz Bon Cop, Bad Cop	The Negotiator Hostage John Q	Guess the Link Day! Three movies: one connection. Can *you* solve the puzzle?	TMNT (Teenage Mutant Ninja Turtles) TMNT II TMNT III

HUMOUR AND SATIRE

Dear LowRider...

LOWRIDER
3A SYSTEMS DESIGN

Dear LowRider,

For some reason people give me this disdained look when they first see me, it's kind of like a what's wrong with him look, and it's starting to bug me a bit. I mean I am completely awesome and super ripped - what is there that someone could not like about me? I attached a picture so you can tell me what's the deal!

Dominant Boye

Dear DBag,

Half popped collar… Hat tipped up… Multiple arm bands… Sunglasses inside despite the fact that you're in a bar… Dumb expression on your face… Skin looking like a nicely browned turkey. It's painfully obvious, and unfortunately for you the diagnosis isn't good, what you suffer from is chronic douchebaggery. There is no cure to this degree of doucheness and it can be contagious. You should do us all a favour and take your pre-faded jeans out of the gene pool - and hopefully you're not too thick to read between the lines.

Sincerely
\LR/

Dear LowRider,

I have had it! English language is worst language… EVER! Having the English as second language is biggest pain in ass! Honestly, nothing make sense, what you think about it being good writer you are?

Full of Bitterness

Dear FOB,

Honestly, despite your limp grasp of English grammar, I am really inclined to agree with you. There are a bunch of things in the English language that don't make any damn sense. Here's a quick example, why is it a 'pair of pants'? Have you ever heard someone call just one leg a pant? So if it's a pair of pants, why is it that a long sleeve shirt isn't called a pair of sleeves? That would fit in with the pair of pants logic. Also there is the whole pair of underwear thing. Is it possible to have just an underwear? Where the hell does the pair come from?! This is just one small part of why the English language annoys me on an almost daily basis. So don't worry, you're not alone.

Sincerely
\LR/

Dear LowRider,

I just finished my midterms… YA-HOOOOOO! But now I don't really know what to do with myself. What do you do when you've finished up your midterms?

Lost in Translation

Dear LIT,

Ah, the glorious after midterms feeling: the sun is shining, birds are chirping, and the smell of bear is in the air. You have nothing to do for a couple days - that definitely means time for some good ol' fashioned fun. Here is a step-by-step surefire way to have a good time:

1. Drive to The Beer Store.
2. Pick up some 750ml cans of anything that looks good.
3. Put on some 'My Own Worst Enemy' on your stereo.
4. Get a key, poke a hole in the can.
5. Put mouth on the hole and open the top.
6. Repeat as necessary.

From there on, just let the good times roll!

\LR/

Better Know A Beer: Birra Moretti

RORY ARNOLD
3A MECHANICAL

I have never trusted the Italians. They're like the French, but with better food. Have a look at a map: Don't they look like they're just waiting to give Spain a nice big kick in the ass? That's why I was so surprised to see an Italian beer in my hand when I walked out of the LCBO.

Birra Moretti was created in 1859 in the town of Udine, which at the time belonged to Austria-Hungary, but there was a strong presence of Italian nationalism. It was here that the businessman Luigi Moretti founded his "Beer and Ice Factory". Over the next century Birra Moretti became a success and was drunk by a large percentage of the local population. It continued to be brewed at the original factory until Heineken Italia bought it in 1996 and the name was changed to Castello di Udine, which now brews a selection of five beers. Birra Moretti has become internationally successful and is available in thirty countries.

When you look at a bottle of Birra Moretti, the first thing you notice on the label is a man wearing a green suit and hat, with a gold tie and a mug of beer lifted just below his red moustache. Genuine, traditional, and authentic are the words that best define this man. Just after World War II, Commander Leo Menazzi Moretti was searching for something to define those three words, which he felt embodied the spirit of his family's brew, and he found it in the form of a man sitting outside on a quaint Italian street sipping a cold pint of Birra Moretti. After he took the man's picture Commander Moretti asked what he could give in return. "Cal mi dedi di bevi, mi baste," responded the man: "A glass of what I'm drinking is sufficient for me."

The photo was taken in black and white but was sent to an artist who added colour and placed it on a poster, which hung wherever Birra Moretti was sold. Many of the shopkeepers noticed that a large amount of their customers thought it was them who sat proudly in the picture. This became the stable of Birra Moretti advertising and a number of actors were used in various photos until a famous artist named Bruno Bozzetto turned it into a cartoon in the 1970s. The cartoon is now put on every single Birra Moretti label.

Birra Moretti is a pilsner-style lager and the classic of the Birra Moretti family, which also includes La Rossa, an amber red dobblebock, Doppio Malto, a stronger ale, Baffo D'oro, a premium malt beer, and the recently developed Zero, a non-alcoholic beer.

The first thing you see when you enter the company's website is a list of their recent awards. This is deceiving, however, because in this day and age, they just make up awards so that nobody has to go home empty handed, and even though I can't say that Birra Moretti has a bad taste, this is mostly because it has no taste at all. I tried numerous ways to give this beer a flavor: I tried drinking it at a warmer temperature; I tried drinking it out of the bottle; finally I tried drinking it out of a glass; but I was unsuccessful. Therefore, Birra Moretti receives a score of 4/10, and most of that is for the picture of the man on the label. It is moderately priced and can only be bought in six packs at the LCBO. It contains a lower alcohol percentage at 4.6% alc/vol and is a light golden colour with a slight hoppy nose.

If you have the poor luck of being stuck with a six-pack of this brew it is best suited to go with mild pasta dishes; and although this beer was brewed to be drunk in the hot Italian sun, I would advise highly against drinking this beer on a hot day as you may mistake it for water. This is especially important if you're building a tower, unless of course you want it to lean, which I hear they do over there.

All in all, Birra Moretti is a beer that can be skipped over, but I guess that's why the Italians are known for their wine.

Last Issue's Crossword Solution

A	N	T	E	■	S	C	A	R	E	■	B	U	S	H
M	E	E	T	■	T	O	G	A	S	■	U	N	T	O
M	A	N	A	G	E	M	E	N	T	■	S	L	U	R
O	C	T	■	E	A	T	S	■	I	N	T	E	N	D
■	■	■	V	A	L	E	■	E	M	U	L	A	T	E
A	D	D	E	R	S	■	P	R	A	T	E	S	■	■
P	O	E	T	S	■	T	I	N	T	S	■	H	I	P
E	R	R	S	■	A	R	O	S	E	■	V	I	N	O
S	K	I	■	A	B	O	U	T	■	F	E	N	C	E
■	■	V	E	R	S	U	S	■	B	L	I	G	H	T
T	R	A	N	S	I	T	■	S	A	U	L	■	■	■
R	O	T	T	E	N	■	B	A	R	T	■	P	R	O
A	M	I	R	■	T	O	O	L	B	E	A	R	E	R
C	A	V	E	■	H	A	S	T	E	■	D	O	N	E
K	N	E	E	■	E	T	H	Y	L	■	O	D	D	S

Vive La France!

A Traveller's Guide to International Humour

CHRIS BENETEAU
4A MECHANICAL

"Why are there trees along the Champs-Élysées? So Germans can walk in the shade."

Silence. Utter silence. For a group of students gathered at an orientation prior to leaving on exchange, you'd expect a better reaction to historical humour. Not so. One even went so far as to say that I'd likely end up being chased by an angry mob armed with torches and pitchforks as soon as I land in Paris. "Not a problem," I said, totally unphased by their lack of humour, "I'll just talk loudly and angry-sounding and they'll probably surrender." Shockingly, this went over even more poorly than my first comment. I fully expect to be the best thing to happen to France-Canada relations since Charles de Gaulle.

Ah, the French. If ever there existed a more perfectly mockable populace, they'd probably have been conquered and assimilated into something less funny.

France plays an important role in the global political landscape. They're a member of the G8 group of nations, they're a permanent member of the UN Security Council, a part of the illustrious nuke club, and they possess the most laughable military record in modern history. No matter how small or destitute a country may be, they can always find solace in the knowledge that they could trounce the French. Even Italy.

I *think* I'm allowed to say that. Not necessarily the Italian comment, but every dig at the French leading up to that point is at least acceptable because of my last name. Now, I don't expect this excuse to fly at the deportation tribunal, but I feel it's valid all the same. But at the same time, why I should I have all the fun? Everyone should be able to laugh a little at a nation's stereotypes. Go ahead, try it. It feels good, I promise. Repeat after me: Cheese-Eating Surrender Monkey.

And while France is a glowing example of historical ethnic hilarity, it's far from the only one. In fact, why don't I just compile a list of humorous observations about a variety of countries:

• Germany: How can an entire country of people be right *all* the time?

• England: It's tragic – that a modern nation can exist without orthodontists.

• Korea: Cheap cars and Starcraft.

• Poland: Horses against tanks – good plan.

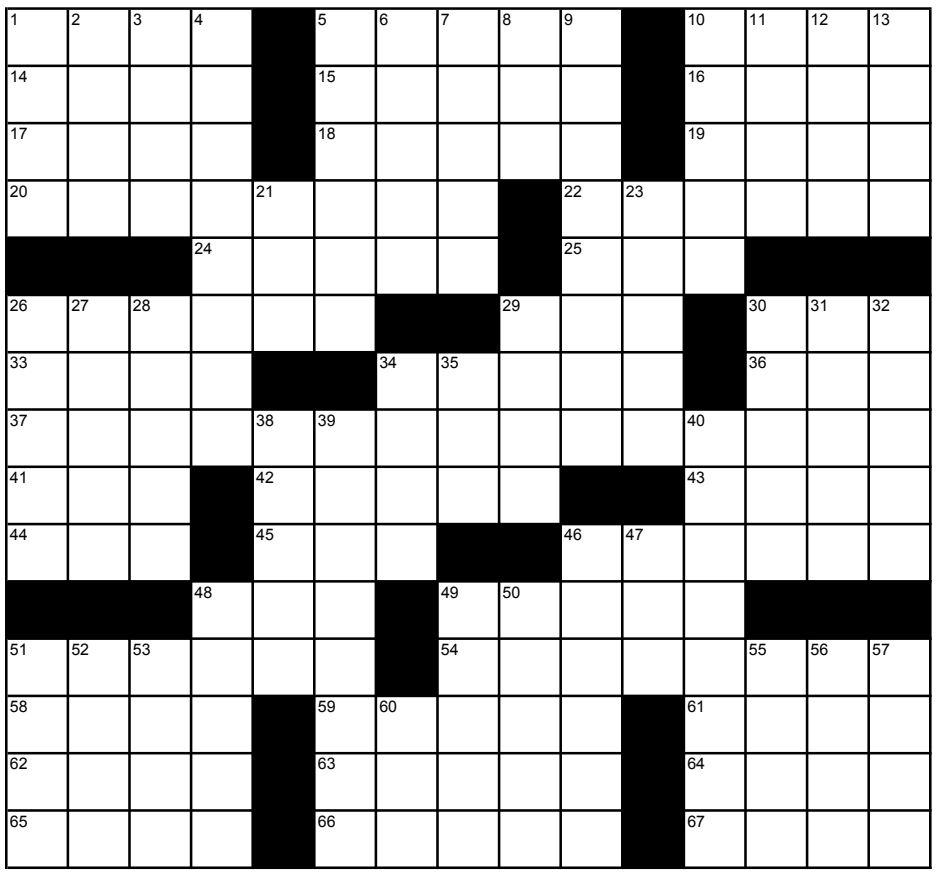
• Japan: That silly peace-sign and animals that are only capable of making noises in the form of their own name.

• Morocco: …sounds like… absolutely nothing. OK, I got nothing.

You get the point though: Lighten up. Embrace these harmless and humorous generalizations. Pretending they don't exist by hiding them under a veil of political correctness is giving them too much weight. I plan on taking my world-savvy and barrier-breaking style of humour across with me on my exchange to France and across the entire continent. Please address all care packages to the Turkish prison system.

Crossword

MICHAEL SUE-KAM-LING AND HILARY LOCKIE
3A CHEMICAL



Across
1. Grapefruit-tangerine hybrid
5. Lit up
10. Engineer's racing vessel of choice
14. Appear
15. Group of lions
16. Move slowly
17. Break suddenly
18. Group of experts
19. Confident
20. Temporary relief
22. Unfasten
24. Gives the go ahead
25. AHS prog.
26. Entice
29. Laplace operator
30. Elementary school council
33. Fairy tale first word
34. Derivative
36. Mistake
37. Sedra's circuit of choice
41. Cow's noise
42. Violent protests
43. Spiked club
44. Whichever
45. Colonial insect
46. Prevented success
48. Belonging to it
49. Ensnares
51. Pluto's former designation
54. Highway restaurant location (2 words)
58. Quebecois bear
59. Decree
61. Small amount
62. Physically disabled
63. Furious
64. Norse god of wisdom
65. Desire
66. Synthetic polymer
67. Elephant feature

Down
1. Former superpower
2. DNA building block
3. Jump
4. Inappropriate
5. Apply for review
6. Poutine requirement
7. One-dimensional objects
8. Two variable differential
9. Tidy (2 words)
10. Street Fighter villain
11. Responsibility
12. Land measurement unit
13. Previously
21. Famous Turner
23. Smith or Pisani, for example
26. Sentence divider
27. Layered vegetable
28. Authentic, the real ___
29. Text files
30. Punishment system
31. A very short time
32. Projectile path
34. Gambling machine
35. Allow
38. Dictate
39. Father of modern Physics
40. The act of neglecting
46. Opposite of 22 across
47. North campus bldg.
48. Something inserted
49. Test or proof
50. Right-hand page
51. Survey
52. Hawaiian feast
53. Warrior's expertise
55. List for busy people (2 words)
56. Milo's canine companion
57. Panel of glass
60. Anhydrous

Prof Quotes

"If I ever want to put my 5-year-old daughter to sleep, I sit her down in front of a 5x5 matrix and ask her to find the determinant."

- R. André, MATH 115

"If I asked you on the exam, or anywhere, maybe on the street with a gun to your head, 'Is this system stable or unstable?!' – would you know?"

- D. Miller, ECE 380

"We'll have to do something about that smell from Mongolian Grill."

- A. Sedra, referring to the proximity of the new Engineering buildings to the restaurant, Engineering Society Council meeting

"The best part of Titanic was at the end..."

- C. Devaud, while discussing vortices, ME 351

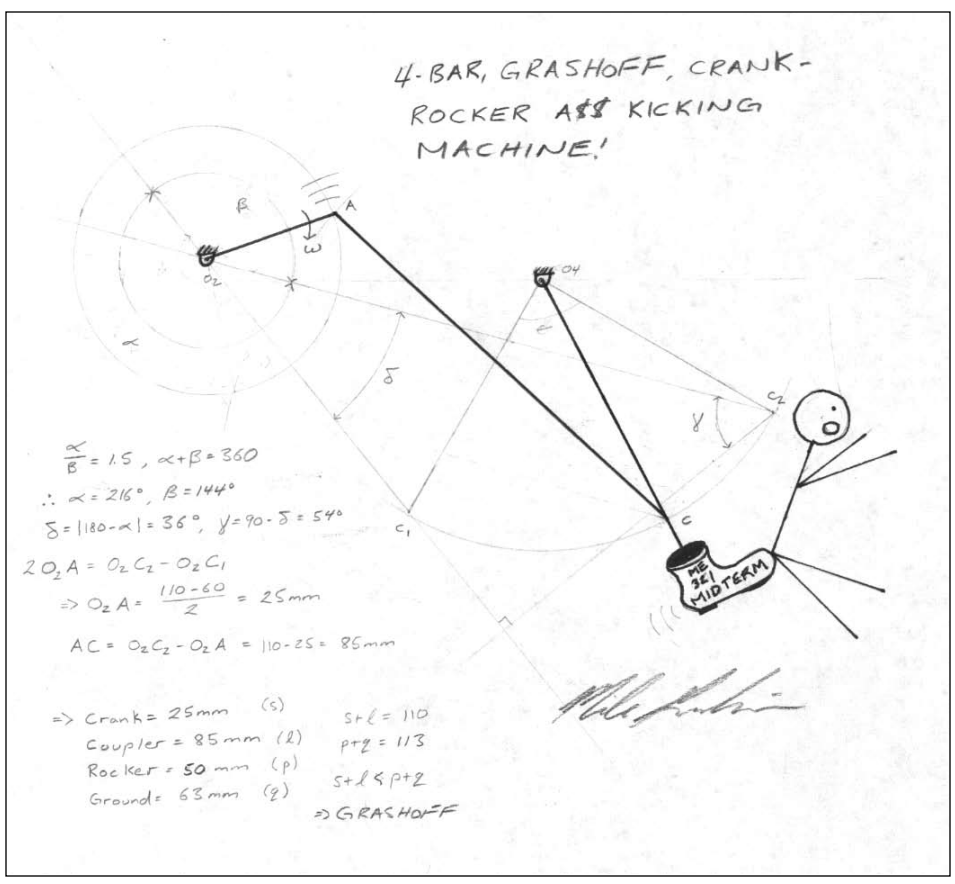
"We're gonna put the shovel in the ground for the first building next winter. Can you actually do that in the winter?"

- A. Sedra, Engineering Society Council meeting

"If you sit in the back row you have to have exceptionally good eyesight, or opera glasses."

- J. Medley, ME 321

MIKE GIANNIKOURIS
3A MECHANICAL



THE IRON INQUISITION

Mike Seliske, 1B Computer

"What should WEEF spend its money on?"

Matt Hunt
2B Mechanical

"More lab stuff."

Victor Nifo
2B Mechanical

"New computers in the Mechanical labs, so that you can use USB instead of floppies."

Jason Tikaram
2B Mechanical

"Making the Engineering campus look better."

Sapandeep Mathar
1B Systems Design

"Fixing all the broken computers."

Kristof Dorgai
1B Computer

"Giving June Lowe a raise."