The official publication of the Association of Professional Engineers and Geoscientists of Manitoba

THE KEYSTONE PROFESSIONAL

SUMMER 2015

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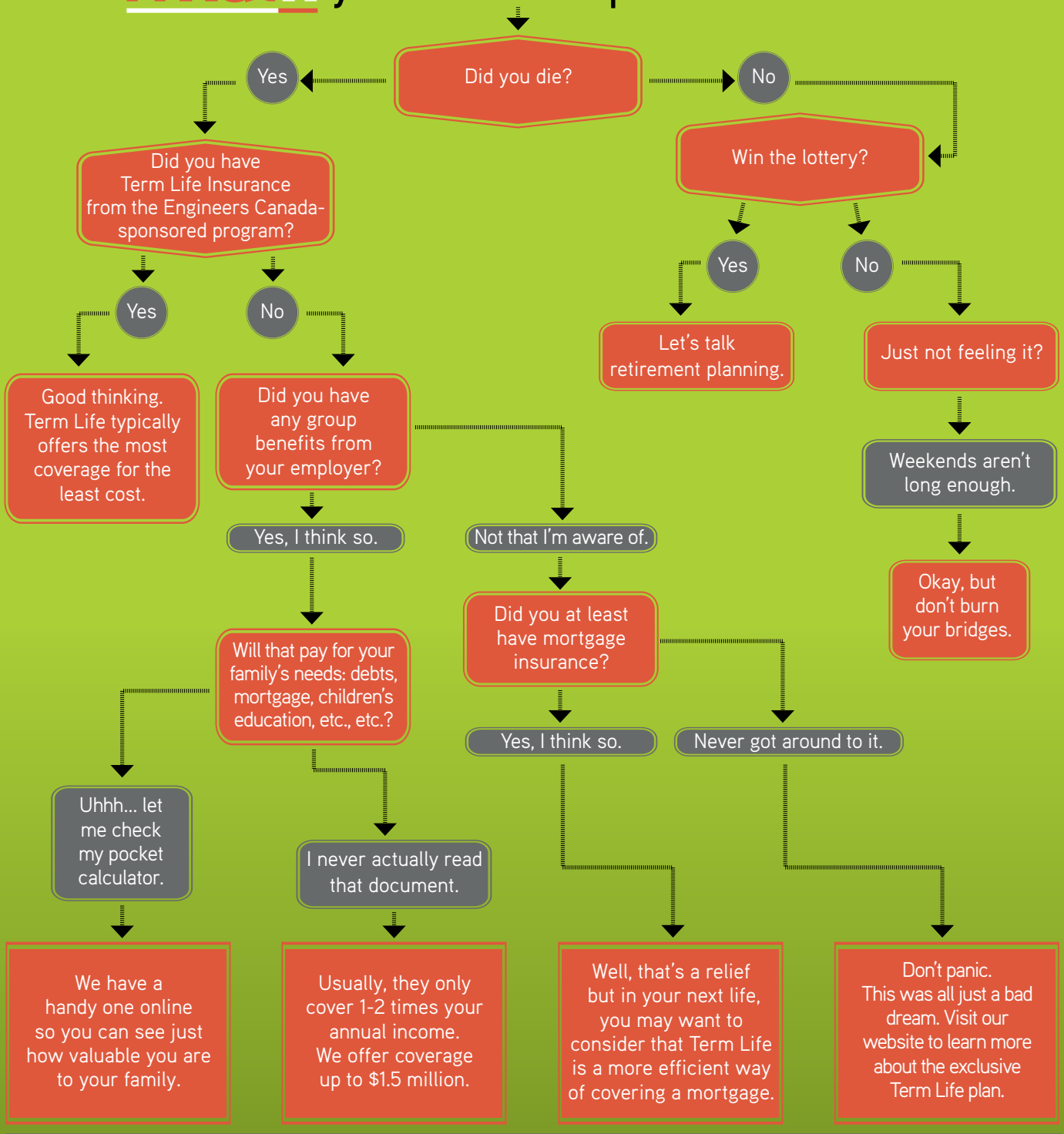

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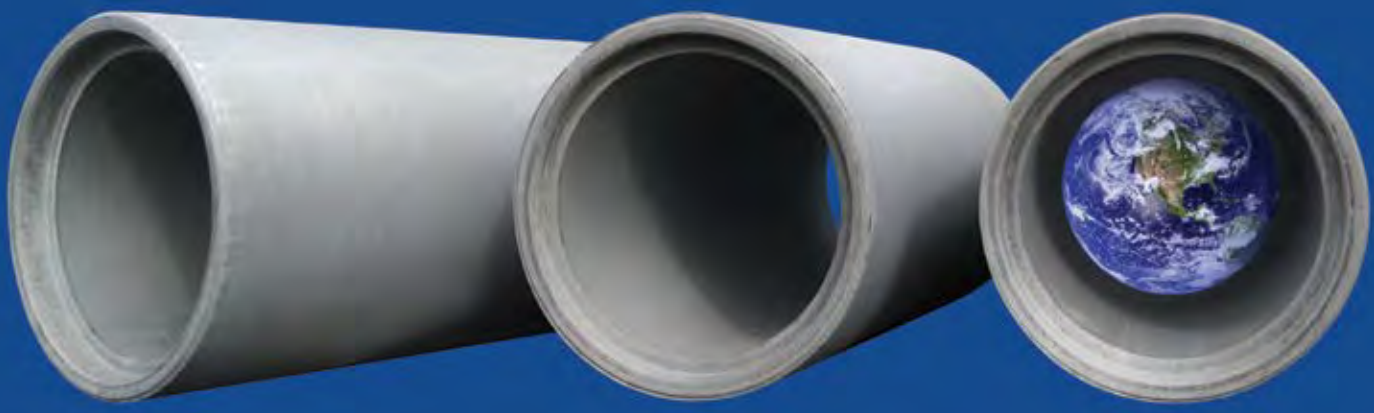

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The Keystone Professional Committee would like to hear from you. Comments can be forwarded to us by email: *amoore@apegm.mb.ca*. Members are also encouraged to submit articles and photos on topics that would be of interest to the membership.

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Howard Procyshyn, P.Eng., President 2014-2015

Regulations and Duties

Greetings…

We are in need of changing the Engineering and Geoscientific Professions Act. Being a self-administered and government mandated Association, we require the support of government to make such changes. Any act changes take considerable time to prepare, administer, propose, recraft and submit to the government for first reading. During attendance at other Associations' AGMs in Canada, it became apparent that act changes are required in all jurisdictions and remain a long arduous process. Recently, other associations were targeting five to seven years of act changes to take place. By good luck or good management, the Achilles heel revealed itself.

Both the Manitoba Association of Architects (MAA) and APEGM have a need for act changes, and approaching government as a collective group, working in concert and with the gracious support of government, there have been timely responses to receive these changes, with positive indicators that they will move forward. After all, this is a fine example of architecture and engineering collaboration even though there are a few isolated members that believe we don't get along… imagine that. This year I have the luxury of working in the same building as the President of the MAA, Mr. Lee McCormick. It's wonderful to see first-hand, the mutual support of the Architectural and Engineering Associations, at all levels.

Your Association hosted three info sessions last January, February, and March to outline the changes. The primary proposed changes are: creation of the Limited License category, exemption from the Corporations Act to make electronic voting legal, expansion of the Registrar's authority to include suspension of members for non-compliance with the ProDev program and provision of authority to give money to charity. There are also some administrative or housekeeping changes in the proposed package. Each of these help to inform the strategic plan as set out by Council to prioritize government relations, recruitment and retention, and public perception. These Act changes will help to achieve these goals.

The sessions were informative and generally well received. There was some discussion regarding the ProDev program. Members were informed that the Association is merely catching up to the authority granted to other regulatory bodies. There was some discussion on the charitable giving policy. Members were informed the proposed budget for charitable giving amounts to less than $10 per year per member, but will allow the profession to show generosity to those in our community who are touched by cancer, heart disease, diabetes, and other serious personal challenges. These two changes have a significant impact on the public we serve. A continued show of support by members for these changes will assist the process.

As part of the process of rebranding, many engineers and geoscientists are sporting the new made in Canada, P.Eng. or P.Geo. lapel pin. If you don't have one, please ask Grant Koropatnick, P.Eng., for yours. Send him an email. He will mail you a pin. The pin attracts attention in any setting and in particular of late at engineering meetings in other provinces. A made in Manitoba idea. Thanks Grant!

Have a great summer and hope you all take the opportunity to play as hard as you work.


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Grant Koropatnick, P.Eng., CEO & Registrar

Fear is a **Great Motivator**

I've heard it said that if you can make people afraid, you can get them to do anything. This seems most apparent to me when political parties use attack ads to make voters afraid of the other candidate. Why vote for a candidate who is likely to raise taxes, cut services and threaten your livelihood? You wouldn't. No one would. If you believe what is being said, you might experience fear or anxiety. Your decisions may be totally irrational – based on the fear caused by false statements. This is an example of being motivated by unfounded fear.

> Let go of any unfounded fears you may be carrying and seize the day by participating more fully in your profession and community.

Risk

What about actual risk? Risk is the combination of probability and outcome. If there is a 100% chance you're going to sustain a paper cut at the office today, do you feel at risk? Not really. The probability is high, but the outcome is minor. If I told you that one out of four Canadians[1] is expected to die from cancer, do you feel at risk? The probability seems high and the outcome is serious. You might feel anxious about those statistics and feel at risk. Does it make you want to eat more fruits and veggies, drink and smoke less, walk more, take better care of your health? Sure, that would be a normal reaction to the fear of cancer.

Safety Factor

Engineers should be good at coping with risk, it is a routine part of a good design. We call it "safety factor". How much extra steel do you put into a structure to reduce the risk of collapse in a gale force wind? How many relays and back-up systems do you put in place to keep the power flowing when an ice storm hits? An engineer will always pay attention to the safety factor and ensure it is properly included in the design. But what if the risk is low? Is there a need for a safety factor at all?

I have observed some engineers motivated by fear; when it grips them, they can't get free. As a result, they over-react and over-design things. Their fear is unfounded but they are stuck in the mode of mitigating a risk level that is either non-existent or extremely low. Why does this occur? You tell me.

[1]Canadian Cancer Society, "Cancer Statistics at a Glance" published Winter 2015. Based on 2009 data.

The Sky is Not Falling

What do you think when you hear a person say "I'm hearing from a lot of people. Everyone is talking about this or that"? How many? One or two? Everyone is talking about what? Some issue that has a low probability of happening and a minor outcome? Is this real risk or just gossip? Why spend time, energy and blood pressure points on that topic? It reminds me of the childhood story of Henny Penny who said "the sky is falling, the sky is falling" when beaned by a falling acorn. The truth is, the sky is NOT falling. The moral is to have courage and to not believe everything that is being told. Sometimes unfounded fear blocks rationality. If you or someone you know succumbs to unfounded fear, gently remind them that the sky is not falling and at the end of the day – all will be well.

We have many goals that we're working on. Council on behalf of the Association, is working on three strategic priorities: government relations, recruitment and retention of new professionals and

improving the public's perception of us. Exciting progress is being achieved for the members and the professions in these three areas. Watch for an update in a future edition of the *KP* magazine and on the web site. It's a great time to be an engineer or geoscientist. Let go of any unfounded fears you may be carrying and seize the day by participating more fully in your profession and community.

Have a great summer and remember our slogan and tell others that... ***"My life's work, makes life work better."*** Your feedback is important. If you have any thoughts on anything, please email me at *gkoropatnick@apegm.mb.ca.*

Engineering PHILOSOPHY 101

Wondering If It Does Exist

M.G.(Ron) **Britton**, P.Eng.

In the fall of 2003 a new graduate course, "The Engineering Design Process" was launched. It had taken two years to get approval from *the system*. In the original proposal the course was to be called "Engineering Philosophy", but this was deemed to be inappropriate. Suffice it to say that changing the course name solved the problem.

Today, at the conclusion of the 2014/2015 academic year, more than 100 students have shared a learning experience that we believe to be founded on engineering philosophy. Student response has been very positive. In fact, this column, and its *title*, came into existence in response to suggestions from former students.

I have never accepted the suggestion that "Engineering Philosophy" is an oxymoron, in spite of the position espoused by many professional philosophers. Interestingly, the current edition of Wikipedia notes, and has noted for a number of years, that "The philosophy of engineering is an emerging discipline that considers what engineering is, what engineers do and how their work impacts on society". As it happens, these are the very issues we consider in our Engineering Design Process course.

We are told that professional philosophers seek out historic foundations for their work. If we want to argue that engineering philosophy is not new, we need to look back at our history and seek responses to the questions Wikipedia suggests are *emerging*.

Maybe engineering's perceived status has something to do with philosophers ignoring us. In The Encyclopedia (1715), it was noted that "...there is a prejudice against the mechanical arts that is the result of their accidental association with the lower classes". During the Industrial Revolution in Britain, technical progress was driven by people from the trades. Engineering was not a part of the offerings at Oxford or Cambridge where philosophers trained young men to become *gentlemen*. Engineering schools did emerge in Europe during this time, but they tended to be stand alone Polytechnics rather that being a part of *real* universities. The *working classes*, populated by people like Watt, Stephenson, Darby, Wedgewood, and Brunel, among many others, may have gained significant wealth from the systems and processes they created, but they continued to lack social status.

"The philosophy of engineering is an emerging discipline that considers what engineering is, what engineers do and how their work impacts on society."

About 100 years later, in 1818, at the inaugural meeting of the Institution of Civil Engineers, Henry Palmer stated that "The Engineer is a Mediator between the Philosopher and the Working Mechanic, and like an interpreter between two foreigners, must understand the language of both, hence the absolute necessity of possessing both practical and theoretical knowledge". In a sense, this acknowledged the relative social status of philosophers and engineers. We existed between these two societal levels. Perhaps we still do.

If we fast forward to current times, we find Kallenberg noting that "Engineering happens in the context of systemic unpredictability endemic to the highly messy real world". Messes pose questions that require solutions, not just better questions. Philosophers talk about such situations. Engineers do something to mitigate those same situations.

Maybe the real reason for engineering philosophy to be considered an "emerging discipline" is explained by van de Poel and Royakkers' recent observation that "...engineering is not just about better understanding the world but also about changing it". This is the very antithesis of classic philosophy.

It is easy to fall into a pattern of attempting to pose better questions instead of providing solutions. Talking is so much simpler than doing. But typically engineers look for ways to improve situations and, from the perspective of professional philosophers, that makes us different. Maybe that explains why changing the name of our proposed Engineering Philosophy class without changing the course contents enabled us to deliver our intended material to our intended audience. Maybe that is an example of engineering philosophy at work. Simply examine the problem and find a workable solution. It may not raise our social status, it may not be terribly profound, but it gets the job done.

"Typically engineers look for ways to improve situations and, from the perspective of professional philosophers, that makes us different."

Thoughts on Engineering Design

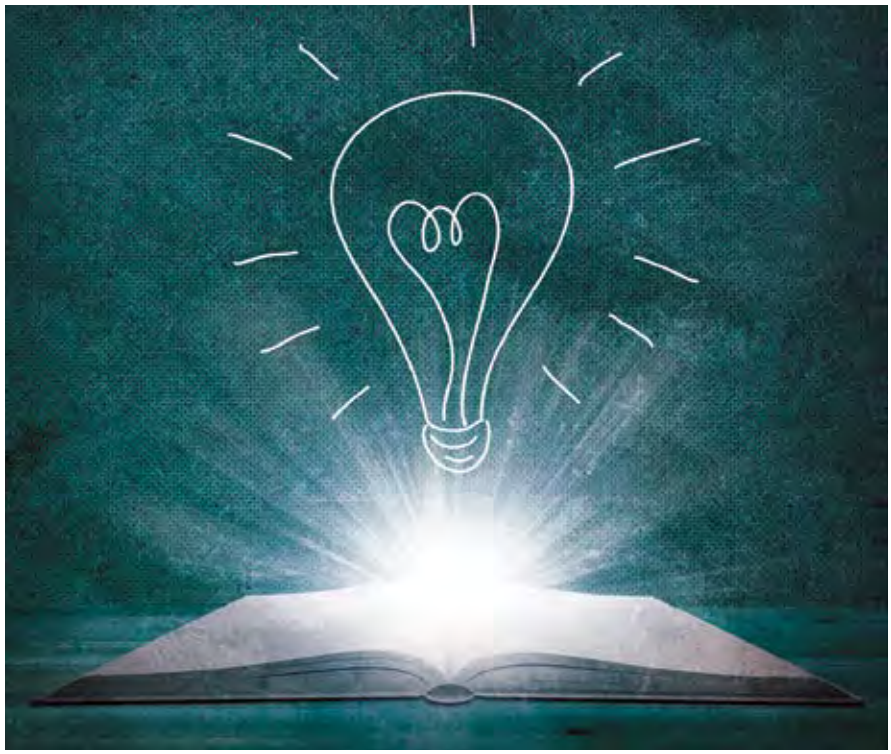
...and finding inspiration in the thoughts of others

M.G. (Ron) Britton, P.Eng.

Many years ago I began collecting *inspirational* quotations. The other day, as I was browsing through my collection, I came across a thought shared by a Japanese writer, Haruki Murakami. "If you only read the books that everyone else is reading, you can only think what everyone else is thinking." I began to wonder if this might provide a partial explanation for the difficulty we have in our attempts to define *design*, or more particularly, *engineering design*. In a broader sense, it might explain our difficulty in communicating our 'message' to those beyond our *circle*.

Steve Jobs once stated, "A lot of people in our industry haven't had very diverse experiences. So they don't have enough dots to connect, and they end up with very linear solutions without a broad perspective on the problem. The broader one's understanding of the human experience, the better design we will have". Is this just another way of expressing Murakami's observation?

In day-to-day engineering practice we read about new products, new projects, new or revised codes and new or revised standards, in order to stay abreast in our respective fields. This material is written in our *language* and from our perspective. It provides a portion of the foundation upon which we build our continuing competence. It provides a *factual* base we can use to create engineering solutions. It is highly variable across specialized areas within the profession. It is about technical detail not broad application. It is important to engineers.



But how many people outside of the engineering community even know that our *reading lists* exist? And beyond that, is there any reason why they should? More than 40 years ago Daniel C. Drucker suggested that "Engineers view themselves, on the whole, as servants of society". Some 20 plus years later, Carl Mitcham, a philosopher of technology at the Colorado School of Mines, offered the opinion that "...engineers commonly think of themselves as humanists ... they pursue their profession expressly because they view it as humanizing...". If Drucker and Mitcham were correct, isn't it incumbent upon us, as "humanists" and "servants", to understand more about that society we "serve"?

Engineers like Bucciarelli, Petroski, Koen, Florman, and others have pondered the process and purposes of engineering and design. Much of their writing seems to address ways to help "... everyone else ..." better understand who we are and what motivates us. While they are reaching out, many non-engineers are undertaking to define, and to help us, and "... everyone else ...", understand engineering.

Francis Spufford, an English non-fiction writer, took a stab at defining

"What is design? It's where you stand with a foot in two worlds – the world of technology and the world of people and human purposes – and you try to bring the two together."

– Mitchell Kapor

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engineering in his book, *Backroom Boys: The Secret Return of the British Boffin*. He suggested that,

> "Engineering, of any description, is an art of the possible. It happens at the junction between what is materially possible and what is humanly possible. Its course is shaped by the latest developments in the endless struggle to manipulate obdurate matter, and also by the agendas and priorities and resources and hopes and illusions of a society. Engineering is where science intersects with the way we live."

Another interesting *spin* was provided by graphic artist, Paul Rand, with his broad, profession independent, definition of design. "Design is the method of putting form and content together. Design, just as art, has multiple definitions; there is no single definition. Design can be art. Design can be aesthetics. Design is so simple, that's why it is so complicated."

Mitchell Kapor, an individual with an academic background in the arts, and the founder of Lotus Development Corporation, offered the following response during an interview. "What is design? It's where you stand with a foot in two worlds – the world of technology and the world of people and human purposes – and you try to bring the two together".

It is encouraging to know that people who have studied our profession from the outside are willing to present such positive views of what motivates us, where we fit, and what we can contribute. However, it is important to recognize that all of the material that has been cited and quoted in this column is, in fact, based on various author's assumptions and opinions, not on scientifically reproducible facts. Before we get too comfortable with their statements, we need to remember that one of the definitions of the verb "assume" (according to Oxford University Press) is "accept as true without proof".

And dipping into my file of *inspirational* quotations one more time, let me leave you with a 100 plus year old comment attributed to John Burroughs. "To treat your facts with imagination is one thing, but to imagine your facts is another."

Another Cracking Year for
SPAGHETTI BRIDGE

By Gemma Keatch

2015 proved to be another successful year for the APEGM Spaghetti Bridge Truss Strength Competition, held at Kildonan Place as part of a series of events marking the Provincial Engineering and Geoscience Week (PEGW) in March.

"It's great to see students, teachers, and engineers come together to build strong entries in support of Winnipeg Harvest. Many bright, young minds applied a lot of engineering ingenuity with glue and spaghetti. This year's contest entries held up 14,602 lbs.!" said Grant Koropatnick, P.Eng. FEC, APEGM CEO & Registrar.

The Association donates $1 per pound to Winnipeg Harvest, who turn it around 20x with their buying power. With matching food donations from partners Canada Safeway and Peak of the Market, Winnipeg Harvest will receive over 320,000 lbs of food from the 2015 Spaghetti Bridge Competition!

"Building bridges is important in any community. The idea of using pasta, which happens to be one of our top ten most needed items, is a great way to inspire youngsters and our next group of engineers to build those bridges. By including such a generous donation to Winnipeg Harvest, it helps illustrate that building bridges to reduce the number of people relying on food banks is important for any professional moving forward", says David Northcott, Executive Director of Winnipeg Harvest. "There are more bridges to build as we feed an average of 61,691 Manitobans monthly with nearly 45 per cent being children."

PEGW activities promote careers in engineering and geoscience to young people of all ages. Hundreds of families took part in the Children's Activities, including building gumdrop structures, flying balsa wood gliders, and digging for Manitoba mineral samples, which were all run by Association volunteers. Booths distributed information about careers in engineering and geoscience, and students displayed their entries for the Truss Strength and the Bridge Design Competitions. The celebration was part of the National Engineering Month occurring across Canada throughout March 2015.


kg


BRIDGE
kg

Aboriginal Access Program (ENGAP) at the Faculty of Engineering Celebrates 30 Years of Success

By Amber Anderson Skrabek

Founded in 1985, The Engineering Aboriginal Access Program at the University of Manitoba (ENGAP) is the most successful program of its kind in Canada, providing guidance to Indigenous peoples pursuing a degree in Engineering.

"The success of this program really hinges on the people," says Randy Herrmann, P.Eng., Director of ENGAP. "We don't just provide our students with counseling services, assistance in finding employment, daycare, or academic and financial support... we provide a community where our students feel at home and can thrive."

In 1991, Dan Brown was the first graduate of the ENGAP program. Like many future ENGAP students that would come after him, he didn't come to university right after high school and that presented him with some challenges. "When I was in high school I had no idea what I was going to do with my life," says Brown. "After being in the workforce for close to a decade I began to think about my future and my career in a different way. That's when I heard about ENGAP." Working at Manitoba Hydro, two hydraulics engineers there told him about the new program, but having been out of school for so long, Brown had no idea what was involved in going to university. "ENGAP provided so many supports that I didn't even know I would need," says Brown.

Dan Brown

> "The U of M is committed to Indigenous Achievement and to ensuring the success of First Nations, Metis and Inuit students and graduates."

"Tutoring, navigating the university, providing access to community based supports and counseling, these were all things that were really the keys to my success." Brown is now the Manager of Process Control and Automation at Syncrude Canada Limited in Alberta, and sits on the Senate of the University of Alberta.

Accessibility to all peoples has always been a priority at the University of Manitoba. The U of M is committed to Indigenous Achievement and to ensuring the success of First Nations, Metis and Inuit students and graduates. "The Faculty of Engineering takes pride in being a leader in this important initiative," says Dr. Jonathan Beddoes, P.Eng., Dean of Engineering. "The ENGAP program has created a unique environment for Indigenous students to succeed."

Brown agrees. "Just having my high school diploma was not going to get me where I wanted to be," says Brown. "The mentors I met through ENGAP gave me the ability to believe that I could get an engineering degree."

ENGAP is having an impact. "We still have a long way to go," says Herrmann. "Less than one percent of engineers in Canada are of Indigenous descent, but knowing this program is having an impact and can help grow that number is quite rewarding."

This year the program celebrates another milestone in watching their 100th graduate receive an engineering degree. Rene O'Laney, grew up in Sagkeeng, Manitoba and he, like Brown, worked for several years prior to coming to the University of Manitoba. "When I first thought about coming back to school, it was just to get my carpentry ticket," says O'Laney. "Then I went to a career fair and met a really nice lady from ENGAP. After speaking with her, I believed I could get an engineering degree. It wasn't easy, but I did it!" O'Laney is now working on projects in northern Ontario for PCL Constructors.

ENGAP's 30th anniversary celebrations will be highlighted during the Faculty of Engineering's Homecoming 2015 festivities on October 2 & 3. Events will include the Faculty Homecoming Reception the afternoon of October 2 that will feature a talk by Dan Brown, a special ENGAP reunion dinner that evening and the University of Manitoba Homecoming banquet on October 3.

For more information, contact Tannis:
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204-474-9872
or toll free: 1-800-432-1960 ext. 9872

SMART GRID
The Energy

By David G. Sanders, P.Eng., PMP

When you ask people to define the Smart Grid, you will get a lot of different answers. Some will talk about wind turbines and photovoltaic as alternative energy sources. Others will talk about smart metering to give the residential customers feedback on their energy consumption habits. Still others will speak of increased efficiencies and using energy more wisely.

I think that Bob Gilligan, the CEO of GE's Industrial Solutions said it best, when he defined the Smart Grid as "The marriage of information technology and automation technology with the existing electricity network. It is the **energy internet**".

The design of our supply grid is over 50 years old. Ironically if Edison and Westinghouse, as early designers of the power grid, were to be transported from the past to our present day, they would still recognize the basics of the system. (However they would be amazed by the equipment controlling the grid behind the scenes). What we seek to do with the Smart Grid is to make the existing grid smarter, to supply energy more reliably and efficiently.

The success of all utilities is measured by reliability of the power supply. There are several different indices used to measure reliability in terms of the frequency and duration of power interruptions. Engineers have been working for decades to increase the reliability of the power system. Smart Grid topics often refer to a self-healing grid. A self-healing grid would be able to react so quickly to natural disasters, faults or human error that utility customers would be totally unaware of any power grid damage.

Massoud Amin, Director of the Technological Leadership Institute at the University of Minnesota, describes the self-healing aspect of the Smart Grid in terms of three functions:

- The first is real time secure monitoring, modelling and reaction that will allow the Smart Grid to constantly tune itself automatically to an optimal state.
- The second is functionality and anticipation which enables the Smart

Internet

Grid to automatically look for problem areas that could trigger large disturbances.

- The third is rapid isolation, which allows the Smart Grid to isolate parts of the systems of the network that experience failure from the rest of the grid, to avoid the spread of disruption. This rapid isolation also enables a more rapid restoration of power.

Many utilities enter the realm of Smart Grid with residential smart metering projects or AMI (Advanced Metering Infrastructure). With the implementation of smart meters, consumers would be able to monitor their own energy usage in real time. These meters permit a two way exchange of information between the consumer and the utility. That information exchange allows the consumer to tailor energy use to the available supply and enable the utility to better respond to energy demands. Although not of great concern to Manitobans with consistent power rates, smart metering has been used successfully in areas where time-of-day power rates exist. The time-of-day power rates change throughout the day to encourage

"The Smart Grid requires a paradigm shift from the thinking and practices we normally associate with **the power system."**

non-critical power use (dishwashers, laundry washers and dryers, etc.) to be used during off-peak periods.

Some of you may remember the George Orwell novel *1984* in which Big Brother (the government) controlled everyone's lives and kept them under 24/7 surveillance. Some utilities have experienced resistance from their smart metering customers to the Smart Grid. These customers fear that with this two-way exchange of information between the power user and the power supplier that the utility may use the AMI data to find out too much about their habits and lifestyle.

The Smart Grid requires a paradigm shift from the thinking and practices we normally associate with the power system. As an analogy, years ago in Winnipeg, residential homeowners put all of their household waste into green garbage bags. Today the waste is drastically reduced with the implementation of recycling carts, garbage carts and separate neighbourhood recycling depots for cardboard and glass. That's the same type of change in thinking that the Smart Grid will require.

Although included in most Smart Grid discussions, plug-in electric vehicles, wind turbine generators and solar photovoltaic arrays are not really part of the Smart Grid. What the Smart Grid does include is the technologies, which permit us to seamlessly integrate, interface, and optimally control these innovations and others into a better coordinated, reliable power system.

Unfortunately there is no one "Silver Bullet" approach to enabling the Smart Grid. Instead we have a "Silver Shotgun", a broad, scattered approach of many potential technologies that can enable the approaching Smart Grid.

Faculty of Engineering | University of Manitoba

Engineering Co-op/IIP at the University of Manitoba:

Putting Education to Work

By Carolyn Geddert, P.Eng.

The Co-operative Education and Industrial Internship Program (Co-op/IIP) is a valuable partnership between the university, employers and students, whereby students complement their academic study with paid work experience in an engineering field. The training and experience Co-op/IIP students receive on work terms, combined with their academic knowledge, prepares them for the work force after graduation. Students have an opportunity to explore different career choices and develop contacts in the industry while engineering employers can gain support and access to additional funding by hiring through Co-op/IIP.

How does the program impact a student's experience?

Two years ago, Dan Nenadov, a Biosystems Engineering student, spent seven and a half months in Nunavut as part of the Co-op/IIP through the Faculty of Engineering at the University of Manitoba. His Arctic work experience in Cambridge Bay as a project officer on infrastructure projects left Nenadov passionate about the North and bringing much-needed engineers to the region.

Nenadov says that he realized early on that it made sense to get involved in the Faculty of Engineering's Co-op/IIP. After he got involved, he realized further that the program is much more than just pairing a student with a job. As he notes, "It's a great way for students to have a bit of control over where they are getting a job, and for employers to have a bit of control over the students they are getting. It makes the whole system more valuable, because everyone's a stakeholder".

His success in and championing of Co-op/IIP at the Faculty of Engineering led Nenadov to be the first recipient of the "Friends of Engineering Co-op/IIP Student of the Year" award. The award, which includes a framed certificate and a $2,000 cash prize, was instituted last year by the Friends of Engineering (Manitoba) Inc., a unique group of Manitoba industry influencers who share the U of M Faculty of Engineering's commitment to excellence in engineering education.

Dan Nenadov

Nenadov, who graduated this spring, was also the first engineering student to receive the University of Manitoba Co-operative Education Student Champion Award for 2013.

How does it work?

The Faculty of Engineering's Co-op/IIP office strives to assist employers by providing one point of contact, access to high achieving, skilled and motivated students. Flexible work terms, (4, 8, 12, or 16 months), and continuous intake of students allows each employer to create the Co-op/IIP program that works best for them. Ease of recruiting saves time and money for employers. Co-op/IIP employers are eligible for provincial grants and tax rebates.

Co-op/IIP is available in all of our departments and programs, including Biosystems, Civil, Electrical & Computer, and Mechanical. Within each of these departments and programs are students enrolled in the Internationally Educated Engineering Qualification program (IEEQ) and the Engineering Access Program (ENGAP).

In addition to posting positions, assisting in recruiting the right students for your company and facilitating interviews, Co-op/IIP helps companies connect with the entire student body through their now famous H.I.R.E.D. (Helping Industry Reach Engineering students Directly) events which take place each Monday evening on campus. Put on in collaboration with the University of Manitoba Engineering Student Society and the NSERC Design Chair, these Monday night events provide employers with the opportunity to speak to students about their company and what opportunities may be available. For students it is a great opportunity to meet employers and find out what they are looking for in employees. Some students have even received job offers at these presentations. Companies who have participated in these events include MacDon Industries, Magellan Aerospace, Dillon Consulting, Multicrete Systems, Manitoba Hydro, Stuart Olsen Dominion, Boeing, MTS and many more. H.I.R.E.D. is held on Monday nights starting at 5:30 PM in E2-110 throughout the fall and winter terms.

"Co-op/IIP helps companies connect with the entire student body through their now famous H.I.R.E.D. (Helping Industry Reach Engineering students Directly) events."

Co-Op/IIP has doubled in size over the last few years, and the goal is to double in size again by the end of the decade. This aggressive growth is a direct result of listening to what our industry stakeholders have told us they are looking for; one point of contact, connection to top-notch engineering students, flexible work terms and access to financial and administrative support.

For more information on how you can find your next star employee, contact Carolyn Geddert, P.Eng., Co-op/IIP Director at 204.474.8948, *Carolyn.Geddert@umanitoba.ca* or visit *umanitoba.ca/engineering/programs/coopiip*.

Welcome New Members

B.S. Abu Nameh
C.S. Acharya
E.P. Adajar
I.D. Ainslie
R.D. Alderson
B. Aryafar
K.A. Assefa
D.V. Beresnev
D.M. Besaw
B.W. Blackmer
E.F. Bohncke
J.D. Bunkowsky
M. Cadorette
B. Chakravarty
Z. Cheng
S.Y.F. Cho
T.C. Chow
L.Q. Chung
K.G. Cobbe
D.J. Creagh
V.E. Cyr
R.A.D.C. Darjuan
F.G. Davila
F.P. Dawalibi
P. De Grandpre
F. Dehmeshki
P.S. Deol
M.S. Desai
S.S. Desai
J.A. Doucet
J.Z. Dueck
A.R. Emery
D.J. Etcheverry
A.M. Evans
J.D. Ferchoff
J.C.R. Ferguson
B.C. Fleming
K.R. Forhan
F. Fourar Laidi
D.A. Fraser
M.K. Gandhi
A. Ganguli
M.P.A. Gaudreau
J.B. Grace
S.P. Grant
A.R. Griffith
D.G. Hanks
D.T. Heaven
R.F. Hergott
A.D. Higginson
D.P. Hinton
G.B. Holman
D.R. Holstein
A. Hossain
A.A. Iravani
P.G. Jackson
T.W. Janke
H. Jean-Baptiste
L.M. Johnson
S.B. Jones
M. Kermani Koosheh
S. Khajehpour
J. Khan
K.S. King
K. Kolakowski
H.C. Kouessi
B. Kovacevic
R.C. Kozutsky
K.N. Kulwa
A. Laforest
D.T.C. Lai
J.L.B. Lambert
S.W. Lapp
P.A.G. Leclercq
F. Lefebvre
S.C. Leung
X. Li
A. Link
Z. Lou
B.L. MacAulay
J.N. MacKenzie
I.M. MacLeod
M. Magafourakis
F. Mahmoodianfard
F. Majdzadeh
B.J.J. Malone
S. Mangat
J.J. Manzano
B.J.D. McCormac
J.W. McCreary
I.M. McLellan
R.J. McMillan
J. Michniewicz
B.N. Mills
L.A. Murphy
O.M.K. Nanayakkara
S.L. Nugent
M.K. O'Hara
D.S. Olmstead
J. Oyarzun
B. Papillon
B.C. Parker
M.A. Petursson
B.E. Petzold
J.M. Plohman
M.W. Pouteau
D.G. Protulipac
P.D.H. Prowse
C.L. Qiang
S. Rechoum
S.K. Reddin
P.T. Redhead
J.T. Reimer
R. Renaud-Drouin
R.N. Riess
C.L.M. Ritchot
L.F. Rodriguez
D.V. Ruiz Quispe
L.M. Ryland
A.A.G. Salibi
C.S. Sandhu
K.A. Savage
K.R. Schaan
K. Sekhon
T.D. Shepherd
K.M. Shrestha
D.R. Sigurdson
J.R. Sintra
T.D. Smith
B.E. Stang
E.A. Steendam
C.L. Swallow
Z. Tang
J.A. Thompson
P.R. Thomson
G.R. Toews
C. Tremblay
A. Vahedi
D.J. Van Ee
J.S. Vespa
K.A. Vilminot
R.T. Waddell
C.S. Wadsworth
A.J. Walczak
H.M. Walton
C.D. Webster
D.B. Wei
Y. Wei
D.R. White
T.A. White
C.B. Wilcox
G. Wilkinson
D.A. Witzel
Z.J. Wolff
S.H. Wong
C.L. Yaremko
W. Zhang

Members-in-Training

S.U. Adindu
S.J.P. Ambs
V.R. Bagay
N. Balakrishnan
D. Bhudia
W.A. Blunt
E.S. Borisova
C.Y. Chan
L.D. Chiu
A.J. Church
B.J. Clarke
M.R. Coates
J.N. Coey
F.J. Cook
G.A.D. Craig
H.H. Danial
J.W. Davidson
T.A. Defoort
L.J. Dueck
A.B. Englot
J.M. Fey
J.D. Fredericks
N. Ghias Nezhad Omran
R. John Zachariah
P. Johnson
R.G. Joson
T.M. Karklin
C.F. Kwiatkowski
J.H.F. Lam
G.V. Lane
M. Lashkarizadeh
E.J.N. Lavergne
W. Lin
Z. Liu
N.C. Machoko
B.M. Madrid
H.A.A. Massoud
R.H.G. Maynard
H.L. McCrea
A.R. Meads
P. Milbers
M.D. Moncek
C.J. Nabanoba Musoke
M.T. Nasri
M. Nessiem
S.R. Nikkel
J.P. Nixon
E.K. Ocran
C.M.M. Palma
E. Ponce Berber
R.R. Prathipati
A. Rabaev
S.F. Radwan
P. Rapsomanikis
E. Salimi
P. Sallh
D. Saraswat
J.A. Seeley
J.N. Serhal
G. Tian
K.M. Turabian
C.C. Uchime
A.A. Ugalde
J.O. Velasco
T.V. Whettell
J. Winter
M.R.R. Wood
Z. Xie
L. Xue
T. Yang
N. Yassin
T. Yebra Vega
K.J.E. Zumel

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J.A. Wilson

In Memoriam

Stanley Bailie

Council Notice to Members

By Grant Koropatnick, P.Eng., Secretary

Annual General Meeting

The 2015 Annual General Meeting of the Association of Professional Engineers and Geoscientists of the Province of Manitoba will be held on Friday, October 23, 2015 at the Fort Garry Hotel, 222 Broadway, Winnipeg, MB.

Nominations for Election to the APEGM Council

The Nominating Committee of APEGM requests recommendations from members and members-in-training for nominees who they consider to be qualified to participate in the governance of the Association and who are willing to so serve the engineering and geoscience professions in Manitoba. There will be four professional engineer positions, one professional geoscientist position, and one member-in-training position to be filled as of October 2015.

The Committee will consider recommendations received by the secretary up to the close of business on Friday, September 11, 2015. In the event insufficient recommendations are received, the Committee may exercise its prerogative to put forward a slate of candidates for election that is equal to the number of positions to be filled. Persons submitting a recommendation are required to obtain the consent of the professional member being recommended and to provide a curriculum vitae or biographical sketch.

Members can also be nominated directly and be on the ballot for the 2015 election by the completion of the prescribed nomination form. Nomination and resume forms may be downloaded or may be obtained from the APEGM office. Persons submitting a recommendation are required to obtain the consent of the nominee.

By-Law Changes

By-Law 17.1 prescribes that any proposal to introduce new By-laws, or to repeal or amend existing By-Laws, must, unless initiated by the Council, be signed by not fewer than six members. Proposals must be given to the secretary at least 42 days before the meeting. In this case, the date for the receipt of a proposal is Friday, September 11, 2015.

Resolutions

By-law 5.1.4 prescribes that resolutions put forward at an Annual General Meeting must be in writing, signed by the mover and seconder, and received by the Secretary no less than 48 hours prior to the commencement of the meeting. Either the mover or the seconder must be present in person or by distance conferencing at the meeting for the resolution to be considered.

Professional Engineer Hired as Winnipeg's New CAO

Registered professional engineer and Association member, Doug McNeil, P.Eng., was unanimously approved as the new Chief Administrative Officer (CAO) for the City of Winnipeg. Doug most recently served as the deputy minister in Manitoba's Infrastructure and Transportation department and previously worked for the Manitoba Floodway Authority and the city's water and waste department. Doug started his new role as CAO on April 7, 2015.

APEGM Member Award Winners

Congratulations to Association Past President Digvir Jayas, P.Eng., FEC on being named the Engineering Ambassador Award Recipient from The Partners In Research (PIR) National awards. The award recognizes Canadian researchers for their outstanding work over a period of time which has contributed to the field of engineering and corresponding promotion of the research to the Canadian public. Please visit *www.pirweb.org* for more information.

Congratulations also to Association member Jeanette Montufar, P.Eng. for winning Shaw Media – Global News Women in Leadership Award which was awarded at the Volunteer Manitoba Awards Gala on April 14, 2015.

Jeanette is the first time winner of this award, which is awarded to someone who demonstrates exemplary vision in creating or implementing a program, project or initiative in response to community need; exemplifies a visionary approach for creating positive change; provides motivation, compassion and inspiration and leads by example.

Jeanette was selected for this award for her leadership in founding the Hummingbird Education Fund, which promotes secondary education for women with limited resources and for working with at risk teens in Winnipeg's Hispanic community. For more information on the Hummingbird Education Fund please visit, *www.hummingbirdeducationfund.com/* or for information on the Volunteer Manitoba Awards please visit, *www.volunteermanitoba.ca/awards*.

Chinese Members Chapter Update

The Chinese Members Chapter of the Association of Professional Engineers and Geoscientists of Manitoba (APEGM) is a non-profit organization, consisting of professionals and members-in-training of Chinese origin and registered with APEGM. Technologists/technicians and students in engineering related fields are also welcome to join the Chapter. As of April 30, 2015, the Chinese Members Chapter had close to 100 members registered.

The objectives of the Chinese Members Chapter is to encourage and facilitate the study, discussion, networking and exchange of ideas and information among their members. This provides mentorship for members that are in the process of becoming registered professional engineers. By creating a forum that connects engineering communities in Manitoba, other provinces in Canada and other countries, the Chinese Members Chapter facilitates the integration of internationally trained Chinese engineers into the local engineering community. All of these objectives promote positive awareness of the significant contributions of the Chinese-Canadian engineering community.

On May 28, 2015 The Chinese Members Chapter held a double feature seminar on becoming a professional engineer. Senior Geotechnical Engineer, Mr. Tony Ng from KGS group talked about "Why am I an Engineer", followed by Sharon Sankar, Association Director of Admissions, on "How do I become an Engineer". Please watch for similar seminars on the Chapter website, *www.apegm.mb.ca/ChineseChapter.*

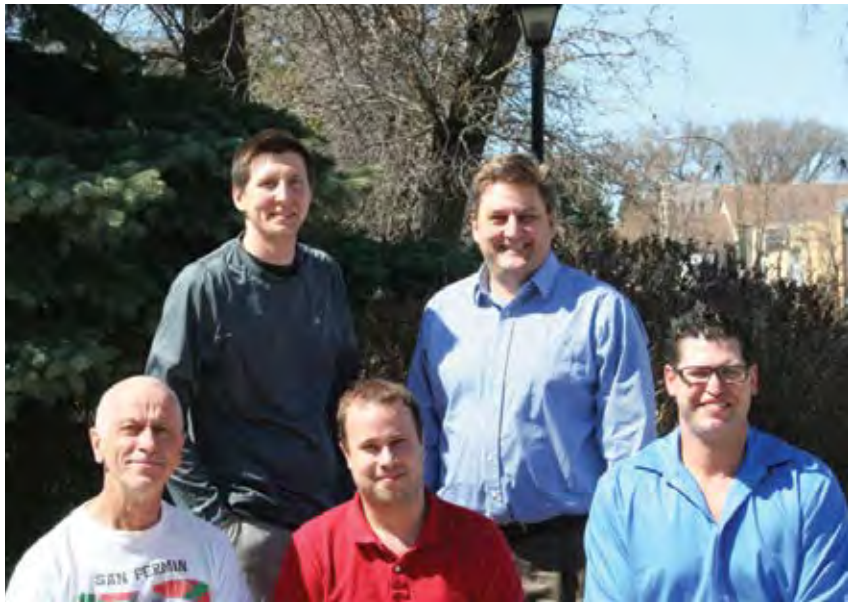
For further details regarding the Chinese Members Chapter, please feel free to contact Steven Wu at *steven.w@ckpeng.com*, Chair, or Wing-Keat (Wayne) Wong, *wingkeat.wong@amec.com*. *www.apegm.mb.ca/chinesechapter.*

Westman Chapter Update

The Westman Chapter has had a prominent 2014/2015 year. The eight executive committee members who graciously volunteer their time have helped organize numerous engineering events over the season. There is strong participation from Association members who attend Westman's scheduled professional development luncheons and technical seminars.

Some of the notable 2014/2015 presentations which were developed to encompass a diverse interest for all engineering disciplines were:

- A discussion of the importance of protecting yourself as an engineer when involved with structural design by President Gerry Mulhern from the Canadian Concrete Pipe and Precast Association.
- A presentation on the electromagnetic engineering method in locating unexploded military ordnance by Rob Riesz an Engineering Officer from CFB Shilo.
- An in-depth look at cold in-place asphalt laying discussed by Mike Kohinski , MIT and the rehabilitation of highway #10 through Riding Mountain National Park by Cory Vitt.
- A detailed overview describing fiberglass characteristics and the construction benefits by Structural Composites.
- A discussion on creating a reliable distribution network in Manitoba by Scott Whaley of Manitoba Hydro.
- An informative presentation on the Manitoba Water Services Board by Travis Parson, Chief Engineer.



APEGM Westman Executive
Back Row: Cory Vitt, Mike Maendel (Vice-Chair)
Front Row: David Ford (Secretary), Ryan Johnson, Scott Whaley (Chair)
Absent: Kyle Cumming (Treasurer), Ashish Banerji, Brad Newton

The Westman executive committee appreciates the continual support and interest from all Association members and we are looking forward to seeing you at future events.

For more information on the Westman Chapter please visit, *www.apegm.mb.ca/westmanchapter.*

CBC Manitoba's Future 40 contest

Congratulations to Association Past President Dawn Nedohin-Macek, P.Eng., FEC and third year engineering student at the University of Manitoba, Mihskakwan James Harper for being nominated for the CBC Future 40 Contest.

The CBC Future 40 Contest is a celebration of the incredible stories that people are doing in our communities. It is a way of putting a spotlight onto the work of top leaders, builders and change makers under the age of 40. Nominations were collected which explained the professional contributions and/or outstanding service in the community of the nominee, and how the nominee has advocated for the health and success for the people that call Manitoba their home. For more information please visit *www.cbc.ca/manitoba/features/future40-2015.*

New Members Luncheon

New members receiving their certificates at the New Members Luncheon held on Tuesday April 14, 2015 at St. Boniface Golf Club.

Conduct Unbecoming

Can a member, who is technically skilled at performing their engineering or geoscience duties, be charged with professional misconduct simply because of their behaviour? For example, would the use of insulting language and cursing be a cause for an investigation?

Many Association members relate professional misconduct to our Code of Ethics. In most instances where a member is charged with professional misconduct, the charge does relate the member's conduct to a violation of our Code. However, the definition of professional misconduct is broader than a violation of any specific canon of our Code.

Our Act defines professional misconduct and unskilled practice by listing six categories of conduct that are actionable through the disciplinary procedures. As expected, one of the categories of professional misconduct is any violation of the Act, By-laws or Code of Ethics (46(1)(d)). One of the other elements of the definition, however, simply refers to 'conduct unbecoming'. When we single out this element, the Act reads as follows:

"Conduct of an investigated person that in the opinion of the panel is conduct unbecoming a professional engineer or professional geoscientist constitutes professional misconduct" (46(1)(b)).

Conduct unbecoming is not further defined in our By-laws or Code of Ethics. The Investigation Committee must therefore interpret this term without the aid of a legislated, prescriptive list. However, since APEGM is not the only regulator that considers conduct unbecoming a sanctionable offence, there is precedence for guidance.

At Duhaime's Law Library, examples from the accounting and legal professions are provided regarded conduct unbecoming (*http://www.duhaime.org/LegalDictionary/C/ConductUnbecoming.aspx*). More refined definitions as well as cases provide direction as to how to interpret conduct unbecoming. Conduct unbecoming should not be used in instances of private affairs. However, conduct unbecoming can also be pretty broad, extending beyond the skills expected for that particular profession. In particular, it is noted that conduct unbecoming includes instances where the individual's actions harm the profession's reputation.

"In most instances where a member is charged with professional misconduct, the charge does relate the member's conduct to a violation of our Code. However, the definition of professional misconduct is broader than a violation of any specific canon of our Code."

At APEGM, a complaint that came in several years ago was levied against an engineer by another member. The complaint was a result of a disagreement that occurred at a public meeting. The complainant alleged that the member had insulted his wife. The Investigation Committee dismissed this complaint; one instance of potentially bad behaviour was not considered conduct unbecoming.

Around the same time, the Investigation Committee became aware of a newspaper article about an individual being convicted of child pornography. The article further indicated that the individual was an engineer. Although our Code of Ethics requires member to obey the laws of the land, the Investigation Committee was mostly concerned about the deleterious effect that this member's actions had on the image of the profession. The member was charged and the matter was published in the *Keystone Professional*.

The issue of conduct unbecoming went dormant for a few years, but there have been several issues lately that have been a cause for concern for the Investigation Committee. Three complaints have been

made regarding conduct in the past year and, in all three cases, the investigation committee has cautioned the member or proposed a penalty.

One complaint was made against a member for the manner in which he publicly treated another member. The complainant showed that the member had emailed an entire group of people and, in that email, declared that the complainant was incompetent in his field of practice. One instance of this kind of behaviour would likely not have been sufficient to be a cause of concern for the Investigation Committee, but the investigation showed that the email was just one example in a pattern of behaviour.

Another complaint was also based on an email. This time, the member made disparaging remarks about women and indicated that he would never again hire female staff to work for him. In this case, the Investigation Committee did not feel that they needed a pattern of behaviour, as the statements made by the member were indicative of an entrenched attitude that had long-term implications.

In a third matter, the complainant raised several concerns, including the member's behaviour. The complainant showed emails where the member insulted the complainant and acted in a manner that might be considered by some as harassing in nature. Once again, the investigation showed that the member had a pattern of behaviour that was conduct unbecoming. For this member, the conduct unbecoming consisted of abusive language directed at others, both verbally and through written communication.

From the cases where the Investigation Committee has taken action, we can start to see a delineation of the kind of conduct that is considered 'unbecoming'. Repetitive behaviour that seriously harms the profession's standing will result in an investigation and a potential caution or charge. One instance of acting badly is not sufficient, unless it is a clear instance of moral turpitude.

As always, I appreciate comments and discussion about standards issues. If you'd like to talk about the above topic or any other area of concern, please do not hesitate to contact me at: *mgregoire@apegm.mb.ca*.

The Keystone Professional wishes to thank the following companies and organizations for their advertising support. Please think of them when you require a product or service. We have tried to make it easier for you to contact these suppliers by including their telephone numbers and websites. You can also go to the electronic version at *apegm.mb.ca* and access direct links to any of these companies.

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Jeff Kutny, Marketing Manager

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THE FACULTY OF ENGINEERING AT THE UNIVERSITY OF MANITOBA INVITES YOU TO

HOMECOMING 2015
A SPECIAL CELEBRATION

All engineering alumni and friends are invited to help us celebrate the 30th anniversary of the University of Manitoba Engineering Access Program (ENGAP).

MARK YOUR CALENDARS!

Faculty of Engineering Homecoming Reception
1:00 pm October 2, 2015
Engineering & Information Technology Complex (EITC) Atrium
University of Manitoba, Fort Garry Campus

To find out more contact:
amber.skrabek@umanitoba.ca or call 204-474-9034

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