

SUMMER | ÉTÉ 2019



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Learning

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Welcome to the new *CIVIL* magazine.

At CSCE we are updating the look of our brand as one of the steps towards delivering on our mission. The look of our brand will better reflect the modern and professional work of our Society, of our members and our industry. This effort also shows our members our commitment to help them deliver on their vision, to provide them the platforms they need to bring about change and to ultimately help them succeed.

This will never negate the fact that we are a brand that is steeped in tradition. As much as we may keep on trend, grow the reach of our voice through new digital means and take a contemporary approach to visual details, we will always be proud of our history and our commitment to uphold the quality of work in our industry.

Bienvenue à la nouvelle revue *CIVIL*

À la CSCE, nous mettons à jour l'apparence de notre marque qui constitue l'une des étapes de la réalisation de notre mission. L'image de notre marque reflétera mieux le travail moderne et professionnel de notre Société, de nos membres et de notre industrie. Cet effort montre également à nos membres notre engagement à les aider à concrétiser leur vision, à leur fournir les plates-formes dont ils ont besoin pour apporter des changements et, à terme, à les aider à réussir.

Cela ne niera jamais le fait que nous sommes une marque ancrée dans la tradition. Autant nous pouvons suivre les tendances, élargir la portée de notre voix grâce à de nouveaux moyens numériques et adopter une approche visuelle contemporaine, autant nous serons toujours fiers de notre histoire et de notre engagement à maintenir la qualité du travail dans notre industrie.

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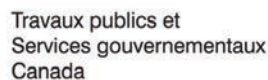
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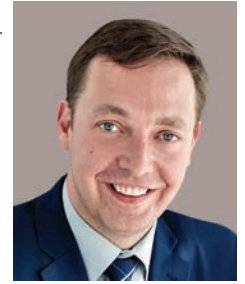
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Unwavering Commitment

Dear friends, colleagues, and members,

As I step into the role of President of CSCE, I want to express how humbled I am by this opportunity. I am also privileged to be taking over this position from someone who is very distinguished in the civil engineering profession and who has had a very influential year with CSCE, Mr. Glenn Hewus. I want to take this opportunity to thank him for helping us bring our national office team up to the next level and for reminding us all that we should be proud of the work we do as engineers, and together as a Society. I look forward to working more closely with the national office team and keeping up the momentum.

I have been a part of CSCE for more than ten years now and have been a member of the Board for the last couple of years. I have been able to both participate in and study the process of bringing change to the civil engineering industry. When I was handed over this new role at the 2019 CSCE Annual Conference in Laval, I made a commitment to the Society. I will be dedicated to the process, the needs of our members, and the change that needs to occur in our work to move us closer to our strategic goals.

Renewing CSCE's strategic goals in 2020 will be one of the first tasks we will address

“

I believe we have taken some great strides toward our goals and we will continue on that trajectory by working more closely with our members to support the next generation of civil engineers.

”

with the Board in the latter half of this year. And as we ride the waves of success from the 2019 Annual Conference, which focused on growing with youth, we can safely predict that this effort will continue to be important for CSCE in years to come. This is in addition to our other current strategic directions, which are geared around sustainable development and enhancing member services.

After a successful annual conference, I want to thank Mr. Glen Carlin, Honorary Chair of the Conference; the conference Co-Chairs, Jean-Luc Martel and François Leprince; and the entire Conference Committee, our sponsors, volunteers, and, of course, our national office team.

The focus of this year's conference was chosen with purpose, as we are making every effort to follow through on our commitments

as a Society. We are dedicated to helping both students and young professionals enter our field because they are the future of our industry. We received an outstanding number of abstracts this year, which only confirms that our focus is in the right place.

In these next twelve months, I look forward to being an integral part of the process of bringing about change not only for CSCE, but for our industry. I believe we have taken some great strides toward our goals and we will continue on that trajectory by working more closely with our members to support the next generation of civil engineers and the progression of the work we do for our industry.

As always, be seen, be heard, and be relevant.

Best regards. ■





Michel Khouday, Ing., M.Eng.,
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Un engagement indéfectible

Chers amis, collègues et membres,

Alors que j'entre en fonction comme président de la SCGC, je dois vous dire à quel point je suis humblement touché par cette occasion. J'ai également l'honneur de me voir confier le flambeau par M. Glenn Hewus, un ingénieur civil éminent qui a eu une année marquante à la SCGC.

Je le remercie de nous avoir aidés à faire tant évoluer l'équipe du bureau national et de nous avoir rappelé qu'il faut être fiers du travail que nous accomplissons personnellement en ingénierie, et collectivement au sein de la Société. J'ai donc hâte de travailler plus étroitement avec l'équipe du bureau national et de poursuivre sur cette lancée.

Membre de la SCGC depuis plus de dix ans, je me suis joint au Conseil d'administration il y a environ deux ans. J'ai pu ainsi étudier la transformation du secteur du génie civil et y participer directement. Cela dit, au moment d'accepter la présidence au congrès annuel 2019 de la SCGC à Laval, j'ai pris un engagement envers la Société. Je respecterai nos processus et je me consacrerai aux besoins de nos membres et au changement qui s'impose pour que nous continuions à progresser vers nos objectifs stratégiques.

Le renouvellement de ces objectifs en 2020 figure parmi les premières tâches que nous



Nous avons fait d'immenses progrès dans l'atteinte de nos objectifs, et nous continuerons dans cette voie en travaillant plus étroitement avec nos membres pour soutenir la prochaine génération en génie civil.



aborderons au Conseil plus tard cette année. Et forte du succès du congrès annuel 2019, qui a mis pleins feux sur la croissance axée sur la jeunesse, la SCGC peut miser avec certitude sur l'importance continue de cette stratégie au fil des ans. Celle-ci s'ajoute d'ailleurs à nos autres orientations stratégiques, qui visent le développement durable et l'amélioration des services aux membres.

Je tiens à remercier M. Glen Carlin, président honoraire du congrès, les coprésidents, Jean-Luc Martel et François Leprince, ainsi que le comité organisateur, nos commanditaires, nos bénévoles et, bien sûr, l'équipe du bureau national.

Nous avons un but précis en tête en choisissant le thème du congrès de cette année, car nous mettons tout en œuvre pour respecter nos engagements en tant que Société. Parmi ceux-ci figure celui d'aider

les étudiants, les étudiantes et les jeunes professionnels à percer dans notre domaine, car l'avenir du secteur est entre leurs mains. Nous avons d'ailleurs reçu un nombre exceptionnel de résumés cette année, preuve que notre visée est juste.

J'ai hâte de faire partie intégrante, au cours des douze prochains mois, du processus de changement qui dynamisera non seulement la SCGC, mais aussi notre industrie. Nous avons fait d'immenses progrès dans l'atteinte de nos objectifs, et nous continuerons dans cette voie en travaillant plus étroitement avec nos membres pour soutenir la prochaine génération en génie civil et le travail que nous accomplissons pour notre discipline.

Comme toujours, soyez vus, soyez entendus, soyez pertinents et soyez fiers de notre société de génie civil. ■



2019 Job Shadowing Event

East New Brunswick and Prince Edward Island Section



On January 25, 2019, the East New Brunswick and Prince Edward Island Section of the CSCE, in partnership with the Faculty of Engineering at the Université de Moncton, organized another successful edition of their Job Shadowing event. This annual event's goal is to bring together CSCE student members from the Moncton region and local employers to bridge the gap between being a student and entering the job market. Prior to the event, the students had the chance to choose what field of civil engineering they wanted to learn more about. They were then paired with a professional engineer working in that field.

After the students and professional engineers met for lunch on campus, they spent an afternoon together. The engineers gave a brief taste of the type of work they did and what a typical day might look like. It was a great opportunity for students to ask questions regarding the field and for the engineers to provide information on what a career in engineering is all about.

17 students and 15 professional engineers participated in this edition and, once again, it was a great success. We took this opportunity to ask participating students and engineers a few questions regarding their experience with the event. Here is what they had to say:

Robert Cyr, P.Eng., Senior Geotechnical Engineer, Conquest Engineering



Why do you think it is important for your organization to participate in this event?

Some of the students don't know in what field of civil engineering they would like to work, or even study in university. Geotechnical engineering isn't a well-known or well-understood discipline. I think that this job shadowing event is a great opportunity to answer many of the students' questions and to clarify what the roles and responsibilities of a geotechnical engineer.

What do you hope students will remember from the time they spent with you?

I hope the students will have gained a better understanding of geotechnical engineering and the importance of quality assurance and quality control during a construction project.

Renée Morency-Cormier, P.Eng., Senior Resident Engineer, New Brunswick Department of Transportation and Infrastructure



Why do you think it is important for your organization to participate in this event?

I think it's important to show the students what their field of study really looks like. What you see in books and what is happening in real life can be two different things. Sometimes they are surprised by what they see once they leave university and enter the workforce.

What do you hope student will remember from the time they spent with you?

That there are many different types of expertise in engineering and that it's important to be exposed to real projects to better understand how the future will be shaped.

Clément Kombo Beya, second-year student, Université de Moncton



Tell us about your experience.

We started the afternoon by gathering information on what type of work a municipal engineer does at the office. We looked at the planning and execution parts of a project and how municipalities proceed to replace roads, sewers, and other types of infrastructure. We ended the day with a site visit where the

City of Moncton was replacing a damaged sewer system.

Was the experience positive for you, and do you think it will influence your future career choices?

The experience was positive, as it allowed me to make a decision on what field of civil engineering I wanted to focus on and made me realize furthermore why I am pursuing engineering studies.

Josée Vautour, fifth-year student, Université de Moncton



What were your expectations for the event?

In a more general aspect, it was to gain a better understanding of the

different career paths available to a civil engineer. More specifically, it was to confirm my interest in transportation engineering. Whether it is environmental, transportation, structural, hydraulics, project management, or any other area, civil engineering encompasses a wide range of specializations. By spending the day with a professional engineer, I was able to see real projects of which I could be part in the future.

Was the experience positive for you, and do you think it will influence your future career choices?

The experience was positive for my career choice. It allowed me to get in contact with a professional engineer and to ask the questions I had. It allowed me to confirm a possible career choice as well as to network with a potential employer. ■

Vancouver	September 25	English	Ottawa	November 14	English
Calgary	October 9	English	Montreal	November 19	Français
Edmonton	October 10	English	Montreal	November 20	English
Winnipeg	October 11	English	Quebec	November 21	Français
Toronto	November 13	English	Moncton	November 27	English

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Journée Jumelage 2019

Section Nouveau-Brunswick Est et Île-du-Prince-Édouard de la SCGC



Le 25 janvier 2019, la section Nouveau-Brunswick Est et Île-du-Prince-Édouard de la SCGC, en partenariat avec la Faculté d'ingénierie de l'Université de Moncton, a organisé une autre édition de la Journée Jumelage couronnée de succès. Cet événement annuel a pour but de rassembler les membres étudiants de la SCGC et des employeurs de la région afin de faciliter leur passage de la vie étudiante à celui du marché du travail. Avant l'activité, les étudiants ont eu la chance de choisir quelle discipline du génie civil les intéressait et ont ensuite été jumelés avec un ingénieur professionnel œuvrant dans leur domaine d'intérêt.

Après que les étudiants et les ingénieurs se soient rencontrés pour un dîner sur le campus, chaque groupe a passé un après-midi ensemble. Durant ce temps, chaque ingénieur eut la chance de donner aux étudiants un aperçu de leur travail et de ce à quoi une journée typique peut ressembler. Ce fut une excellente opportunité pour les étudiants de poser des questions sur le domaine et aux ingénieurs de fournir de l'information sur ce qu'est une carrière en ingénierie. Lors de cette

édition de la Journée Jumelage, 17 étudiants et 15 ingénieurs professionnels ont participé et encore une fois, ce fut un grand succès. Nous avons profité de cette occasion pour poser quelques questions aux participants par rapport à leur expérience avec l'activité. Voici ce qu'ils avaient à dire :

Robert Cyr, ing., Ingénieur en géotechnique principal, Conquest Engineering



Pourquoi pensez-vous que c'est important d'accueillir des étudiants dans votre organisation pour la Journée Jumelage ?

Certains étudiants ne savent pas encore dans quel domaine du génie civil travailler et même étudier (quel cours optionnel à choisir). La géotechnique n'est pas une discipline très connue et comprise et je crois que la Journée Jumelage est une bonne occasion de répondre aux questions des étudiants et de clarifier le rôle et les responsabilités d'un ingénieur spécialisé en géotechnique.

Qu'est-ce que vous espérez que les étudiants auront retenu lors de leur court passage dans votre organisation ?

J'espère que les étudiants auront une meilleure compréhension du domaine de la géotechnique et de l'importance de l'assurance et du contrôle de la qualité lors de projets de construction.

Renée Morency-Cormier, ing., Ingénieure résidente principale, Ministère des Transports et de l'Infrastructure du Nouveau-Brunswick



Pourquoi pensez-vous que c'est important d'accueillir des étudiants dans votre organisation pour la Journée Jumelage ?

Pour leur démontrer réellement à quoi leur domaine d'études ressemble. Les livres et la réalité peuvent être très différents. Ils restent souvent surpris par ce qu'ils voient. Ce n'est pas toujours ce à quoi ils s'attendent du domaine de l'ingénierie.

Qu'est-ce que vous espérez que les étudiants auront retenu lors leur court passage dans votre organisation ?

Qu'il existe différents domaines d'expertise en ingénierie et aussi qu'il est important de s'impliquer dans des projets réels afin de mieux comprendre comment l'avenir sera façonné.

Clément Kombo Beya, étudiant en deuxième année, Université de Moncton



Parlez-nous de votre expérience.

On a commencé par obtenir des informations sur le travail d'un ingénieur municipal dans le bureau. J'ai pu apprendre sur la planification et l'exécution des projets, comment la municipalité fait pour remplacer les routes, faire l'entretien des égouts, etc. Par la suite, on a visité un chantier sur lequel la Ville de Moncton

effectue présentement le remplacement d'un système d'égout.

Est-ce que cette expérience vous a été bénéfique et est-ce que vous pensez qu'elle a influencé vos futurs choix de carrière ?

Oui, cette expérience a été pour moi très bénéfique, car elle m'a aidé à prendre une décision sur ma discipline d'intérêt et m'a permis de réaliser à nouveau pourquoi je fais des études en ingénierie.

Josée Vautour, étudiante en cinquième année, Université de Moncton



Quelles étaient vos attentes ?

De façon générale, c'était d'avoir une meilleure idée des carrières possibles en génie civil. Plus spécifiquement, c'était de confirmer mon

intérêt dans le domaine du transport. Le génie civil est un domaine vaste entre l'environnement, le transport, la structure, l'hydraulique, la gestion de projets, etc. En passant une journée avec une ingénieure, j'ai été capable de voir des projets réels auxquels je pourrais participer à l'avenir.

Est-ce que cette expérience vous a été bénéfique et est-ce que vous pensez qu'elle a influencé vos futurs choix de carrière ?

Cette expérience a été bénéfique dans le choix de ma carrière. Elle m'a mis en contact avec des ingénieures pour leur poser mes questions. Ceci m'a permis de confirmer un choix de carrière possible en plus de réseauter avec un employeur potentiel. ■

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Equilibrium and Career Growth

As engineers, we understand *equilibrium* to mean the concept for which a system is in a state of balance or rest. As a canon of engineering, it is a principle that readily applies to both our body of knowledge as well our professional careers. Naturally, our body and mind seek to conserve energy and, as a result, remain at rest. Although the act of being at rest may feel comfortable, it often mitigates career growth and future opportunities. Such mitigating factors may include the avoidance of social or networking events, non-participation with technical, business, or regulatory societies, and not continuing professional development in engineering or complementary disciplines that expand or deepen our knowledge. Such behaviour could be considered opportunity-averse.

Research performed by Dr. Sian Beilock, a cognitive scientist and President of Barnard College, correlated taking math tests with visceral pain sensations (Beilock, 2017). The point being made is that nothing that advances your career is easy or comes without pain; it is in fact difficult to undertake such activities and requires deliberate action on your part. Dr. Susan David, an instructor with Harvard Medical School, asserted, "Discomfort is the price of admission to a meaningful life" (David, 2017). Principally, this means that one should be comfortable with being uncomfortable. With the former, personal and professional growth becomes stagnant and may

contribute to lost opportunities to which we would have otherwise been exposed. Proactive measures are an important first step and can include developing a strategic career plan, becoming engaged in professional societies, or assuming positions of leadership.

The good news is that measures taken need not occur immediately or all at once. Success is more often than not a series of small accomplishments that, over time, aggregate into what we view as success. Incremental improvement is positive change and although this particular strategy may not yield immediate or easily discernable results, it is nonetheless the path to success (Obama, 2017).

References

- Beilock, S. L. (2017, November). *Why we choke under pressure and how to avoid it*. Retrieved from www.ted.com/talks/sian_leah_beilock_why_we_choke_under_pressure_and_how_to_avoid_it
- David, S. (2017, November). *The gift and power of emotional courage*. Retrieved from www.ted.com/talks/susan_david_the_gift_and_power_of_emotional_courage
- Obama, B. (2017). *A conversation with Barack Obama, Bill Gates and Melinda Gates*. Retrieved from www.youtube.com/watch?list=PLr6SwO7GNtc9lVWcoqyv-rtZbqJGXuYte&time_continue=5&v=9buDC32fkW0



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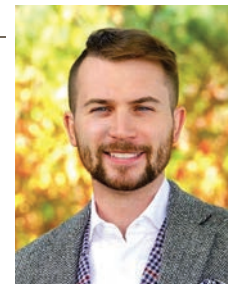


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L'équilibre personnel et la croissance professionnelle

En tant qu'ingénieurs, nous entendons par « équilibre » le concept selon lequel un système est en stabilité ou en repos. Mais ce canon de l'ingénierie s'applique aussi, métaphoriquement, à nos connaissances et à nos carrières. Notre corps et notre esprit cherchent à conserver l'énergie et, par conséquent, visent à rester au repos.

Si ce « repos » procure confort et détente, il peut miner nos possibilités de progression professionnelles. Exemple : on évite les événements sociaux ou de réseautage, la participation aux sociétés techniques, commerciales ou réglementaires et le perfectionnement professionnel continu en génie ou dans des disciplines complémentaires. Ce comportement peut représenter une aversion à l'avancement.

Sian Beilock, chercheuse en sciences cognitives et présidente du Collège Barnard, a établi une corrélation entre les tests de mathématiques et les douleurs viscérales (Beilock, 2017). Le message, c'est que la progression professionnelle n'est pas facile et comprend toujours des moments de « douleur ». Et cette progression exige une action délibérée de notre part – pas toujours facile non plus. La Dre Susan David, professeure à la Harvard Medical School, soutient pour sa part que les malheurs et les épreuves vont de pair avec une vie riche de sens (David, 2017). Bref, il faut être bien à l'aise d'être mis au défi. Sans défis, nous risquons de rater des occasions de croissance personnelle et professionnelle et donc de stagner. D'où l'importance de prendre d'abord des mesures proactives comme l'élaboration d'un plan de carrière, la participation à des sociétés professionnelles et l'accession à des postes de direction.

Mais rassurez-vous : vous n'avez pas à entamer plusieurs mesures ensemble, d'un seul coup. Le succès passe plutôt par une série de petites réalisations qui, au fil du temps, constituent un parcours dit réussi. Pour résumer la pensée de Barack Obama, les améliorations progressives mènent au changement positif et, si cette stratégie ne produit pas forcément des résultats immédiats ou évidents, elle demeure la vraie voie du succès (Obama, 2017).

« Le succès passe plutôt par une série de petites réalisations qui, au fil du temps, constituent un parcours dit réussi. »

Références

- Beilock, S. L. (2017, novembre). *Why we choke under pressure and how to avoid it*. Disponible sur www.ted.com/talks/sian_leah_beilock_why_we_choke_under_pressure_and_how_to_avoid_it
- David, S. (2017, novembre). *The gift and power of emotional courage*. Disponible sur www.ted.com/talks/susan_david_the_gift_and_power_of_emotional_courage
- Obama, B. (2017). *A conversation with Barack Obama, Bill Gates and Melinda Gates*. Disponible sur www.youtube.com/watch?list=PLr6SwO7GNtc9lWwcoqyv-rtZbqJGXuYte&time_continue=5&v=9buDC32fKw0 ■



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Sharing of Knowledge

How the Mentor/Mentee Dynamic Goes Both Ways

By Shayna Wiwierski, DEL Communications

The great thing about mentorship is that it goes both ways. Harold Retzlaff, Senior Project Manager with the Saskatchewan Ministry of Highways and Infrastructure, enrolled in the provincial government's mentorship program, which provides career and professional development support to public service employees and enhances leadership at all levels of public service. From there, he was matched with Aaron Gerein, Senior Project Manager with the Saskatchewan Ministry of Highways and Infrastructure. What started as a way to pass on knowledge soon became a two-way highway of sharing ideas, theories, and cultural learning shifts. Soon, both gentlemen realized that they were both receiving valuable advice from each other.

We sat down with Retzlaff and Gerein and chatted about generational differences, what they learned from each other, and where they think the industry is going.

CIVIL: Tell me about yourselves, how you got into the industry, why, and how long you've been in the industry for.

Harold Retzlaff (HR): I am the senior project engineer with the Saskatchewan Ministry of Highways and Infrastructure. I am a practicing professional engineer and have been in the industry for a little over 36 years.

I guess I was influenced at quite a young age. As I was growing up in my neighbourhood, a family moved in and it so happened that the father of the family was a civil engineer who was working for the engineering company who was supervising the construction of the Richardson Building, which was the first and – at the time – the tallest building in Manitoba, let alone Winnipeg. That was back in the late sixties



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was going on. I was keenly interested in anything that would move any mounds of earth. That was developed further with my love of art and drawing in high school. In high school, a career counsellor suggested engineering as a career choice. I had taken all the sciences I needed at the time and engineering seemed like the right fit for all the passions I had from a young age throughout my life in high school.

Harold, why did you enroll in the mentorship program?

HR: Basically, there’s been so much corporate knowledge walking out the door with retirements here, and it’s a concerning issue. More so, I benefitted from a mentorship that wasn’t programmed, so to say, but I was fortunate to work with some senior engineers and technologists early in my career. They really provided me a lot of the knowledge that I carry forward in my career right now. To not be able to pass that along is a bit of a concern of mine.

Why did you feel having a mentor was important? Why is being a mentor important?

HR: I would have to say that the importance really is that you need to be able to share. That’s the big thing: you can read books all you want, but until you actually work with someone and they stand beside you, so to say, and walk you through the design of a project, it’s a whole different experience. I think it’s much more valuable learning in that sense.

AG: I would have to agree with a lot of the points that Harold has made. In my office, I often take a keen interest in the longstanding members of public service in government. They have a lot of knowledge and a wealth of experience that I don’t have, and I recognize that as being very valuable: I can learn from what they know. To be able to match to somebody who is not the same age as me, to have the wealth of experience

that Harold has, is really fortunate for me. To have that knowledge and experience available to me hits on a lot of points I was looking for through the mentorship program, so I was happy to be Harold’s mentee. To be matched up with someone like Harold made it that much better. It is the icing on the cake.

When did you realize the learning was happening on both sides?

HR: Aaron and I established early on that that was something I was looking for. I realized that there is an opportunity for me to get a better understanding of what is the driving force behind a lot of our young engineers, or young people as a whole. I was looking for some of that information and feedback from Aaron.

AG: The first meeting wasn’t that fruitful, but that’s because we were more focused on getting to know one another on a personal level. The second meeting was where Harold and I were discussing what Harold wants out of our meetings, what I want out of our meetings, the mentorship program, and some of the goals we have set; we essentially set a common goal together. The second meeting and every one after that is when learning was happening on both ends. When I express something and Harold takes a keen interest in it, he gets very quiet. I can hear the gears turning in his head and he’s actively listening to what I have to say. Likewise, I actively listen.

What types of trends is Aaron sharing or participating in?

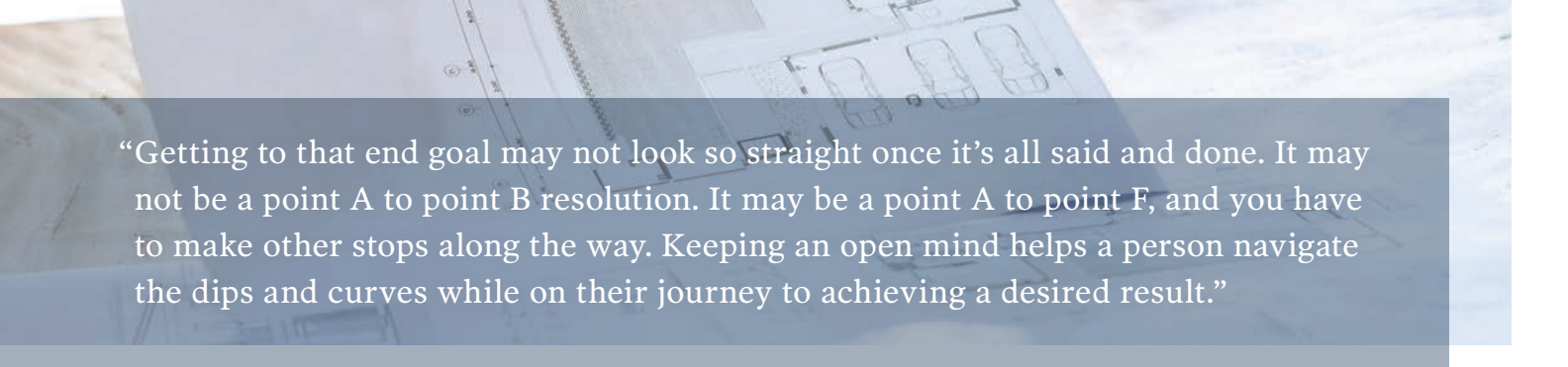
HR: The trends I’m looking for are the social priorities. When I was in my formative training, education days, and early in my career, there was a certain social trend that I as an engineer was to address. I know it’s changing, but where are the priorities with the younger generation? Part of it, you might say, is sustainability, climate change...

or early seventies. That sparked my interest and was sort of my start.

The influence was definitely by another individual who was doing some work that I could see right in front of me and it was inspiring.

Aaron Gerein (AG): I am also a practicing professional engineer and have been in the industry for just under six years now. It’ll be six years in May.

From a very young age I have been intimately passionate about anything construction. Whenever I was travelling around the province with my dad, growing up on a farm, I would often ask him to pull over at construction sites, ask him to just sit there and watch the equipment and what



“Getting to that end goal may not look so straight once it’s all said and done. It may not be a point A to point B resolution. It may be a point A to point F, and you have to make other stops along the way. Keeping an open mind helps a person navigate the dips and curves while on their journey to achieving a desired result.”

those are some of the things, but understanding where they come from and using that and understanding that information and bringing it back into the profession and saying, “OK, here is what we are trying to address with our projects.”

This is part of the mentoring, but so is accepting the younger engineers and accepting their right to ask, “Why are we doing it this way?” without giving them the answer, “Well, that’s always been the way we’ve done it.” That’s so incorrect. We have to be able to explain why we do it, as that’s really the foundation of understanding the choices that have been made and the reasons we are doing it the way we are.

AG: One of the biggest trends – maybe not a trend socially, but one we talk about in our meetings together – is communication. Most often, it’s the differing viewpoints and perspectives of the generations. I’m a millennial and Harold is a baby boomer. The commonality between us is that we live in a baby boomer-driven world. That’s who all the managers and senior managers are around us. Fluid communication among the generations isn’t always happening. Because of our differences, there’s often a broken line of communication, which we carefully try to navigate based on our own perspectives while trying to understand and respect each other’s viewpoint. How we operate and co-exist is a trend in our mentorship program. How we communicate, what we intend, what we mean, and our perspectives are all important aspects within that discourse.

Harold, what have you learned from Aaron and how have you incorporated it into your job?

HR: Part of it is understanding the work/life balance. That is something that has changed over time, maybe changed a lot, I’m not sure of the degree. That’s a big thing that I have

seen come around and it’s something that I’ve learned to work toward, or modify my own approach to things.

Aaron, what is the best piece of advice you have learned from Harold that has helped you in your career?

AG: There are two pieces of advice I have been given by Harold to date. The first piece of advice is that it’s all about the little things. I have often overlooked the little details or didn’t pay attention to them as often as I should. What I mean by that is that I often overlook the things like stopping by someone’s office, seeing how their weekend was, or taking the time to see how they they’re doing while on my journey to another task. Being personable and taking that extra five minutes of your day can have a large impact on future events with those people.

The second piece of advice I’ve received is keeping an open mind on achieving results. Getting to that end goal may not look so straight once it’s all said and done. It may not be a point A to point B resolution. It may be a point A to point F, and you have to make other stops along the way. Keeping an open mind helps a person navigate the dips and curves while on their journey to achieving a desired result.

Is there anything you want to ask each other?

HR: Aaron, has the time that we spent together been valuable? Has it been productive for you and valuable for you in – hopefully – your long and professional career?

AG: A resounding yes. It’s had an immediate impact; I’ve learned a lot from Harold. It’s certainly had an immediate impact in my career and it’s been timely, to say the least. I’ve had recent performance reviews where I was able to clearly communicate what my intentions are for my career, how I see my career playing out, to my immediate supervisor and my manager. That’s not something I have done in the past and it’s

something I have learned from him: how to communicate more directly. I feel it’s had an impact on my relationship with my immediate supervisor and manager because now they know my intentions up front and I communicated them very clearly. There are other aspects I have learned as well, such as learning to communicate with others on a very timely or regular basis. Building relationships is really important early on as they affect other long-term aspects of a person’s career.

AG: Harold, has anything I have mentioned made an immediate impact or had an impact at all?

HR: I’m going to say that it’s reinforced some of my goals. My own goal here is to set aside more time for the knowledge transfer. To recognize that that is an important role. I shouldn’t get hung up in my own daily projects to the point where I do eventually walk out the door when I retire, so to say, and have not taken the opportunity to work with the younger engineering staff and technologist staff, and that area. More so than that, also the understanding of what motivates Aaron’s generation of engineers, and that is a big plus to me. Not just on a professional level, but on a personal level: the work environment is also a big factor in making for a satisfying career.

AG: I think it’s made an immediate impact on my ability to network with others, like getting involved in the local engineering committees. It’s not something I considered in the past but volunteering and networking with professional associations locally is something I have been able to get involved with through Harold. He’s been a positive influence on me in multiple ways, as I’ve already attended one of the monthly CSCE meetings and I intend to find ways to get more involved while keeping an open mind about the opportunities in front of me. ■



Canada's Sustainable Future is Built on our Civil Engineering Achievements



F. Michael Bartlett, FCSCE, Chair, CSCE National History Committee

CSCE historic sites represent past progress milestones toward Canada's attainment of the United Nations Sustainable Development Goals (SDGs), particularly Goals 6 (Clean Water and Sanitation) and 9 (Industry, Innovation and Infrastructure). This article briefly describes six of these sites, highlighting lessons learned that may guide efforts to achieve a sustainable future.



Acadian Aboiteau, NB, Seventeenth and Eighteenth Centuries (Hébert, 2013)

Acadians settling adjacent to the Baie Française (now Bay of Fundy) in the seventeenth century faced low-lying saltwater marshes and heavily forested highlands. They had neither time nor resources to clear and grub the land for agriculture, so they used dyking techniques developed in Western France to turn the marshes into agricultural land.

The key technology was the aboiteau, a covered channel through the dyke with an internal flap gate, as shown schematically in Figure 1. At high tide, the flap gate automatically closes, keeping the saltwater out. At low tide, it opens, releasing fresh rainwater to the sea. The time necessary to desalinate the marsh by leaching the salt with rainwater through the aboiteau could be as short as two years.

By 1750, the Acadian colony had reclaimed 13,000 acres (5,300 hectares) of saltwater marsh. When the Acadians were deported, newly arrived Loyalists from New England took their farms but could not maintain the dykes and aboiteaux. To save the farmland and preserve the existence of the new settlers, the colonial government released imprisoned Acadians to serve the Loyalists by reconstructing and maintaining the aboiteaux.

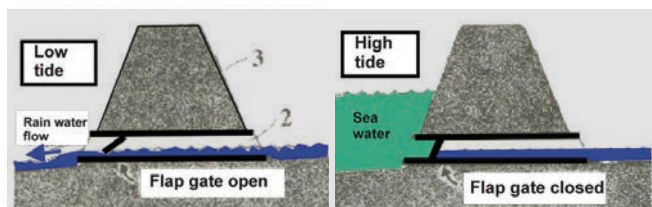


FIGURE 1: Function of the aboiteau flap gate.

Egerton Sewer, London, ON, 1916 (Lucas, 2016)

In the mid-nineteenth century, the Thames River was the unofficial sewer of the City of London. Canadian civil engineer Willis Chipman advised City Council in 1892 that “your sewers in their present form are a menace to the health of your city” and recommended improvements to the sewer system.

The city councillors of the day used visions of economic prosperity to justify sewer construction. Several Supreme Court nuisance verdicts addressing the deposition of sewage in the Thames also had to be resolved. Support was not unanimous: at a public meeting, a lawyer quipped “the natural place for the sewage of any city is a

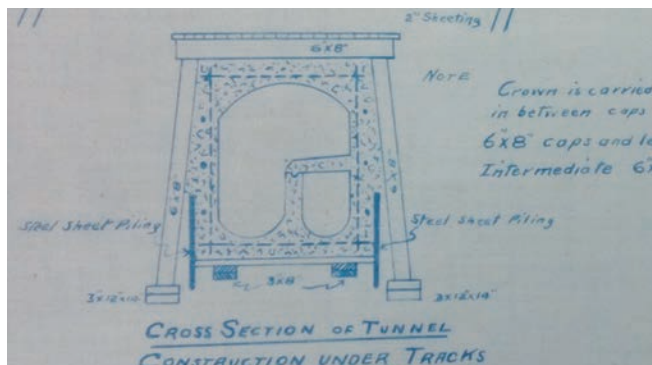


FIGURE 2: Cross section of the Egerton Sewer (City of London).

river, God Almighty gave us rivers to drain the country.” Fortunately, construction commenced in 1896-1897.

The Egerton Sewer, designed by Chipman, was constructed from 1914 to 1916. As shown in Figure 2, it was conceived as separated sewers within one structure because, according to Chipman, “it is important that the volume of sewerage be a minimum and that it be a constant quality.” It was 7,400 feet (2,256 metres) long and 25 feet (7.6 metres) below grade.

Red River Floodway, Winnipeg, MB, 1968 (Passfield, 2001)

The great Winnipeg Flood of 1950 forced over 100,000 people to evacuate their homes. A subsequent nine-volume 1953 federal report recommended construction of several flood control measures, including a 26-mile-long (42 kilometres) ditch around Winnipeg. Although the projected benefit/cost ratio was 2.73, there was concern that the project was unaffordable because the estimated cost of \$72.5 million roughly equalled the province’s annual net revenue of \$74 million. Duff Roblin, leader of the opposition, supported the project: detractors referred to it dismissively as “Duff’s Ditch.”

In June 1958, Roblin was elected Premier of Manitoba and established the Red River Floodway Advisory Board. The floodway channel was designed to ensure long-term stability of the side slopes, limit the maximum water velocity to preclude bank erosion, and select the optimal channel cross section and gradient. Construction commenced in October 1962 on the largest excavation project ever undertaken in Canada and the second-largest earth-moving project in the world. The floodway was completed on schedule in March 1968 at a cost of \$62.5 million.

The Floodway has since been effective in preventing significant damage in the major floods of 1969, 1970, 1974, 1979, and the 1997 “Flood of the Century.” It has prevented more than \$40 billion (2011 dollars) of flood damage in Winnipeg since 1968 – that’s a benefit/cost ratio in the hundreds.

British Commonwealth Air Training Plan (BCATP), 1940 (MacKenzie, 2009)

In December 1939, an agreement was reached between Great Britain, Canada, Australia, and New Zealand to train 1,500 aircrew per month, starting in April 1940. The total estimated cost was \$600 million and the estimated Canadian contribution, \$350 million, was considerable given that the total federal budget for 1939 was \$500 million.

The challenges for Canadian civil engineers working on the project included site selection, followed by the design and construction of runways, taxiways, roads, services, hangers, barracks, and many other buildings to a very demanding schedule. The key to success was the development of standard airfield layouts and standard building designs using prefabricated wood components.

The training rate peaked at over 3,000 graduates per month. The total cost of \$1.76 billion included a Canadian contribution of \$1.59 billion. In 1945, Winston Churchill described the BCATP as “a spacious task imaginatively conceived and most faithfully carried out.” The initiative provided the foundation of Canada’s post-war air transportation network: of the 176 airfields constructed, 62 remain in service today, including the Toronto Pearson and Vancouver International Airports.



FIGURE 3: Bloor Viaduct construction in 1916 (City of Toronto Archives).

Prince Edward Viaduct, Toronto, ON, 1919 (Rose, 1984)

A 1910 report recommendation that three subway lines be constructed immediately in Toronto was rejected because the estimated cost of \$23.5 million was too high. A proposed crossing of Rosedale Ravine using a double-decked bridge to accommodate a subway was accepted, however, and funding of \$2.5 million (about \$36 million today) for the Bloor Viaduct was approved by ratepayers in 1913.

Five reinforced concrete alternatives were proposed but the Toronto Department of Works had inexperience with and uneasiness about concrete construction. A team led by Thomas Taylor designed steel arches for a central span of 281.5 feet (85.8 metres), two flanking spans of 240 feet (73.6 metres), and two end spans of 158 feet (48.2 metres). Figure 3 shows construction progress in 1916. The viaduct was named for the Prince of Wales, later Edward VII, in 1918. Provisions were made for a lower deck to accommodate subway traffic. When the subway line was extended across the viaduct in the mid-sixties, the additional construction cost was less than \$420,000.

The viaduct became popular for individuals wishing to commit suicide. In response, the "Luminous Veil" barrier, designed by architect Dereck Revington and engineers at Halcrow Yolles, was proposed and eventually completed in 2003.

The Québec Bridge, QC, 1907 (Tarkov, 1986)

The 1917 Québec Bridge is an International Historic Civil Engineering Landmark of the ASCE and the CSCE. To learn lessons, however, it is instructive to consider the 1907 collapse of the previous structure that caused the death of 75 construction workers.

Responsibility for the collapse rests with Theodore Cooper, Consulting Engineer for the project, who was then the most eminent steel railway bridge engineer in America. During post-collapse investigations, he testified that his decisions were constrained by the limited financial resources of the owner, the Quebec Bridge Company. He revised the original bridge specifications because he felt they underestimated the train and snow loadings while requiring "horizontal strength against an imaginary and impossible wind." Further, Cooper said, "I made modifications in the unit strains to be employed upon the various members with the view of keeping the final weight within limitations."

Unfortunately, Cooper's "modifications to the unit strains" to reduce costs also unacceptably reduced the margin of safety. Stress sheets

from *Engineering News* indicate the critical compression chord was designed to resist a unit strain (i.e., an allowable stress) of 20,800 psi (143 MPa) under specified dead and live loads but failed at a stress of 17,900 psi (123 MPa). Cooper accepted even higher unit strains when informed that the actual dead load was 19% greater than assumed.

Cooper was also aggressively self-confident. He resisted the appointment of a design review engineer by the Canadian Department of Railways and Canals, saying "This puts me in the position of a subordinate, which I cannot accept." He never visited the site and hired inexperienced help. As noted in *Engineering News*, "Real authority lay at New York, 600 miles away, with an engineer who had never seen the structure for which he was carrying the entire engineering responsibility."

Lessons Learned

These brief histories offer the following guidance when striving for meaningful progress toward the SDGs:

1. Acadian Aboiteau: Simple and culturally acceptable solutions can be effective and durable.
2. Egerton Sewer: Popular public perceptions can be wrong.
3. Red River Floodway: Bold projects can return remarkable dividends.
4. British Commonwealth Air Training Plan: Crises can be managed to yield lasting, successful outcomes.
5. Prince Edward Viaduct: Foresight works, but we can anticipate only some of the future.
6. Québec Bridge Collapse: Civil engineers require humility.

Perhaps these lessons learned apply more broadly in the practice of civil engineering!

Acknowledgements

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References

- Hébert, G. (2013, April). *L'aboiteau Acadien – The Acadian aboiteau – Nomination for an historic civil engineering site.*
- Lucas, J. V. (2016). Egerton Street double sewer. *Canadian Civil Engineer*, 33(2), 12-16. Retrieved from https://issuu.com/glaciermedia/docs/civil_may_2016__laz_de
- MacKenzie, A. (2009). Engineering "the aerodrome of democracy," Canada 1939-1944. *Engineering History and Heritage*, 162(3), 147-155. doi: <https://doi.org/10.1680/ehah.2009.162.3.147>
- Passfield, R. W. (2001). "Duff's Ditch": The origins, construction, and impact of the Red River Floodway. *Manitoba History*, 42. Retrieved from www.mhs.mb.ca/docs/mb_history/42/duffsditch.shtml
- Rose, P. (1984). Into the twentieth century – Two Toronto bridges. *Canadian Journal of Civil Engineering*, 11(4), 875-883. Retrieved from www.nrcresearchpress.com/doi/pdf/10.1139/l84-105
- Tarkov, J. (1986). A disaster in the making. *American Heritage of Invention & Technology*, 1(3), 10-17. ■

The Global Engineering Congress was held in London, UK in October 2018 as part of the 200th bicentenary of the Institution of Civil Engineers. Participants shared ideas on how to meet the United Nations Sustainable Development Goals. This article is based on a presentation given at the Congress titled Turning hindsight into foresight: The sustainability and resilience of knowledge.



Lifelong Learning

Ron Thiessen, Ph.D., P.Eng., EP,
Environmental Engineer, Principal Consultant, Advisian



A *Canadian Civil Engineer* guest editor usually establishes a technical theme of broad interest and solicits contributions from professionals with the requisite expertise. This issue has something different. Given CSCE's renewed focus on lifelong learning – a personal passion – I thought stories from our professionals who have made this discipline part of their careers may be inspiring to a broad range of readers.

The individuals who share their stories in this issue are inquisitive and perseverant. Based on my own lifelong learning journey, these two characteristics are central to the joy and practice of lifelong learning.

After completing a Bachelor's degree in civil engineering and earning the P.Eng. designation, I became restless – I needed a mental challenge and academia was my choice. Contaminated site risk assessment and remediation was my focus, requiring further training in chemistry and biology. I recall taking first- and second-year courses in these topics online with a toddler on my lap. Any parent will understand this as a test of perseverance!

One of my work connections at the local university discovered I was re-training and convinced me to complete a Master's degree in Environmental Engineering while continuing

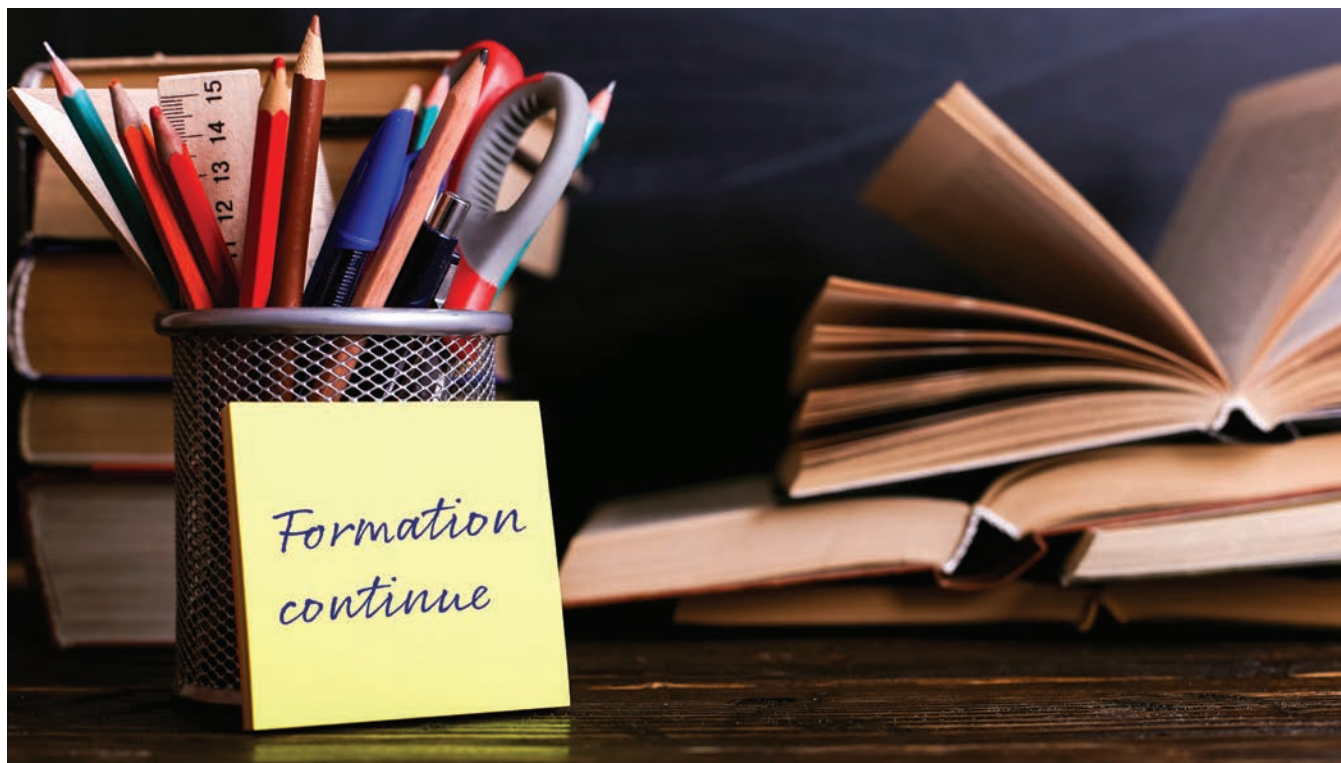
to work full-time. Five years later, I convoked with three young children cheering when I crossed the stage. Shortly after, a couple of tough situations disrupted family life. Again, I needed a productive objective to keep my mind occupied while I sought to understand a new reality. I continued to work because of necessity; however, the research and teaching associated with doctoral studies was part of the healing process. Six years later, three teenaged children hugged their "Doctor Dad" on convocation day.

I and the contributors trust that our stories are encouraging to those contemplating or already living the discipline of lifelong learning. ■



Formation continue

Ron Thiessen, Ph.D., ing., EP,
ingénieur en environnement, conseiller principal, Advisian



Habituellement, un rédacteur invité de *L'ingénieur civil canadien* détermine un thème technique d'intérêt général et sollicite des contributions de la part de professionnels ayant le savoir-faire approprié. Ce numéro propose quelque chose de différent. Étant donné l'intérêt renouvelé de la SCGC envers la formation continue, une passion personnelle, j'ai cru que des histoires rédigées par des professionnels qui ont fait de cette discipline une partie intégrante de leur carrière seraient inspirantes pour un grand éventail de lecteurs.

Ceux qui racontent leurs parcours dans ce numéro sont des gens curieux et persévérants. Selon ma propre expérience de formation continue, ces deux caractéristiques sont au centre de la joie et de la pratique de

la formation continue. Après avoir terminé mon baccalauréat en génie civil et obtenu mon titre d'ingénieur, je suis devenu fébrile, impatient. J'avais besoin d'un défi mental et j'ai choisi le milieu universitaire. L'évaluation du risque des sites contaminés et leur assainissement a été mon centre d'intérêt, ce qui a exigé plus de formation en chimie et en biologie. Je me souviens avoir suivi des cours en ligne de chimie et de biologie de première et deuxième année avec un bambin sur mes genoux. N'importe quel parent comprendra que c'est un test de persévérance!

Un de mes contacts de travail à l'université locale a découvert que j'étais de retour aux études et m'a convaincu de faire une maîtrise en génie de l'environnement tout en continuant de travailler à temps plein.

Cinq ans plus tard, trois jeunes enfants m'applaudissaient lors de mon passage sur la scène à la collation des grades. Peu après, quelques événements difficiles ont perturbé ma vie familiale. Encore une fois, j'ai eu besoin d'un objectif productif pour garder mon esprit occupé alors que j'essayais de comprendre une nouvelle réalité. J'ai continué à travailler par nécessité. Cependant, la recherche et l'enseignement associés aux études doctorales ont fait partie de mon processus de guérison. Six ans plus tard, trois adolescents ont embrassé leur « Docteur Papa » le jour de la collation des grades.

Les contributeurs et moi sommes confiants que nos histoires encourageront ceux qui contemplant la poursuite d'une formation continue ou qui vivent déjà cette expérience. ■



Continued Learning for Success and Enjoyment

Ian Keir B.Sc., P.Ag., M.Eng. in progress,
Senior Environmental Coordinator, Paramount Resources Ltd.

I was motivated to pursue further education after taking a class in the Engineering department at the University of Calgary for professional development. As with the Association of Professional Engineers and Geoscientists of Alberta, professional development hours are required for my professional membership with the Alberta Institute of Agrologists. However, that class, along with my work experience, led me to a much bigger goal than I had never anticipated: a Master's degree in Engineering. My positive experience with continuing education has opened my eyes to the benefit of ongoing learning no matter what stage you are at in your career.

I was born on Vancouver Island and moved to Whitecourt, AB in elementary school. Prior to attending the University of Alberta, I worked in road construction and servicing oil tools. I wanted a professional career and completed a Bachelor of Science in Environmental and Conservation Science with a major in land reclamation at the University of Alberta. My interests then were in soil and reclamation science.

Post-degree, I started a career in the oil and gas industry in the field overseeing wellsite construction for drilling rigs. Eventually I moved into wellsite reclamation, where I mainly supervised the reclamation (earthworks and revegetation) of wellsites

before focusing on environmental assessment and remediation and, finally, overseeing that work from an environmental coordinator position for an oil and gas producer. In my role as an environmental coordinator, I have held responsibilities in various areas, from vegetation and wildlife management to air, soil, and water quality and even water treatment and water supply. I work regularly with engineers and other technical experts. I am responsible for managing wellsite and facility remediation and reclamation programs, spill response programs, and compliance with regulatory approvals for sour gas plants.

More recently, a wider variety of projects and proposals have been crossing my desk in downtown Calgary from both consultants and industry partners. I am becoming involved in interesting and complex projects such as groundwater modelling, multi-phase extraction, phytoremediation, guideline development, and risk assessment and, while I had previous work experience with some of these, I was not familiar with all of them. I came to think that some additional technical education would benefit both me and my employer and I looked for some professional development opportunities. I found the University of Calgary's Environmental Engineering program and signed up for my first class: Contaminated Soil Remediation. I wondered what more could I learn in that area – after all, I'd been working on soil remediation projects for years. Well, it turned out that there was still a lot to learn. The course was extremely relevant to my job and offered me exactly what I'd been looking for.

I inquired further about the Environmental Engineering program at the University of Calgary and applied for a Master's in Civil Engineering with a specialization in environmental engineering. I have since taken several relevant courses in areas such as water treatment, facility lifecycles, and

contaminant migration in groundwater. I've since learned that engineers have an equation to describe everything!

Although my continued effort in learning hasn't always been easy, especially with a young family and a full-time job, I believe it has afforded me opportunities for success that I wouldn't have had otherwise. My knowledge allows me to make better decisions around the feasibility and potential for success of proposed projects and offer valuable advice. For example, a complex hydrogeological model was developed for a site that I managed. When consultants presented the results, I was able to ask well-informed technical questions. I understood the input parameters, boundary conditions, and limitations to the model. I was aware of how critical the sensitivity analysis was along with the quality of the data going in. I could do this because I had completed a smaller-scale model of the same site for a class project.

In addition to the knowledge I've gained, I've also expanded my network of peers in the industry. Relationships built with other students and professors have been valuable to my career development as well as on a personal level. I collaborated with researchers in the Engineering department on behalf of my employer to study remediation methods for one of its contaminated sites. The courses that I took on remediation, water treatment, and contaminant migration were directly related to this project and I was able to apply what I learned daily at work. I valued being able to discuss the project and my course topics with the researchers involved. I know that I can call upon them for specialized expertise if needed down the road.

I feel fortunate that my industry comprises many fields of study and that opportunities for learning are truly endless. I have a positive outlook on my career knowing that lifelong learning can enhance my success at work and increase enjoyment of my career. ■



My positive experience with continual education has opened my eyes to the benefit of ongoing learning no matter what stage you are at in your career.



Toute une vie à apprendre

Ian Keir, B.Sc., agronome, M.Ing. en cours,
Senior Environmental Coordinator, Paramount Resources Ltd.

J'ai eu envie de pousser mes études un peu plus loin après avoir suivi un cours de perfectionnement au Département d'ingénierie de l'Université de Calgary. Tout comme l'APEGA (l'Association des ingénieurs et géoscientifiques de l'Alberta), l'Institut des agronomes de l'Alberta (Alberta Institute of Agrologists) exige que ses membres suivent un certain nombre d'heures de formation continue. Toutefois, ce cours et mon expérience professionnelle m'ont amené à me fixer un objectif bien plus ambitieux que prévu, et je me suis inscrit à un programme de maîtrise en ingénierie. Mon expérience positive avec la formation continue m'a fait voir les avantages d'un apprentissage continu, peu importe où on est rendu dans notre parcours professionnel.

Je suis né sur l'île de Vancouver et j'ai déménagé à Whitecourt (Alberta) lorsque j'étais à l'école primaire. Avant d'entrer à l'Université de l'Alberta, j'ai travaillé en construction routière et en entretien d'outils dans le secteur pétrolier. Comme j'aspirais à une carrière professionnelle, j'ai fait un baccalauréat en science de l'environnement et en science de la conservation avec une majeure en remise en état des terres à l'Université de l'Alberta. Je m'intéressais alors vraiment à la science des sols et de leur remise en état.

Mon diplôme en poche, j'ai entrepris une carrière dans l'industrie pétrolière et gazière en surveillance de chantier de construction de sites de puits pour les installations de forage. Plus tard, j'ai travaillé en remise en état des sites de puits, principalement à superviser la remise en état (terrassment et végétalisation) des sites de puits, avant de me concentrer sur l'évaluation environnementale et l'assainissement et, finalement, à superviser les travaux en tant que coordonnateur des services environnementaux pour un producteur pétrolier et gazier. Dans le cadre de mes fonctions de coordonnateur des services environnementaux, mes responsabilités étaient variées et allaient de la gestion de la végétation et des animaux sauvages à la qualité de l'eau, du sol et de l'air ou même au traitement des eaux et à l'alimentation en eau. Je travaille

fréquemment avec des ingénieurs et autres experts techniques. Je suis responsable de la gestion des programmes d'assainissement et de remise en état des sites de puits et des installations, des programmes d'intervention en cas de déversement et de la conformité aux autorisations réglementaires pour les usines de gaz acide.

Dans mon bureau au centre-ville de Calgary, je reçois depuis quelque temps des propositions et des projets de plus en plus diversifiés de nos consultants et partenaires de l'industrie. Je participe à des projets intéressants et complexes, par exemple, en modulation d'amplitude des eaux souterraines, en extraction multiphase, en phytorestauration, en élaboration de lignes directrices et en gestion des risques. J'avais une certaine expérience dans certains de ces domaines, mais je ne m'y connaissais pas vraiment. Je me suis dit qu'un peu plus de formation technique serait profitable tant pour moi que pour mon employeur. En cherchant les possibilités de perfectionnement professionnel, j'ai découvert le programme de génie de l'environnement à l'Université de Calgary et je me suis inscrit à un premier cours sur l'assainissement des sols contaminés. Comme je travaillais depuis des années sur des projets d'assainissement des sols, je me demandais bien ce que je pourrais apprendre de plus dans ce domaine! Et j'ai découvert que j'en avais encore beaucoup à apprendre! Le cours s'est avéré extrêmement pertinent pour mon poste et m'a offert exactement ce que je cherchais.

Je me suis renseigné un peu plus sur le programme de génie de l'environnement à l'Université de Calgary et me suis inscrit pour une maîtrise en génie civil avec spécialisation en génie de l'environnement. J'ai depuis suivi plusieurs cours pertinents en traitement des eaux, en cycles de vie des installations et en migration des contaminants dans les eaux souterraines. Et j'ai appris que les ingénieurs peuvent tout décrire avec une équation!

Même si mon parcours de formation n'a pas toujours été facile, en particulier avec une jeune

famille et un emploi à temps plein, je crois qu'il m'a donné des outils de réussite que je n'aurais pu avoir autrement. Mes connaissances me permettent de prendre de meilleures décisions quant à la faisabilité et au potentiel de réussite des projets proposés; je peux également être de bon conseil. Par exemple, un modèle hydrogéologique complexe a été préparé pour un site que je gère. Lorsque les consultants ont présenté leurs résultats, j'ai été en mesure de poser des questions techniques plus judicieuses. Je comprenais les paramètres, les conditions limites et les contraintes du modèle. J'étais conscient du caractère crucial de l'analyse de sensibilité et de la qualité des données de départ. Tout ça m'était possible notamment parce que j'avais réalisé un modèle à plus petite échelle de ce même site pour un projet d'université.

En plus de nouvelles connaissances techniques, le programme m'a également permis d'élargir mon réseau professionnel dans cette industrie. Les relations bâties avec les autres étudiants et les professeurs ont été précieuses tant pour ma carrière que pour moi-même, d'un point de vue plus personnel. J'ai travaillé avec des chercheurs du Département d'ingénierie au nom de mon employeur pour étudier des méthodes d'assainissement pour un de ses sites contaminés. Les cours que j'ai suivis en assainissement, en traitement des eaux et en migration des contaminants étaient en lien direct avec ce projet et j'ai été en mesure d'appliquer quotidiennement ce que j'y ai appris. Je reconnais la chance que j'ai eu d'échanger avec les chercheurs à propos du projet et des sujets de la formation. Je sais aussi que je peux les appeler pour une expertise spécialisée si le besoin s'en faisait sentir.

Je me sens privilégié de travailler dans un secteur qui touche de nombreux domaines d'apprentissage et où les occasions d'apprendre sont illimitées. Je vois ma carrière d'un bon œil puisque je sais qu'en continuant à apprendre j'augmente non seulement mes chances de réussite, mais également mon plaisir à travailler. ■



Lifelong Learning and Learning for a Living

Joseph A. Daraio, Ph.D., P.Eng., Assistant Professor, Member CSCE, Faculty/Student Advisor
Memorial University of Newfoundland Student Chapter, Executive Committee Member NL Section



In retrospect, my career path seems to make sense, despite its circuitousness. There are two main threads, or perhaps “Articles of Faith,” that kept me moving forward. One was a faith in knowledge and understanding and the second was that hard work will lead to reward. These have not always been present in my consciousness

and both have been challenged at various times in my life. They still remain, however, and combined with a love of nature, these two articles of faith have provided a steady, if not straight, path that I have followed.

I became environmentally aware in the late 1980s as an undergraduate student at a small community college in New York State.

At the time, acid rain and the ozone hole were major problems and global warming was starting to come to the public awareness. I wanted to contribute to the solutions to these problems. After changing majors five times in the first two years of my college career, I transferred to the State University of New York’s College of Environmental



Learning for a living is not for everyone, nor is it required to be a good engineer. It allows me to continually see problems anew and, with my background, allows me to approach things from a large-scale systemic level.

Science and Forestry to pursue a degree in environmental studies. I wound up with a degree in environmental and forest biology. Science was a better fit. I was fascinated by the study of forest ecology and learning about the natural history of trees. I also gained an appreciation of how knowledge of the world can be transformative. The world looked different. After a trip to the American Southwest before graduating in 1991, I knew I wanted to study desert ecology.

Not long after my arrival at New Mexico State University, a personal crisis led me to a state of complete doubt about everything. Though I finished my Master's degree in Biology (1994), ecological research was not for me. Taking a coursework option, I focused on seeking answers to questions that I did not even know how to fully articulate. I waded through material on psychology, mysticism, spirituality, religion, and philosophy, and it was the latter that resonated. In particular, the questions were about the nature of knowledge. What is knowledge? How do we know? How can we know we know? This led me to questions about the nature of consciousness and ultimately to understand the evolution of mind. How and why did consciousness evolve? After struggling to find work in the mid-90s with a degree in biology, I decided to follow these interests (or what had almost become an obsession) and seek answers through formal studies in philosophy. I would make a contribution through ideas.

I received my Master's degree in Philosophy, somewhat ironically, from Rensselaer Polytechnic Institute (RPI) in 1998. My degree was the last traditional philosophy graduate degree granted by RPI before the department merged with Psychology to become the Cognitive Science department. There was a strong emphasis on logic and artificial intelligence in the program and my research focused on questions of animal

consciousness, evolution of mind, and epistemology (theories of knowledge). Faith in hard work got me through what has proven to be my most difficult program of study, and I am most proud of this degree.

I began doctoral work in philosophy at the University of Connecticut in 1998, but found myself questioning my career path. There were many reasons for this, but two of these are particularly salient. First was a great insight about myself and my perceptions, beliefs, and interactions with the world. Second, not unrelated to the first, I wanted to return from the realm of ideas to the real world and make a tangible contribution to society. Nevertheless, my philosophical training has been extremely valuable throughout my career. In particular, a better grasp on the nature of knowledge, namely science, as a way of knowing solidified my faith in knowledge. I decided to study environmental engineering, which was in line with my biology background and interest in conservation. While getting up to speed on my required math and undergraduate engineering courses to complete my environmental engineering degree, it became clear just how much my philosophical training helped me to understand, analyze, and solve problems. My past ecological training also provided me with a broader ecosystem perspective and shifted my interests to larger scales (i.e., hydrology and the flow of water) and away from environmental engineering.

After graduating with an M.Sc. from the University of Connecticut (2002), a position as hydraulic engineer with the U.S. Bureau of Reclamation provided opportunities to work on several projects that included dam decommissioning, river hydraulics and fish habitat, and restoration of the Williamson River (Oregon) floodplain and delta, which was a great success. Ultimately, the work did not satisfy my desire for knowledge and

understanding, and it became clear what I should do. I received my Ph.D. in Civil and Environmental Engineering (2009) focusing on environmental hydraulics with the intention of pursuing an academic career. It has been a relatively straight path from this point, with two post-doctoral appointments, then a faculty position at Rowan University in New Jersey. Fate would have it that I would meet a Canadian, get married, and be part of a joint hire at Memorial University of Newfoundland (MUN) in 2015. (She is in the Department of Psychology.)

Through all this, my love of nature and desire to contribute to society have not changed, and faith in knowledge and hard work has kept me moving forward. The constant throughout my career has been continuous learning, and I now do it for a living. The Canadian Society for Civil Engineering has been an important part of this for me: my U.S. membership to the Society gave me access to an array of information, learning opportunities, and publications. In particular, membership helped get me up to date and keeps me informed about sustainable infrastructure in Canada. My most recent research focused on the potential impacts of climate change on hydrology and the vital importance of designing resilient infrastructure systems. The latter falls heavily on young and emerging professionals and the uncertainty of climate change impacts underscores the necessity of lifelong learning. I try to emphasize this in the courses I teach, but it is through my role as advisor the MUN CSCE student chapter that this message can be more readily conveyed. The opportunity for students to be involved at this level has the important effect of making apparent how much more they need to learn.

Learning for a living is not for everyone, nor is it required to be a good engineer. As an academic, it allows me to continually see problems anew and, with my background, allows me to approach things from a large-scale systemic level. Learning for a living helps me be a better teacher and I hope that students can see its value through my example. Civil engineers can surely appreciate that the foundation of learning is laid in an undergraduate program, but the structure is completed only with experience and lifelong learning. ■



Formation continue et gagner sa vie en apprenant

Joseph A. Daraio, Ph.D., ing., professeur adjoint, membre de la SCGC, conseiller étudiant et professeur pour la section étudiants de l'Université Memorial de Terre-Neuve, membre du comité exécutif de la section Terre-Neuve-et-Labrador



En rétrospective, mon cheminement de carrière semble logique, malgré les détours. Il y a deux fils principaux, ou peut-être « croyances », qui m'ont toujours poussé vers l'avant. D'abord, j'ai confiance en la connaissance et la raison, ensuite je crois que les efforts constants portent des fruits. Même si ces croyances n'ont pas toujours été conscientes et qu'elles ont toutes deux été mises au défi à différentes étapes de ma vie, elles sont toujours présentes. Combinées à un amour de la nature, ces deux croyances ont guidé mon chemin de manière stable, bien que pas toujours en ligne droite.

J'ai été sensibilisé à l'environnement vers la fin des années 1980, alors que j'étais étudiant au baccalauréat d'un petit collège communautaire de l'État de New York. À l'époque, les pluies acides et le trou dans la couche d'ozone étaient des problèmes

majeurs, et la population commençait à prendre conscience du réchauffement de la planète. Je voulais contribuer à résoudre ces problèmes. Après avoir changé cinq fois de concentration dans les deux premières années de ma carrière collégiale, j'ai bifurqué vers la Faculté des sciences environnementales et de la sylviculture de l'Université d'État de New York pour obtenir un diplôme en études de l'environnement. Je me suis retrouvé avec un diplôme en biologie de l'environnement et de la forêt. La science me convenait mieux. J'étais fasciné par l'étude de l'écologie de la forêt et par l'histoire naturelle des arbres. J'ai aussi découvert la transformation qu'apporte la connaissance du monde. Le monde semblait différent. À la suite d'un voyage dans le Sud-Ouest américain après avoir obtenu mon diplôme en 1991, j'ai su que je voulais étudier l'écologie du désert.

Peu après mon arrivée à l'Université d'État du Nouveau-Mexique, une crise personnelle m'a mis dans un état de doute complet à propos de tout. Même si j'ai terminé ma maîtrise en biologie (1994), les recherches en écologie n'étaient pas pour moi. En choisissant plutôt la maîtrise de type cours, je me suis concentré à chercher des réponses à des questions que je n'arrivais pas tout à fait à articuler. J'ai pataugé dans la psychologie, le mysticisme, la spiritualité, la religion et la philosophie, et c'est cette dernière qui a résonné. Plus spécifiquement, les questions qui traitaient de la nature de la connaissance. Qu'est-ce que la connaissance? Comment savons-nous? Comment pouvons-nous savoir que nous savons? Ceci m'a mené vers les questions sur la nature de la conscience et, ultimement, à vouloir comprendre l'évolution de la pensée. Comment et pourquoi la



Gagner sa vie en apprenant n'est pas pour tout le monde, ce n'est pas non plus essentiel pour être un bon ingénieur. Être professeur d'université me permet de voir continuellement les problèmes de façon nouvelle et, avec ma formation, cela me permet d'avoir une approche systémique à grande échelle.

conscience a-t-elle évolué? Après bien des difficultés à trouver du travail au milieu des années 1990 avec un diplôme en biologie, j'ai décidé de poursuivre ces intérêts, ou ce qui était devenu pratiquement une obsession, et de chercher des réponses à l'aide d'études formelles en philosophie. J'apporterais ma contribution à l'aide d'idées.

J'ai obtenu ma maîtrise en philosophie, de façon plutôt ironique, de la part de l'Institut polytechnique Rensselaer (IPR) en 1998. Mon diplôme a été le dernier diplôme classique d'études supérieures en philosophie accordé par l'IPR avant que la faculté ne fusionne avec celle de la psychologie pour devenir la Faculté des sciences cognitives. Le programme accordait une grande importance à la logique et à l'intelligence artificielle, et mes recherches portaient principalement sur les questions de la conscience animale, de l'évolution de la pensée et de l'épistémologie (étude de la pensée). La croyance au travail acharné m'a permis de passer à travers ce qui s'est avéré être le programme d'études le plus difficile pour moi. C'est ce diplôme qui me rend le plus fier.

J'ai entrepris mon doctorat en philosophie à l'Université du Connecticut en 1998, mais j'ai commencé à mettre en doute mon cheminement de carrière. Il y avait plusieurs raisons derrière ce questionnement, mais deux ressortaient plus particulièrement. Premièrement, j'avais une grande compréhension de moi-même et de mes perceptions, croyances et interactions avec le monde. Deuxièmement, un peu relié à la première raison, je voulais revenir du monde des idées pour retourner dans le vrai monde et contribuer de façon tangible à la société. Quoi qu'il en soit, ma formation en philosophie a été d'une grande valeur tout au long de ma carrière. Plus spécifiquement, une meilleure compréhension de la nature de la connaissance, soit la science en tant que manière de savoir, a solidifié ma croyance envers la

connaissance. J'ai décidé d'étudier en génie de l'environnement, dans la suite de ma formation en biologie et en lien avec mes intérêts pour la protection de la nature. En me mettant à niveau sur les exigences en mathématique et les cours de baccalauréat en génie pour terminer mon diplôme de génie de l'environnement, j'ai compris combien ma formation en philosophie m'a aidé à comprendre, à analyser et à résoudre des problèmes. Ma formation antérieure en écologie m'a aussi apporté une vue plus large des écosystèmes et a détourné mes intérêts du génie de l'environnement vers des problèmes à plus grande échelle (p. ex., l'hydrologie et le flux de l'eau).

Après l'obtention de ma maîtrise de l'Université du Connecticut (2002), un poste d'ingénieur en hydraulique au US Bureau of Reclamation m'a fourni l'occasion de travailler à différents projets tels que le démantèlement de barrages, l'hydraulique fluviale et l'habitat du poisson, de même qu'à la restauration des plaines et de deltas inondables de la rivière Williamson (Oregon), qui a été un immense succès. Malgré tout, ce travail ne satisfaisait pas ma soif de connaissance et mon désir de comprendre, et ce que je devais faire est devenu évident. J'ai obtenu mon doctorat en génie de l'environnement (2009) avec concentration en hydraulique de l'environnement, tout en ayant l'intention de poursuivre une carrière dans le milieu universitaire. Le chemin a été plutôt droit à partir de ce point, avec deux nominations postdoctorales, puis un poste de professeur à l'Université Rowan au New Jersey. Le destin a voulu que je rencontre une Canadienne, que je la marie et que nous soyons engagés conjointement à l'Université Memorial de Terre-Neuve en 2015. (Elle fait partie de la Faculté de psychologie.)

À travers ce périple, mon amour de la nature et mon désir de contribuer à la société n'ont pas changé, et mes croyances envers la connaissance et le travail acharné m'ont

continuellement poussé vers l'avant. La constante tout au long de ma carrière a été la formation continue, et c'est maintenant ce qui me fait gagner ma vie. La Société canadienne de génie civil a joué un rôle important pour moi à ce sujet : mon adhésion américaine à la Société m'a donné accès à tout un éventail d'information, d'occasions d'apprendre et de publications. Plus spécifiquement, mon adhésion m'a aidé à me mettre à jour et à me garder informé sur les infrastructures durables au Canada. Mes recherches les plus récentes portaient sur les impacts potentiels des changements climatiques sur l'hydrologie et l'importance vitale de concevoir des systèmes d'infrastructures résilients. Ces dernières reposent fortement sur les épaules des jeunes professionnels émergents et l'incertitude des impacts des changements climatiques met en évidence la nécessité de la formation continue. J'essaie d'en rendre l'importance dans les cours que j'enseigne, mais c'est grâce à mon rôle de conseiller à la section étudiante de la SCGC de l'Université Memorial que ce message peut être plus aisément transmis. En étant impliqués à ce niveau, les étudiants ne peuvent que constater combien ils ont toujours à apprendre.

Gagner sa vie en apprenant n'est pas pour tout le monde, ce n'est pas non plus essentiel pour être un bon ingénieur. Être professeur d'université me permet de voir continuellement les problèmes de façon nouvelle et, avec ma formation, cela me permet d'avoir une approche systémique à grande échelle. Gagner ma vie en apprenant m'aide à être un meilleur professeur, et j'espère que les étudiants peuvent en voir la valeur grâce à mon exemple. Les ingénieurs civils peuvent certainement se rendre compte que le fondement de l'apprentissage se trouve dans un programme de baccalauréat, mais que sa structure est complète seulement avec de l'expérience et de la formation continue. ■

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The Importance of Continuing to Learn

Scott Batt, MCE, P.Eng., Associate, Project Manager, R.V. Anderson Associates Limited

Scott is a Registered Professional Engineer and has over 11 years of civil and structural engineering experience in the consulting and construction industry. His current career focus is primarily on design, assessment, and management services of municipal infrastructure and urban development projects. His projects typically follow either design-build, traditional, or public-private partnership delivery methods within many scopes, including building servicing, site grading, and municipal road upgrading.

Early Interest in Engineering

Scott's engineering passion stems from his belief that civil engineers have a leading role in planning, designing, building, and providing a safe and sustainable future. Growing up, he was always amazed by the incredible feats of engineering and construction that Canadians achieved to make Canada what it is today. His technological inquisitiveness and eye for detail led him to pursue engineering early on. Scott first obtained a Diploma in Civil Engineering Technology from the College of the North Atlantic's (CNA) Corner Brook Campus in Newfoundland and Labrador in 2007.

As a student at CNA, Scott worked with the learning resource centre helping students with math, science, and engineering. Upon graduation, he transitioned into the role of Teacher's Assistant for the Civil Engineering program until eventually continuing his studies at Lakehead University in Thunder Bay, ON.

In 2009 Scott received his Bachelor's degree in Civil Engineering and was offered a position with an engineering consulting firm back in his hometown of Corner Brook, NL. This was Scott's entry point into engineering industry practice, where he has helped his clients in detailed design and inspection for municipal and structural infrastructure projects.

Drive for Engineering Excellence

In 2013, four years into the engineering consulting world, Scott realized more than ever the importance of continuing to learn as an engineer. With his exposure to clients' challenges and the present day's competitive marketplace, Scott decided to pursue higher education.

While continuing his practice as an engineering consultant, Scott decided to enroll in the Master of Civil Engineering Program offered through distance education

at Norwich University in Northfield, VT.

For the next two years, Scott carried out full-time studies with the support of his family. In the spring of 2014, he received his graduate degree in Civil Engineering with a specialization in structural engineering.

Going back to school in the middle of a flourishing career was one of best things he ever did, Scott now says. It helped him not only expand his technical skills and open more doors to further his career, but also to deepen his passion for education. Norwich University's program helped shape his zest for engineering excellence at three levels: technical knowledge, personal growth, and academic excellence. The skills he acquired and the networks he established were invaluable. Scott gained a broader outlook on his profession and is able to apply that knowledge to his career every day.

Passion for Continuing Education

Since obtaining his Master's degree, Scott has made it a practice to continue to learn and promote engineering excellence through various channels. As an Associate and Project Manager at R.V. Anderson Associates, he has had wide exposure to problems, solutions, and trends in civil engineering across Canada.

But Scott also believes that the knowledge gained from the field at the site of construction and continuous learning complements this consulting experience. He regularly participates in seminars, industry conferences, webinars, and short courses to keep up with current practices and technologies. R.V. Anderson Associates ensures that staff members are well-informed about the latest technology innovations by holding technical seminars, vendor training sessions, project management training, and mentorship. This continuous learning – whether it is offered by suppliers, universities, or industry

leaders – allows Scott to expand his knowledge, encourages him to read about and research topics that are not currently his strong areas of expertise, and, most importantly, to ask the right questions!

Membership with CSCE

Being a member of CSCE has allowed Scott to be part of a distinct and professional community. This group of people with diverse backgrounds gives him access to a unique network of peers in the industry and allows him to take advantage of the vast learning resources available. CSCE provided Scott with the right platform to bridge the gap between academia, student membership, and the consulting and construction industries. This added tremendous value to his career and helped him see the profession from different perspectives.

Enabling Clients with Enhanced Value

The industry knowledge and exposure gained through such interactions with community members and academics helps Scott provide the best possible solutions to his clients. His focus at R.V. Anderson Associates remains to provide clients with sustainable and resilient designs and cost-effective project management solutions all the while leveraging best practices and technologies. Most recently, for example, he managed a project to assess and design a solution to control the release of excess stormwater runoff on a challenging development with steep gradients. Using dual-stage hydraulic modelling, he helped his client meet zero net runoff for storms in up to a 100-year return period. This project included the use of open bottom detention chambers, a multi-stage outlet control structure, oversized storm pipe, and strategically placed baffles in ditches to attenuate flows. The project is a good example of the benefits of lifelong learning and the ways in which Scott applies new ideas and processes on a daily basis. ■



L'importance de continuer à apprendre

Scott Batt, MCE, ing., associé, gestionnaire de projet, R.V. Anderson Associates Limited

Scott est un ingénieur professionnel enregistré ayant plus de 11 ans d'expérience en génie civil et structural en consultation et dans le secteur de la construction. Ses activités professionnelles actuelles sont principalement axées sur des services de conception, d'évaluation et de gestion pour des projets d'infrastructures municipales et d'aménagement urbain. Il réalise, habituellement selon un modèle de conception-construction classique ou en partenariat public-privé, des projets dans divers domaines, y compris l'entretien de bâtiments, le nivellement de terrain et la réfection de routes municipales.

Intérêt de longue date pour l'ingénierie

Scott s'est rapidement passionné pour l'ingénierie parce qu'il croit que les ingénieurs civils jouent un rôle de premier plan dans la planification, la conception, la construction et la création d'un avenir sécuritaire et durable. Dès son plus jeune âge, il a été étonné des incroyables exploits techniques et de construction que des Canadiens ont réalisés pour faire de ce pays ce qu'il est aujourd'hui. Sa curiosité technique et son sens inné du détail l'ont rapidement mené vers l'ingénierie. En 2007, il a obtenu un premier diplôme en technologie du génie civil au campus de Corner Brook du College of the North Atlantic (CNA) à Terre-Neuve-et-Labrador.

Pendant ses études au CNA, Scott a travaillé au centre des ressources d'apprentissage où il a aidé les étudiants en mathématique, en science et en ingénierie. Une fois diplômé, il est devenu assistant d'enseignement pour le programme de génie civil jusqu'à ce qu'il parte poursuivre ses études à l'Université Lakehead à Thunder Bay, en Ontario.

En 2009, il a obtenu son baccalauréat en génie civil, puis un poste pour une firme de consultants en génie dans sa ville natale de Corner Brook à Terre-Neuve. C'est là qu'il a commencé à pratiquer l'ingénierie et à aider ses clients en réalisant la conception détaillée et l'inspection pour divers projets d'infrastructures municipales ou structurelles.

Motivation pour l'excellence en ingénierie

En 2013, quatre ans après son entrée dans le monde de la consultation en ingénierie, Scott a réalisé plus que jamais l'importance

de continuer à apprendre en tant qu'ingénieur. Face aux défis posés par ses clients et à la forte concurrence du marché actuel, il a décidé de poursuivre ses études.

Sans faire une pause dans sa carrière de consultant, il s'est inscrit à un programme à distance de maîtrise en génie civil offert par l'Université Norwich de Northfield, au Vermont.

Pendant deux ans, il a étudié à temps plein grâce au soutien de sa famille. Au printemps 2014, il a obtenu son diplôme d'études supérieures en génie civil avec spécialisation en génie des structures.

Il affirme aujourd'hui que ce retour aux études au beau milieu d'une carrière florissante est la meilleure chose qu'il a faite. En plus d'approfondir ses compétences techniques et d'avoir accès à plus d'options pour la suite de sa carrière, cette maîtrise a fait croître sa passion pour l'éducation. Le programme de l'Université Norwich l'a aidé à consolider sa soif d'excellence en génie à trois niveaux : connaissances techniques, croissance personnelle et excellence universitaire. Les compétences acquises et les réseaux ainsi créés sont inestimables. Il a une vision plus large de sa profession et peut mettre cette connaissance en pratique quotidiennement.

Une passion pour la formation continue

Depuis l'obtention de son diplôme de maîtrise, Scott n'a cessé d'apprendre et de promouvoir l'excellence de diverses manières. En tant qu'associé et gestionnaire de projet chez RVA, il est grandement exposé aux problèmes, solutions et tendances en génie civil dans tout le Canada.

Il croit cependant que les connaissances acquises dans son domaine sur les chantiers et en formation continue sont d'excellents compléments à son expérience en consultation. Il participe fréquemment à des séminaires, conférences, webinaires et courtes formations pour se tenir au fait des pratiques et technologies actuelles. RVA veille à ce que son personnel soit bien informé des dernières innovations technologiques par l'entremise de séminaires techniques, de séances de formation par les fournisseurs, de formation en gestion de projet et de son programme de mentorat. La formation continue, qu'elle soit offerte par des fournisseurs, des universités ou des chefs de file du secteur, permet à Scott d'élargir ses connaissances et l'encourage à lire et à faire des recherches sur des sujets qui ne sont pas présentement sa force et, surtout, à poser les bonnes questions!

Membre de la SCGC

En tant que membre de la SCGC, Scott fait partie d'une communauté distincte et professionnelle. En plus de donner accès à un réseau unique de pairs œuvrant dans le secteur et ayant des parcours très diversifiés, ce groupe offre de vastes ressources d'apprentissage. Pour Scott, la SCGC est une excellente plateforme pour faire le pont entre l'université, les associations étudiantes et les secteurs de la consultation et de la construction. Elle a été d'une aide précieuse pour sa carrière et l'a aidé à voir la profession de divers points de vue.



La formation continue, qu'elle soit offerte par des fournisseurs, des universités ou des chefs de file du secteur, permet à Scott d'élargir ses connaissances et l'encourage à lire et à faire des recherches sur des sujets qui ne sont pas présentement sa force et, surtout, à poser les bonnes questions!

Une valeur ajoutée pour ses clients

Cette connaissance de l'industrie et l'exposition apportée par de telles interactions avec les autres membres de la communauté et le corps professoral aident Scott à offrir les meilleures

solutions possible à ses clients. Chez RVA, il vise toujours à offrir à ses clients des conceptions durables et résilientes et des solutions de gestion de projet rentables qui tirent profit des meilleures pratiques et technologies. Tout récemment, par exemple,

il a géré un projet pour évaluer et concevoir une solution permettant de réguler le rejet d'eaux pluviales excédentaires dans un développement présentant de fortes pentes. En utilisant la modélisation hydraulique en deux étapes, il a aidé son client à obtenir un écoulement net nul pour des intempéries pour une période de récurrence de 100 ans. Ce projet comprenait l'utilisation de chambres de retenue à fond ouvert, d'un ouvrage de régulation de débit à plusieurs étages, d'une conduite d'évacuation des eaux pluviales surdimensionnée et d'ailettes placées à des endroits stratégiques dans des fossés pour atténuer le débit. Cette réalisation est un bon exemple des avantages de ne jamais cesser d'apprendre et de la manière dont Scott met en œuvre chaque jour de nouvelles idées et de nouveaux procédés. ■



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