

Comparing professions

I just finished reading the article “Engineering in the Next 10” in the July/August 2007 publication (*Engineering Dimensions*, p. 54). I was pleased with the topics debated and views shared by the participants on the different challenges and opportunities to the profession. I don’t normally share my views, looking on as many of the profession’s members do. However, there are a couple of points that I feel need to be voiced in this forum.

I muse at the constant comparison and aspiration that the association makes between the medical, political or legal professions as compared to the engineering profession. Do we really think we impact people on the same personal level in society as the medical profession? Let’s not kid ourselves; the medical profession is unique in its relationship to our health in society. Alternatively, surveys have always placed engineers in a different category from politicians or lawyers, and we should keep it that way. I agree that the profession has its place in society, and that we need to be better at raising its profile through communication, proactivity, etc. We need to get over this obsession with comparing ourselves to these other professions.

Moving forward, I believe the topics and committee discussion was in line with my thinking. It is the first step in defining the “what” in solving the problem (as a true engineer would put it). However, one observation on the participants in the roundtable discussion is that all but one is in the engineering profession. I think the event missed the opportunity by not involving more non-engineering participants. It is through opening up dialogue between other external viewpoints that the association will truly understand what it will take to raise our profile and then how to execute on the transition.

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The human side of things

After reading the article “Engineering in the Next 10,” I feel compelled to write and express my sentiments. I was intrigued by the comments citing a need for a more

renaissance education. As a female engineer I would like to propose that providing a curriculum that incorporates more cross-disciplinary courses would in fact attract more female students. Is the root reason females are shying away from engineering because of its perceived non-human, über-technical side?

As a graduate student in biomedical engineering, I noticed that most of the graduates in this field are women. In fact, at one point, our research group had seven women and no men. I reasoned that biomedical engineering had more human impact. In that group we actually worked directly with patients and I think this is what attracted us to the field.

If I may make broad-based comments here: Many women enjoy working together to solve problems and many look for careers where they can have an impact on people, not things (e.g. doctors, nurses, teachers). If engineering is seen as a place where people work alone in their offices and make things without interaction with the public, it’s no wonder women wouldn’t want to enter that world. Many of you know the engineer who works alone is not very common or even non-existent. Engineers owe it to themselves to become more outspoken. When was the last time you saw an engineer on the news explaining a concept to the media? In my field, biomedical engineering, doctors and surgeons get all the credit. You rarely hear about the engineers who designed, tested and built the equipment that makes the surgery possible.

The comment “[Engineers] sit in back rooms waiting for you to bring the problem. Years ago, we identified the problem” rings very true in my ears. Our whole education system brings the problems to us. I don’t recall a course challenging us to find a problem that needs a better solution. It is difficult to find a problem without understanding the world around. Indeed, when I’ve asked my own drafting class to come up with their own projects, they were dumbfounded. In order to discover needs and problems to address, we have to have experience and time to ponder. Some of the most well-rounded engineers I’ve met hung out with people from other departments, not just engineering, but you don’t get to meet them if all your classes are within the halls of engineering. This again reinforces the notion that an engineering curriculum should encourage taking courses from other faculties.

Interestingly, I am involved with a product that requires a redesign of equipment that looks too “engineering-like” to sell. As the author stated in this article, design in Canada does not come from engineers. After meeting with a few designers I was told that engineers can’t design. They are too technical and wouldn’t be able to let ideas flow. I beg to differ and when I do reach my career goal of being a professor, I would like to develop a course in industrial design. I know many engineers who are very artistic and would love the creativity of a course like this. In fact, are we getting a bad rap because of a lack of human factors in design? There are new fields out there that engineers

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Marilyn Powers, PhD, P.Eng.

should have key involvement in but they are currently coming from psychology and kinesiology. Have engineers earned the reputation of not being capable of designing for humans because in the past equipment has been designed and the operators had to adapt to use it?

It seems that our education curriculum is a good place to start to influence change. It is essential to retain the technical expertise currently taught but do we have room to engage students in other non-technical fields within a four-year program? Will we attract more females by incorporating a visible human side to engineering? Will the market bear a five-year program giving flexibility to the student to explore other areas?

I agree that engineers are playing a passive role. How are we to change public perception if there are no visible role models? That goes for attracting people to the field, whether they be male or female. I like the notion that engineers should consider themselves advocates for improving quality of life. I believe that does empower us to contribute more fully to society.

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A disturbing trend revisited

I must disagree with Don Ireland's letter in the September/October issue of *Engineering Dimensions* (pp. 9-10).

Foreign trained engineers are not expected to know about the North American/Canadian specific codes and standards through past experiences in their home countries. The knowledge gained through taking a course and/or self-reading and passing the related exams are far from the knowledge gained through working experiences. That is where the 12 months of Canadian experience comes to the equation for the licensure process.

Today's technological evolution, improvement and fast paced emerging new branches of knowledge and expertise in each engineering discipline, make gaining the true knowledge of a specific area of engineering even harder. This is the same for Canadian graduate engineers who work in specific branches of their disciplines when they move to other branches and sub-branches of the same disciplines to work.

Having worked in the telecommunications industry for almost 30 years, 13 of which have been in Canada, I have come across engineers without any engineering "thinking concepts" with even several years of experience, amongst both Canadian and foreign trained engineers. I had a gentleman working on my team a few years back who was a Canadian graduate engineer with a P.Eng. licence. He was basically unable to troubleshoot any issues without referring to the troubleshooting guides and procedures. He had the same difficulties initiating any design work from scratch and needed to refer to the existing design works and diagrams. He was ultimately replaced with a younger Canadian graduate engineer with less experience who could easily think like an engineer and look for a solution. I had a similar situation with foreign trained engineers too.

I agree with Don that we must not endanger public safety by licensing the incompetent engineers, which does not apply only to foreign trained engineers. We have to consider the market and technological changes as well. The new VAR initiative from PEO for licensed engineers to keep their achievements and developments and work records up to date, will not only provide PEO with an effective tool to evaluate the performance of current engineers, but will also offer some statistical figures on the engineering market, which ultimately will help in adjusting the quantity of the engineering graduates and immigrants to Ontario. This by itself will improve the engineering image and values in the society.

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The real facts

It has taken 30 years, but the September/October 2007 *Engineering Dimensions* has finally corrected an error from the Centennial edition of September/October 1987. In this latter publication it was stated that in 1935, "The electron microscope was invented by James Hillier of Brampton and Albert Prebus of Edmonton." The 2007 edition correctly recognizes Hillier's home town as Brantford ("100 years of Canadian engineering," p. 55).

Pat D.C. Barnhouse, P.Eng., Ottawa, ON

Correction

Correction to "100 years of Canadian engineering," p. 55, *Engineering Dimensions*, September/October 2007, re: The first Ritual of the Calling of an Engineer. The first ceremony was held at the University Club in Montreal on April 25, 1925, attended by four alumni, graduates of the class of 1893, University of Toronto. The unveiling of the 46 cent "Iron Ring" commemorative postage stamp was held in Montreal on April 25, 2000, marking the 75th anniversary of this first ceremony. (Page 10 of *Engineering Dimensions*, March/April 2000, contains the same error.) On May 1, 1925, at 4:15 p.m., the first student ceremony was held for 107 student candidates of the graduating class in engineering at the University of Toronto, conducted by Camp 1.

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Advocating for another industry?

A curious article in the September/October 2007 *Engineering Dimensions* caught my eye ("Community activism could slow future real estate development: survey," p. 14). The results of this survey issued by an organization called Saint Consulting indicated, amongst other things, that "all of these responses are a result of individual interests in protecting their personal property investments" and "the survey findings reflect the traditional NIMBY syndrome where residents will support certain development so long as it isn't located too close to their own property or residence" and "local activism against development is growing at an alarming rate."

I thought it was peculiar that the PEO journal would run an article that appeared to be an op-ed piece for a particular industry—the development industry. Little is stated, too, about what exactly Saint Consulting is other than "an international organization that gauges public attitudes on real estate development issues." I decided to search Saint Consulting on the Internet.

The first words I saw on the site were: "Real estate development and expansion have been hallmarks of our American culture. New jobs and higher tax revenue have long been viewed as beneficial—a visible sign of progress and growth. All that

has changed.” Sounds like a rally cry for a bunch of raving capitalists! And I mean those who view land with no buildings to be of no value (and since when is farmland “undeveloped?”).

This is old-fashioned and dangerous thinking. Dig deeper in the site and you will find that Saint Consulting acts as a lobbyist for the development industry, which casts some doubt on the objectivity of the cited survey.

Now, I consider myself a bit of an activist in my own community. As a group we are questioning the wisdom of routing a major sewer pipe through an area of significant environmental, archeological, geological and political concern (this is the Grand Valley after all, an area of great interest to our neighbours at Six Nations). Yes, the area is close to my home but not enough to be NIMBY. Our group has been characterized by one of my fellow engineers in correspondence with the Ministry of the Environment (MOE) as being “anti-development”—a charge with no foundation as we have only opposed one particular facet of the project. This has been clarified in a rebuttal sent to the MOE.

Obviously my fellow engineer makes his living through the good graces of the development industry, and that is his choice. I believe, though, there is a role for professional engineers to become community activists as well, as we can be of great assistance to concerned laypeople on technical matters, and our own knowledge of the “process.”

But I don't believe that a regulatory body such as PEO should appear to be advocating for a particular industry, such as in this article, just because it may employ engineers.

Keith Middleton, P.Eng., Paris, ON

A few questions

I see from the current issue of *Engineering Dimensions* that John C. Tysoe is still denying global warming (“Gore’s misleading nonsense,” November/December 2007, p. 9). I have a series of questions for him and others like him:

1. If global warming is false but we still take action as if it is true, will the world come to an end as we know it?
2. If global warming is true and we take action as if it is true, will the world come to an end as we know it?
3. If global warming is false and we act as Tysoe asks us, will the world come to an end as we know it?
4. If global warming is true and we do not take action following Tysoe’s lead, will the world come to an end as we know it?

Only one scenario, # 4, answered incorrectly leads to the end of the world as we know it. And that is the scenario asking us to follow Tysoe’s lead. All others lead to either preventing or slowing global warming or acting responsibly in either regard.

David Moffat, P.Eng., Toronto, ON

Too many rules

Now that Bill 124 has been dealt with, and the ascendancy of a P.Eng.’s seal over the ministry of housing’s BCIN requirements has been reaffirmed, it is time to tackle another issue: that being the ever-increasing level of restrictive regulations in the area of construction design and engineering.

As an example of late, plans examiners in the city of Toronto and nearby municipalities have been directed, by their supervisors, to demand that mechanical and HVAC engineers should include calculations of duct sizes for residential and commercial/industrial projects. This may sound like a small thing to some; however, in my opinion, for an engineer to be forced to add yet another layer of paperwork to the already over-regulated permit process with this silly requirement is nothing less than a waste of time.

It is a fact that we have for many years been subject to the wishes of well-meaning municipal officials who have scrutinized, criticized and made changes to our well-considered designs. Corrections that are made necessary due to code issues are acceptable and, in fact, welcome. Wasteful additions to permit applications and associated paperwork are not. What

is needed now is some form of assertiveness on the part of PEO that will lead to a lessening of this type of over-regulation.

As one prominent engineering consultant remarked at an ASHRAE (American Society of Heating, Refrigerating and Air-conditioning Engineers) meeting several years ago, the continuing encroachment of unnecessary regulations has led to a lessening of the ability of an engineer to exhibit any of the creativity that has, in the past, stood us in good stead with the international community.

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Finding fault

Dr. Bilanski’s article in the November/December issue (“Some things never change!,” p. 3) highlights the disparity in remuneration, education and what might be considered “prestige” or “recognition” of engineers compared with other professions. This has been a longstanding issue and the subject of many articles in past issues of the magazine. While struggling with this apparent problem, PEO simultaneously advertises the following statement in *Yellow Pages* directories: “To make a complaint about a P.Eng. or engineering company, contact PEO.”

It seems rather inconsistent that PEO purports to enhance the image of the professional engineer while encouraging the public to find fault with engineers. Does the College of Physicians and Surgeons of Ontario or the Law Society of Upper Canada encourage complaints in such a manner? Perhaps “some things never change” because we don’t make them change.

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