

## Shortage lies in skills, not numbers

I am writing to respond to Ray Kathwaroon, P.Eng., who wrote to address the oversupply of engineers in Canada ("Engineers in oversupply," Letters, May/June issue, p. 7). I think that he and other letter writers may have misinterpreted the intent of the articles in the September/October 1999 issue of *Engineering Dimensions*. They were not so much about shortages in the number of engineers, but rather about shortages in the skills of available engineers—both new graduates and mid-career people.

My article was based on research that I and a graduate student have done to learn what skills are needed by Canadian industry, and was specifically about a skills shortage in Canada's automotive industry (see "Trouble on the shop floor: The auto industry's human resources crisis," pp. 26-29). Other articles in the same issue addressed the skills shortage in other sectors, such as the information technology and microelectronics industries. The fact is, there are serious and growing skills shortages in many disciplines within Canada's engineering profession.

Virtually all previous studies have addressed only the numbers of engineers needed in the future—not the specific skills that these engineers will require. The one point that can be made on the numbers issue is that the world is becoming a more technological place, and engineers are the best equipped to develop, manage and generally deal with technology. It seems that studying for a career in engineering is most definitely not a mistake for a young person in today's Canada.

This doesn't mean that nothing needs to change. It's clear that, although Canada's education system is excellent in many respects, developments in our profession have made it necessary to revamp some of our educational processes. For exam-

ple, the analytical skills of Canadian engineering graduates are generally judged by industry to be excellent, but they lack the ability to do design work, along with a whole range of "soft," yet vital, skills—such as teamwork and communications.

To address these issues, a number of new initiatives have begun, including the founding of the Canadian Design Engineering Network or CDEN, which is a multidisciplinary group of engineering faculty members who intend to improve the teaching of, and research in, design engineering in Canada. CDEN has members at virtually all engineering schools in Canada. It was recently awarded over \$1 million from the Natural Sciences and Engineering Research Council of Canada (NSERC) to carry out an extensive program of work in this area. In addition, NSERC, under the leadership of Dr. Tom Brzustowski, P.Eng., has founded a new program called the NSERC Industrial Chairs in Design Engineering which, in partnership with industry, will establish 16 professorships dedicated to teaching design engineering at schools across Canada.

Although many exciting and leading edge projects are done by Canadian engineers, it has been recognized that their lack of design skills has, in certain cases, led to projects being awarded to foreign firms, or to Canadian firms with offices located outside of Canada. Examples of this in the automotive sector are numerous.

If our engineers cannot do the work as well as engineers in other countries, the work will not be done in Canada. The situation needs to change. This is why the initiatives described above are so important for Canada's future and specifically for the engineering profession.

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## Protecting the right to practise

President's Message in the May/June issue ("Refocusing PEO," p. 3) and changes at PEO over the last few years have alarmed me.

In describing the metamorphosis of a licensing body, President Peter DeVita, P.Eng., implies that we have not hit stage three—"a right to practise," and writes: "... PEO has been stuck getting out of

the cocoon." This is patently untrue! Although we may not have kept our mandate current, we do in fact have a right to practise, and *Gazette* proves that, to some degree at least, we defend that right.



The other concern about which the column is very clear is that licensing is critical to an engineering graduate's career. DeVita writes: "... over two-thirds of licensed professional engineers believe they do not need a licence to do their work," and "... only about 60 per cent of engineering students become licensed professional engineers." This is perfectly normal. Many lawyers do not practise law. They manage companies or become politicians. Doctors enter research and do not practise medicine.

I entered engineering to become a manager and decision maker in the manufacturing environment. I achieved my goal after 10 years in various "engineering" roles and have most recently started my own company in a non-engineering field. Does this mean I don't need my engineering licence? In a legal, "right to practise" sense, no I don't. But in terms of professionalism, credibility and continuing competence, the licence is extremely valuable.

As long as PEO's leaders and members think that being an engineer means "practising engineering" in the legal, regulated sense of it, there will be strife in our midst. According to your own statistics and my experience, the majority of engineers are in unrelated or, at least, unregulated areas of practice. This does not mean that engineers are unrecognized. In fact, I would suggest it means that the people responsible for managing the organizations that employ us (and drive our economy) realize the value of engineers in whatever role we play.

So redefine the scope of practice for regulated engineering so that it reflects today's society. Promote the need for professional engineers to perform that scope. Extol the virtues of professional engineers in unregulated roles. But don't try to make every graduate into a regulated engineer. It isn't necessary and will make us look like a monopolistic, turf hungry group of egotists.

*John Harris, P.Eng.  
Orillia, ON*

## Keeping up tradition

As Gerald Farr, P.Eng., rightly stated in his letter, most engineers consider the Obligation Ceremony of The Ritual of the Calling of an Engineer to be the highlight of their graduation ("Opening up the Iron Ring Ceremony," p. 9, May/June 2000 issue). Repeated surveys conducted by the 25 camps have indicated that an overwhelming majority of obligated engineers favour the ceremony in its traditional form.

Candidates participating in the Obligation Ceremony are welcomed into the profession by their peers. The obligation, which is personal and voluntary, is the quintessence of the ritual, not the iron ring, which is solely a reminder of the obligation.

Access to ceremonies organized by the 25 camps across Canada is, by tradition, limited to obligated engineers and candidates to preserve the privacy and solemnity of the ceremony. A few camps hold open ceremonies, to which close relatives and friends are admitted.

However, at four guests per candidate on the average, a ceremony for 300 candidates usually requires the costly rental

of a large hall, with a capacity of well over 1200 people. Alternatively, three or four separate ceremonies would have to be conducted to accommodate candidates, relatives and friends in an appropriate ambiance.

This is why a number of camps, who have held open ceremonies in the past, have reverted to traditional ceremonies. Aside from breaking with long-standing tradition, the increasing number of candidates and attendees, more elaborate logistics that many camps are not equipped to handle, costly insurance coverage and other incidental expenses have been the main deterrents.

*Rémy G. Dussault, P.Eng.  
Chief Warden*

*The Corporation of the Seven Wardens Inc.  
St. Laurent, QC*

## Dangers of online surveys

The article on online employee surveys in the May/June issue prompts me to raise my concerns about the proliferation of surveys in general ("Survey says: Go

online for better results," Communications, pp. 23-24).

No amount of surveying will overcome employee dissatisfaction. Supervisors and managers should be communicating directly with their employees, identifying problems at a personal or work team level, and should be able to take appropriate action. If not, senior management is at fault.

A survey in which "... you can control the environment to avoid bad data" will have skewed results and be counter-productive. No amount of "analysis and graphing" will help, unless the company is willing to make changes. Also, the fact that "the advent of inexpensive and easy-to-use web survey software has dramatically simplified employee satisfaction surveys" does not address these fundamental problems.

There is also the issue of protecting the confidentiality of data via the web. Surveys conducted on the Internet are vulnerable to unauthorized access, and it's easy to identify a particular respondent.

I am skeptical of the value of "easy-to-use" survey tools, which have made

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"creating web surveys almost as easy as keying in a letter." On the rare occasions that I respond to surveys, I find that many questions are too subjective for me to give yes/no or prioritized answers.

*Christopher J. Farrow, P.Eng.  
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### Elusive solution

I am writing in response to Paul Tinari's article "Reinventing engineers for the new marketplace," which appeared in the May/June issue.

In the article, a puzzle is presented. It would have been nice if you had put readers out of our collective misery by providing the answer.

After all, without seeing the answer and the reasoning behind it, I think that most of us will conclude that, based on the information provided, there is no unique solution, thus hurting the credibility of the article.

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### Proving Canadian mettle

It was with much interest that I read Karen Hawthorne's article about the success of Lakehead University's civil engineering students against their American counterparts in the American Institute of Steel Construction Student Bridge Competition ("Lakehead University team wins American steel bridge competition," March/April 2000 issue, p. 12).



I'd like to inform readers about a similar Canadian success story. St. Clair College's civil engineering technology students participate in the North Central

Region of the American Society of Civil Engineers' concrete canoe competition. This year, the competition was hosted by the University of Michigan in Ann Arbor.

For the second straight year, the St. Clair College team came away with top honours for the best final product. This category evaluates the canoe's appearance, construction and performance. For more information, please contact me at (519) 972-2727, ext. 4459 or [gvrantsidis@stclairc.on.ca](mailto:gvrantsidis@stclairc.on.ca)

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### Open invitation to control engineers

If automatic control or one of its facets constitute your field of endeavour, you should consider joining the International Federation of Automatic Control (IFAC). As its name implies, IFAC groups national member organizations (NMOs), each representing a country, into a federation. So, any individual must first belong to the NMO

of his or her country to participate in IFAC.

In Canada, the NMO is IFAC-Canada, a non-profit, incorporated society that obtained its charter from the federal industry ministry in 1997. So far, under the leadership of IFAC-Canada, two events sponsored by IFAC have taken place in Canada. A third one has been approved. The eighth IFAC symposium on "Computer Applications in Biotechnology," will be held in Quebec City in June 2001. IFAC-Canada has also nominated candidates for all IFAC technical committees, who are now our representatives on the committees.

To enable Canadians involved in automatic control to participate more fully in IFAC, the board of directors of IFAC-Canada welcome qualified professionals to join the society as members without having to pay a fee. For more information or an application, contact professor J. O'Shea at [oshea@auto.polymtl.ca](mailto:oshea@auto.polymtl.ca) or at École Polytechnique, C.P. 6079, Succ. CV, Montreal, QC, H3C 3A7.

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