

Ignoring the obvious

I never expected to read such unsubstantiated rubbish in *Engineering Dimensions*, and by an engineer of all people! Mr. Tysoe ("Our pragmatic approach," July/August 2005, p. 8) hopes for a pragmatic approach and proceeds to rant about his perceived lack of evidence for global warming, without any facts to illustrate or justify his head-in-the-sand views—just that it's "a colossal bore," and that Canadians couldn't believe the Earth is warming, presumably because we have cold winters.

I suggest that we as engineers need to take these warnings seriously. The reports

"The plague of 'dumbing down' that has been gradually destroying primary and secondary education now threatens to infect schools of engineering."

(Andrew) Steve Petrie, P.Eng.

I hear speak of rising ocean temperatures (which seem to cause the increasing frequency and intensity of hurricanes and cyclones) and disappearing glaciers, as well as increasing CO₂ in the atmosphere. It is irresponsible to ignore this potentially disastrous situation. It is obvious that the rapidly escalating use of fossil fuels must cause both greater pollution and increasing temperatures since combustion results in heat and usually exhaust gases. The magnitude of these effects may not be fully known, but to dismiss them as a bore is hardly in the interest of the future well-being of our children! I hope not too many in the profession or the public are fooled by such self-serving nonsense.

The Kyoto Protocol may not be the ideal solution to the problem, but Canada needs to study proposals closely and try to work along with the U.S. and other countries in reducing energy use and pollution, and in developing new technologies to provide cleaner and more efficient sources of power. We also need to consider our incredibly wasteful habits, such

as using clothes dryers on hot summer days when the sun will do the job free, idling cars at the curb and many other unnecessary uses of power.

Our planet's future is at stake.

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The plague of dumbing down

I was shocked and saddened to read Michael Mastromatteo's report ("Educator sees image makeover for engineering," *Engineering Dimensions*, July/August 2005, p. 15) on remarks by the University of Western Ontario's dean of engineering, Dr. Franco Berutti, P.Eng., that (to para-

phrase): Because high school teachers can't teach algebra, some engineering schools plan to drop competence in algebra as an admission requirement.

So the plague of "dumbing down" that has been gradually destroying primary and secondary education now threatens to infect schools of engineering. My heartfelt advice to wavering engineering educators is: Don't give in! Algebra is the language of science. How can you drop algebra as a requirement for admission and still claim to be producing graduates of applied science?

Teachers of engineering had better think this one through. Perforce, any engineering school that passively accepts from primary and secondary teachers shoddy, "dumbed down" products must also adopt the implicit motto of the producers of these products: We will pretend to teach, and the students will pretend to learn.

Never mind algebra—it is well known that many high school graduates can neither read nor write.

Instead of quietly accepting the work

of incompetent primary and secondary school teachers, engineering educators should go noisily on the offensive and ask in a loud voice: Why can't the kids do algebra anymore? After all, we learned algebra, so why can't they? Is the human race getting stupider, in violation of the laws of evolution?

If engineering educators knuckle under and go along with incompetence in primary and secondary teaching, in a few years anyone interviewing an engineer will be wise to ask, Did you graduate from one of those make-believe engineering schools?

I applaud the University of Western Ontario and its dean of engineering, Dr. Berutti, for courageously raising engineering admission standards. They are smart enough to know that quality wins and wins respect.

As a vital service to Ontarians, would *Gazette* consider publishing a list of those schools of engineering who plan to drop algebra as a requirement for admission? Let's hear these schools declare themselves.

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Code incompetence

I found the article, "Do engineers know the *Electrical Safety Code*?" (*Engineering Dimensions*, July/August 2005, pp. 20-22) very interesting in light of all the bitching, whining, and moaning about BRRAG [Building Regulatory Reform Advisory Group, on whose report Bill 124/02 and its regulation 305/03 are based]. From the data, it appears that approximately 69 per cent of engineers professing knowledge of the *Electrical Safety Code* are incompetent. I would imagine that the numbers for BRRAG would be about the same.

So every P.Eng. who whined about BRRAG should be forced to eat the Electrical Safety Authority (ESA) report in its entirety. Ketchup, salt and pepper optional.

Also, for PEO to do anything less than demand the names of all engineers submitting inadequate applications to the ESA is a total dereliction of duty as a licensing and disciplinary organization. Any

engineer whose name appears twice on the ESA report should be immediately brought before the Disciplinary Committee for incompetence.

Failure to follow up on this issue gives total credence and validity to BRRAG and any similar legislation removing licensing and disciplinary authority from PEO.

I look forward to a similar review for building code submission errors.

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Purpose of higher learning

In his treatise on the separation of engineering and applied science, Dr. Filippo Salustri, P.Eng., (“Time to separate engineering and applied science,” July/August 2005, pp. 44-45) does not consider that the definition of engineering is the application of science, in conjunction with experience. Of course, experience cannot

be taught; it can only be fostered. The article assumes rather than asserts that the purpose of university is to get a job. This is a fair assumption if applied to programs offering to teach welding, equipment operation or any practice, but myopic when applied to higher learning. Ironically, in my electrical engineering career, much of the information I acquired at university quickly became stale, yet I do value scientific fundamentals and approaches to problem solving. Curricula can always be improved, but it is up to me to stay current and I do so through necessity and interest. University taught me to learn—that is the true purpose of higher learning, which I think Dr. Filippo Salustri has failed to address, and possibly failed to grasp.

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Degree options

I was surprised by the misleading information in Dr. Salustri’s Viewpoint article (“Time to separate engineering and applied science,” pp. 44-45) in the July/August 2005 issue.

Salustri mentions that MEng holders cannot obtain PhD degrees or publish articles since the work done towards earning the MEng degree is course oriented and is somehow not theoretical. This may reflect the current practice of some universities but it is not true in general, at least not historically.

My MEng was granted by McMaster University in the mid-1990s. At that time, the distinction between thesis and course work was not separated by the MASc and MEng designations. McMaster’s practice may indeed have been changed since then; however, many working engineers hold a theoretical MEng.

At the time, the option to pursue a thesis or course work was made available to students at the outset of the MEng degree. Those who did choose the thesis option were able to pursue further academic work and to publish articles. My MEng thesis and published articles, and those of many of my colleagues, are witness to this. Graduates of the MEng program at that time have also gone on to obtain engineering PhD degrees at various schools, as well as to study other non-engineering areas.

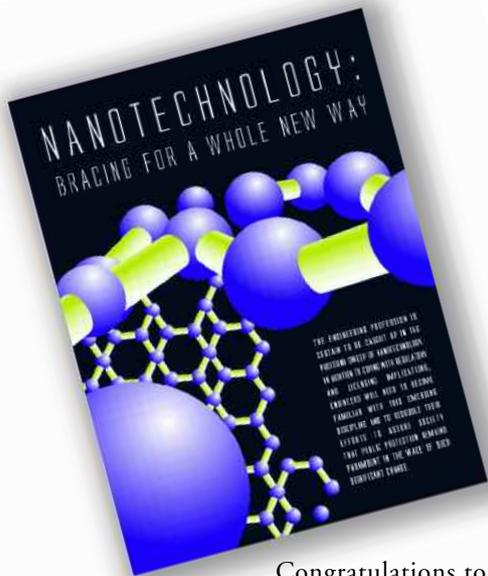
Salustri or anyone else is free to investigate this for themselves by consulting the McMaster department of chemical engineering for copies of the thesis work.

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Furthering nanotechnology

I enjoyed very much the three articles written by Michael Mastromatteo in the May/June 2005 issue of *Engineering Dimensions*. In particular, the most informative article on nanotechnology (“Nanotechnology: Bracing for a whole new way,” pp. 52-55) will be of great benefit to all PEO members and other engineers in Canada as they are introduced to this fascinating emerging new technology.





Congratulations to Mr. Mastromatteo on doing a superb job!

Despite its nano name (Greek for “dwarf”), this revolutionary technology is expected to have gigantic implications and influences on practically all traditional branches of science and engineering for many years to come. I sincerely hope PEO—in cooperation with industrial stakeholders like the Canadian Council of Professional Engineers and other professional engineering associations in Canada—takes the initiative to launch a task force on nanotechnology and engineering.

Canada is already behind other industrialized countries in the world on nanotechnology research spending. In the June 2005 issue of *Technology Review*, there are some important statistics on public and private nanotechnology R&D funding in the world for 2004. More than \$10 billion (U.S.) was spent globally, with two-thirds of this amount from corporate and private funding. Japan led the way in the world by spending approximately \$4 billion, followed by the United States with about \$ 3.4 billion.

Here is the ranking for the top 10 countries for nanotechnology R&D spending in 2004: Japan, U.S., Germany, U.K., Taiwan, South Korea, Australia, China, France, Italy. Unfortunately, Canada does not even appear on this list of 10.

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Opportunity to shine

A recent letter by Fred Bealle, P.Eng., (“Deserving of respect,” May/June 2005, p. 11) joined the chorus of outrage that professional engineers are required to demon-

strate their knowledge of the *Ontario Building Code* (OBC) in order to comply with Bill 124. I offer an alternative point of view.

For anyone who has burned the midnight oil preparing for engineering exams, the qualification exams should be child’s play. They are open book and they are multiple-choice. In fact, the test is simply a matter of whether one can look up the correct answers for 75 questions in less than 180 minutes. For the minimum 70 per cent pass criterion, the candidate has more than three minutes to seek out each answer. Is there an engineer in the business who is cowed by this prospect? As noted by Mr. Bealle, “An engineer would not last very long if the engineer didn’t know how to read the OBC.”

If my perception is correct, many, if not most, of the building-related complaints that we see in the blue pages are filed by building officials. The circumstances are usually related to the actions of an engineer who has either ignored or misunderstood the OBC. It must be very frustrating for a plans examiner to review a set of sealed drawings and find that the engineer has made errors in his or her design that threaten life, safety or property. It is more so if the engineer refuses to acknowledge the error and provide prompt correction.

I think that the Bill 124 examination program is a wonderful opportunity for engineers to demonstrate to themselves and to the Ministry of Municipal Affairs and Housing that they are indeed well qualified to prepare and submit plans for approval. I also think that the program offers an opportunity to PEO. Our organization should obtain and analyze the test results to identify any areas where our members require assistance. It can then initiate a program to bolster our knowledge in these areas.

I take issue with Mr. Bealle’s position that PEO metes out stern punishment to engineers who make mistakes. In truth, we all make mistakes and relatively few are brought to the attention of PEO in the form of a complaint. The ones we read about in the blue pages may be the most blatant or they may simply be the ones that, for one reason or another, caught the attention of someone who took the trouble to initiate the process.

Whether builders write the exams is moot. The designer (or architect or engi-

neer) is ultimately the person who decides how the building is to be constructed. The builder’s job is to implement the design efficiently and well.

Finally, the education and experience required to obtain a licence are not always true measures of an engineer’s familiarity with the OBC. If the Bill 124 exams help to make them aware of any weak areas in their knowledge base, it will have served them and our profession well.

Respect is a commodity that cannot be commanded or coerced. It must be earned. We engineers can take a step toward this by demonstrating to ourselves and to the regulatory authorities that we are indeed well qualified to prepare and submit plans for permit. Let’s do it!

Allan Quaille, P.Eng., Cedar Valley, ON

The environment and us

In reference to articles on global warming and other environmental problems referred to in the March/April and July/August issues of *Engineering Dimensions*, the catastrophic problems in our world go well beyond these concerns. The respondents to “Letters” and, in fact, all engineers worldwide, should read a small book entitled *A Short History of Progress*, by Ronald Wright, a national best seller.

The theme of the book demonstrates humanity’s ability to destroy earlier civilizations due to our inability to curtail our “needs.” It addresses the overpopulation, dwindling land for food supply, loss of greenery, the nearing exhaustion of fossil resources, amassing material goods as fast as they are invented, air and water pollution and, of course, global warming. The notes and bibliography are so extensive that they constitute half the size of the main text, and should be read as well. I defy the reader not to feel very worried as he or she sees the direction we are going in.

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