

Issue of demand over supply

Reading the September/October issue's articles on global change (pp. 34-35) and the Kyoto charade (pp. 36-41) left me with the impression that I was reading

a debate about evolution or some other matter of faith versus science. Surely our understanding of world climate over the past half million years must count for something here.

But perhaps we are looking at only one side of the problem, because most problems of this nature boil down to supply and demand. So far, all the discussion is about supply in a world whose resources—land, space, and energy (if many of the energy sources we were allowed to consider won't work)—are finite. Perhaps it is time to suggest that the demand side of the equation should be tackled. One way to do this would be to reduce the entire world to Third World economic status—the August blackout could be regarded as the first training exercise. But even that would only work for a while; sooner or later we must answer the ultimate question: How many people can planet Earth support? Let the debate begin.

*Arthur B. Harris, P.Eng.
Troy, MI*

Heating up the debate

As part of the "Global warming—heated debates" article in your September/October issue (pp. 34-35), there are a few seriously misleading statements that should not go unchallenged as they appear in print in a professional engineering publication. In one short paragraph of Ross McKittrick's article, such a false image of the actual situation emerges that it is difficult to know where to start.

Professor McKittrick writes the following:

- ◆ "Compared to the vast natural carbon cycle, humans add a very small amount of carbon to the air each year through fossil fuel use and deforestation." True, but this is not the issue. The perturbation is to a balanced system and those small additions have in fact resulted in an approximately 30

per cent increase in the carbon dioxide concentration in the atmosphere relative to pre-industrial times;

- ◆ "At the global level, the flux averages just over 1 tonne per person annually." I have not checked this number, as the atmosphere does not respond to per capita emissions. It is rather the total global emissions that determine atmospheric concentrations, and they are continuing to rise. In 1973, carbon dioxide emissions from coal, oil and gas stood at 15,761 megatonnes (Mt) worldwide. In 2001, this was 23,683 Mt (*Key World Energy Statistics 2003*, International Energy Agency);
- ◆ "This has not changed since 1970, since global energy markets naturally constrain aggregate availability for fossil energy." Global energy markets apparently do no such thing according to International Energy Agency (IEA) statistics. In 1973, coal, oil and natural gas accounted for approximately 5200 megatonnes oil equivalent (Mtoe) of the global primary energy supply. In 2001 this figure was approximately 8000 Mtoe, for an increase of approximately 53 per cent over these years; and
- ◆ "Emissions will peak mid-century at about 11 billion tonnes as the population peaks at about 9 billion." Economic and demographic forecasts to mid-century are fine but forecasting is not going to be very credible if it does not start with a more accurate picture of the present than discussed above.

Professor McKittrick writes that he is familiar with the scientific arguments for global warming, so it is difficult to understand the reason for the basic flaws in the arguments he offers. One hopes that the panel discussion scheduled for November 21, 2003 is more informative on the subject.

How accurate a picture of global climate we get from global circulation models and how effective the Kyoto Protocol can be in reducing emissions are interesting questions with legitimate room for debate as there are uncertainties in the difficult scientific questions. We should start by getting the easy questions right.

*Deniz Karman, P.Eng.
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Money talks, but not here

I really don't think salary surveys belong in *Engineering Dimensions* Salary issues belong to an advocacy group—not a regulatory group such as PEO. Personally, I believe salaries are an issue between an engineer and his/her employer, and there is no call for such surveys. I would hope that if an engineer has concern about salary, he or she has enough gumption to schedule a meeting with the employer and discuss matters. I cannot see the value at all of such surveys.

*Clayton M. Morgan, P.Eng.
Bowmanville, ON*

Practising professionalism

In his article "Ethics bar is rising for professionals" (September/October 2003, pp. 24-25), Jim Ridler questions whether the engineering profession is next on the public's ethical accountability agenda. As a non-engineer, I am surprised there is even a question.

In the mining industry's consulting engineering field, there have been several high-profile cases that have put this group of professionals on notice alongside the accountants, lawyers, doctors and financiers. The most prominent cases have been Equatorial Tonopah, Inc. vs. Kvaerner U.S. Inc. (the Tonopah copper mine), Compania Minera Maracunga (Kinross Gold Corporation and Bema Gold Corporation) vs. Fluor Daniel Chile Ingenieria y Construccion S.A., Fluor Daniel Corporation and Fluor Daniel Wright Ltd. (the Refugio gold mill) and Anaconda Operations Pty Ltd. vs. Fluor Australia Pty Ltd. (the Murrin Murrin nickel plant). These cases have been in the headlines for several years and a recent article published in *The Northern Miner* (September 22-28, 2003; p. 4) summarizes the details.

Both Refugio and Murrin Murrin were resolved via arbitration, resulting in awards of US\$24 million and A\$42.3 million respectively. In the case of Tonopah, however, "The courts found Kvaerner liable for professional negligence in the construction of the operation, and for negligent misrepresentation and fraudulent concealment in the feasibility study. Equatorial got a judgment for US\$136.9 million, all it had asked for. (A further US\$20 million covers costs and interest.)"

I don't know if ethics were at issue in the Fluor cases, but according to this arti-

cle and the outcome of the Tonopah trial, the judge and jury were unimpressed with Kvaerner's ethical behaviour. Engineers beware. To be a professional is to practise ethics, regardless of your discipline.

*Gord Turcotte, CIM
Ottawa, ON*

Learning from the past

I read the article "Engineering education for the 21st century" (July/August 2003, pp. 36-39) with some dismay. Let me explain my disappointment with it.

In 1973, I created the position of education director at the University of Manitoba Engineering Society Student Council. I was not happy with the quality of my engineering education and its focus on the technical, with no discussion of social or political issues.

To remedy this, I created my own course for credit on the Engineer in Society. It was a third-year engineering course structured like an arts seminar course. Four daring professors agreed to sponsor it (with much protest from other faculty members). I arranged for a Professor Beakley from Arizona State University to come to Manitoba to present his new first-year engineering textbook on the engineer in society, technological change, etc. It replaced a drafting textbook that was first published in 1899, from which we learned the importance of having an arrowhead 1/8" long.

Now fast forward 30 years. It would appear that this same issue is still being discussed. Moreover, the University of Toronto task force thinks this is "new" stuff and their revelations actually warrant ink in the PEO magazine. I thought this was standard stuff in engineering school now. I guess not.

It was my seminar course and courses like my non-technical elective (an honours philosophy course on the history and philosophy of science by Paul Churchland) and not the other four years of standard engineering courses that taught me to think critically and to write concisely and clearly. These are the skills critical to my practice of engineering. I did not need years of study and a task force to create what I did 30 years ago.

Clearly, the U of T task force members, to paraphrase the article, must be

exposed to their history so that they can learn from their past.

*Grant Wichenko, P.Eng.
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Helping at home

This letter is sent in response to an article that appeared on the July/August 2003 issue of *Engineering Dimensions*, the article titled "Sparking passion for change" (pp. 28-30) written by Parker Mitchell.

We at the Tetra Society of North America full-heartedly agree with the article and admire the engineering graduates for using their skills to help people who are less fortunate. However, we want to remind your readers that while many people who live in poorer countries are in dire need of help, there are individuals in our own country, even our own communities who need assistance.

Tetra Society of North America is a not-for-profit society that works to decrease or eliminate barriers for disabled people by facilitating the creation of unique enabling devices. Tetra unites technically skilled volunteers with disabled adults and children to build and design these enabling tools. Since its incorporation in 1992, Tetra volunteers have created over 3000 assistive devices through more than 30 chapters in cities across Canada and the United States.

Our members have inspired the creation of recreation aids and equipment, communication tools, workplace and mobility aids, etc. Tetra volunteers have made a great difference in the daily lives of many people with disabilities. Please contact Tetra Society toll free at 1-877-688-8762, or visit our website: www.tetrasociety.org, for more information about Tetra's activities throughout North America.

*Jim Howard
National Coordinator,
Tetra Society of North America
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Discovering ethics

In a genuinely cultured community, there would be no need for regulations, laws and law enforcement. *The Gazette* section in every issue of *Engineering Dimensions* is a reminder that our culture is lacking and that our institutions—schools and universities—are not taking the time to pay special attention to the spiritual, as opposed to the religious, development of our men and women.

Religions are increasingly preoccupied with symbols and practices, which, by their very nature of being different, are divisive, rather than universal values—the spiritual path—which are uniting. Moreover, ethics cannot be taught as a school subject; ethics are discovered. Ethical conduct is the natural behaviour of a person who has attained

wholeness. Yoga and meditation are the acknowledged disciplines to attain that wholeness. Bringing yoga and meditation into our schools, universities and workplaces will eliminate the need for disciplinary committees taking retroactive measures of dubious benefit.

*Edward Atraghji, P.Eng.
Ottawa, ON*

Ethics must be at core

Ethics form the basis of a moral compass that directs behaviour and models the inter-relationships between people in and out of the workplace. In practice, it is the totality of one's thoughts and feelings that we do the right thing simply because "it is the right thing to do." Ethics remain that indefatigable symbol in time immemorial as the

moral code of conduct, impervious to the winds of change or the hands of time. Ethics are simply an absolute. Ethics and morality are important determinants in engineering education and practice, and are of vital necessity in all aspects of engineering and engineering technology practice.

In business, industry and technology, ethics and morality cannot be isolated from deeply-rooted personal values of self-worth, dignity and respect. Rules and regulations will not and cannot prevent unethical practice; the yardstick of ethics is morality, the only measure. It is that ethical and moral code of conduct, having both centre and circumference in a never ending circle of social determinants that governs our activities in a righteous manner, equal of both head and heart sharing the milk of human kindness and consideration without which sans man, sans life, sans everything.

*Manny Linden, MEIC, MCSME,
FIED, FChE, RRng.dES, C.E.T.
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Tools that inform

Normally I flip through *Engineering Dimensions* I am desperate for time. I have just been through the September/October issue—almost cover to cover—and am moved to pen this note of commendation and encouragement. Our ecosystem is basically a technical/scientific issue. Unfortunately, there is both "good" and "bad" science. In my view, informed professionals will sort them out, and *Engineering Dimensions* is one of the tools they need. In the process, the profession can ride this wave for both personal and professional advantage, as well as the benefits to society as a whole. My motivation to write is not only to thank you and congratulate you personally on a very fine "tool," but hopefully to assist you in contending with problems associated with "budget allocations," which everyone faces in doing their job.

*Fred Atkinson, P.Eng.
Toronto, ON*

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