

Technology's overrated

Writing in these pages recently, Microsoft's Bill Gates not surprisingly argues for more science and technology graduates and increased funding. He sticks to the oft-used technology lobby "script" that calls for making bold assertions and citing misleading statistics while concluding that policymakers must follow the standard science and technology prescription. If we insisted on a fact-based approach, we would get a very different economic prescription for Canada.

Granted, Mr. Gates begins factually enough: "The economies of Canada and the United States have been the envy of the world." But then he boldly argues, "the reason: our unsurpassed excellence in research and development, which has been fuelled by a work force made up of the world's top scientists and engineers." Note this is not "a reason" or "one of the many reasons," it is "the reason." Nothing else apparently matters. The success of companies like Microsoft has nothing to do with breakthrough marketing and branding. Or distribution excellence. Or people management. Scratch the surface of Canada's technology darlings — Research In Motion, Cognos, Husky Injection Molding to name a few — and you will find more than "unsurpassed excellence in research and development."

But for Mr. Gates, the only reason for our enviable economic prosperity is a work force made up of the world's top scientists and engineers. And so his prescription is for more students to choose science and engineering because we are lagging in that regard.

Is there any proof for this assertion? For example, is American prosperity purely a function of its high-tech, science-intensive sector? Using the broadest definition of high-tech industries — computer hardware and software; communications technology; pharmaceuticals and biotechnology; aerospace and aerospace engines; medical devices — they account for a mere 1.76 per cent of U.S. jobs. The financial services industry alone is 67 per cent larger and has wages 18 per cent higher. What happens in the other 98.24 per cent of the jobs-economy is actually quite important to America's prosperity. Asserting that the success of the U.S. economy is singu-

lary "fuelled" by its scientists and engineers can't be supported by the data.

Neither is there evidence that more scientists and engineers would enhance future prosperity. Across developed economies, there is no relationship between the graduation of scientists and engineers and economic growth. Among the Group of Seven industrialized nations, America ranks seventh in natural science and engineering undergraduate degrees per capita, yet leads in innovation and prosperity.

How about the alarm over the precipitous decrease in computer science freshmen between 2000 and 2004 in the United States? While true, using 2000 as the base year — the height of the Internet bubble — is a bit suspicious. At that time, majoring in computer science was seen as a guaranteed path to becoming an instant millionaire. Meanwhile, data from the U.S. National Science Foundation show that precisely the same number of students entered science and engineering overall in 2004 as 2000. With the implosion of computer science jobs, students opted for other more attractive branches of science and engineering. In fact, over the past 20 years, the number of students entering science and engineering in the U.S. has been remarkably stable.

How about the recent study suggesting that "35,000 new jobs in information and communications technologies are added annually" in Canada, and tragically only "7,000 qualified graduates" are produced per year? In the most recent year for which hard numbers are available, Canada actually graduated 13,000 in computer science and electrical/computer engineering. Are nearly half of them unqualified? And taking into account the number of information and communications technology jobs that are routinely filled by people from outside high-tech,

and by university graduates from arts and commerce, the 13,000 graduates are plenty. Nonetheless, Mr. Gates concludes: "To stay competitive, it is essential that both countries focus on improving the quality of education and expanding the number of young people who study math and science in school." Whew. That is quite a leap.

So, what is the U.S. education system doing differently that has helped make the U.S. economy so successful? There is one distinctive thing: It educates way, way more business students. Fully 21 per cent of America's university students are in business programs. No other country in the world is close.

America doesn't win on technology creation; it wins on building great businesses, some based on the application of technology. And it builds great businesses by, surprise, surprise, educating students in business.

Like many other developed countries, Canada outproduces the U.S. in science and engineering bachelors — 11 per cent more per capita — but trails the U.S. dramatically in business education, graduating only 59 per cent as many students per year. While Mr. Gates advocates trying to convince students to fill the available science and engineering spots, in the business domain Canada keeps the number of students down by restricting the number of places in university business programs — an odd educational strategy.

America will continue to excel because it leads the world in producing business people. It has always had, and will continue to have, plenty of scientists and engineers. Its great businesses and business environment will continue to act as a powerful magnet for scientific talent from around the world.

From the narrow perspective of the software industry, Mr. Gates may see the obvious prescription for Canada. However, if we discipline ourselves to look at the facts rather than superstitions, we will head in a dramatically different direction than that advocated by the science and technology lobby's most prominent member.

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