

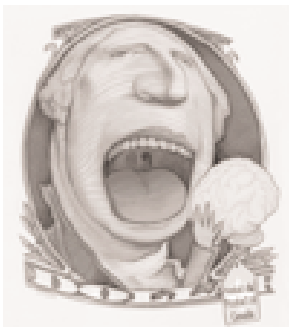
# THE BRAIN DRAIN IS REAL AND IT COSTS US

*Lots of Canadians are always ready to move to the United States. When US immigration policy lets them, they go. Since 1989, the US border has been much more open to skilled Canadians, and they have started to move in substantial numbers. In economic terms they generally outperform both US natives and predecessor Canadian migrants. The flow of bodies is offset by a more than equal inflow of skilled migrants from the rest of the world, but such immigrants are not as productive as those who have left, and their resettlement here is costly. We urgently need policy that will both keep people from going to the US and persuade those who have already gone to come back.*

*De nombreux Canadiens sont toujours prêts à émigrer aux États-Unis. Dès lors que la politique d'immigration américaine le leur permet, ils plient bagages. Depuis 1989, la frontière canado-américaine est beaucoup plus ouverte aux travailleurs canadiens spécialisés et un nombre appréciable de ceux-ci ont commencé à traverser la frontière. En termes économiques, ces émigrants offrent généralement un meilleur rendement et une plus grande productivité que leurs homologues américains et que les émigrants canadiens qui les ont précédés. Ce flux migratoire est compensé au plan économique par un flux inverse, d'une égale proportion, de travailleurs spécialisés en provenance du reste du monde, mais ces derniers ne sont pas aussi productifs que les personnes qui ont quitté le pays. Leur installation au Canada s'accompagne de coûts importants. Il nous faut de toute urgence une politique qui encouragera les gens à demeurer au Canada et qui persuadera ceux qui ont déjà déménagé de revenir au pays.*

## D. J. DeVoretz

That there has been a net transfer of highly skilled Canadians to the United States in the 1990s is not in doubt. This flow of highly-trained permanent and temporary movers between Canada and the United States after 1989 has been largely one-way and constitutes a substantial subsidy from the Canadian taxpayer to the richest country in the world — and to Bill Gates in particular. Recent changes in United States immigration law, together with the signing of NAFTA and its attendant mobility provisions, which are exclusively reserved for highly-educated Canadians, have accelerated this trend.



Given the substantial taxpayer subsidy inherent in the Canadian educational system, and the long-term economic growth and productivity consequences of this one-way movement to the United States, important policy issues arise. These include the trade-off of an accessible, subsidized post-secondary Canadian educational system against the loss of productive, highly-subsidized immigrants to the United States. There is also the question of how best to address the short-run or public finance issues: by reducing selected educational subsidies for potential émigrés or by imposing an exit tax on emigrants, or perhaps both? In addition, should we try to replace skilled workers with immigrants, with their attendant productivity and administrative costs, or should we instead bribe highly skilled Canadians to stay or to return home, as we did in the 1970s? Finally, how does the short-run loss in reduced tax revenues compare to the resulting long-run eco-

conomic growth gained by using tax rates to persuade the “best and the brightest” to return?

In order to address these questions, I will use evidence on post-1989 permanent flows to the United States, supplemented with data on NAFTA-related and intra-company temporary flows, to show that current total flows to the US constitutes a substantial portion of recent relevant Canadian graduating cohorts. Next, to document the “best and brightest” argument, I will present evidence demonstrating that, once resident in the US, Canadian emigrants outperform comparably educated US residents. I will follow this with a brief description of the “alphabet soup” of United States visa classifications, mainly to suggest that there are more doors into the US than there used to be, and that they are open wider, so as to facilitate the emigration of the highly skilled. Finally, I will suggest policy measures to mitigate the impact of this brain drain.

**M**ovement of talented Canadians to the US has at least a century-long history. Luminaries of the stature of Alexander Graham Bell led the way, followed by a cadre of talented but less glamorous émigrés. By the late 1950s, Canada was in the midst of its first legitimate “brain drain” to the United States. A net total of approximately 10,000 highly-skilled Canadians left for the United States each year between 1950 and 1963. The movement virtually stopped between 1965 and 1990, however, when US immigration policy became family based and subject to hemispheric quotas, two changes that placed Canadians at a disadvantage in the queuing process. Expansive Canadian

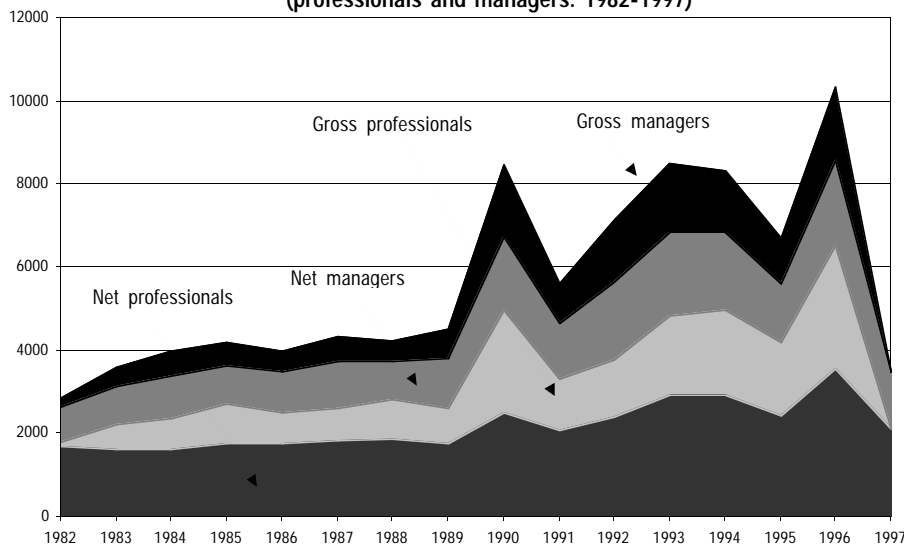
The dramatic transformation of the way the US immigration policy regime affected Canada means that reference to the pre-1989 era for evidence of a Canadian “brain exchange or drain” is largely irrelevant.

immigration policies, including tax incentives, coupled with unpopular US foreign policy adventures even briefly reversed the “brain drain” into a “brain gain” for Canada. From the mid-1970s until the late 1980s migration between the two countries was in a period of quiescence. Given this highly variable flow of migrants, the choice of modern benchmarks to measure the existence of a brain drain is crucial.

In the 1990s, the United States instituted two major immigration policy measures which both led to changes in the skill content and size of Canadian emigration flows to the United States. First, the 1990 *United States Immigration Act* increased the number of employment-based slots (“E” and “H” visas), which meant highly skilled Canadians no longer had to queue in the overcrowded family reunification entry category. Next, the mobility provisions of, at first, the Canada-US Free Trade Agreement (1989) and then North American Free Trade Agreement (1993), which inaugurated the “TN” visas for Canadians with a Bachelor’s degree or higher, altered the filter that Canadians faced when contemplating temporary emigration to the US. In addition to these two immigration policy measures, the “L” visa, which allowed intra-company transfers to the United States by Canadian-based companies, kicked into effect with a vengeance in the post-NAFTA era.

This dramatic transformation of the way the US immigration policy regime affected Canada means that reference to the pre-1989 era for evidence of a Canadian “brain exchange or drain” is largely irrelevant. US

Figure 1  
Canadian gross and net emigration to the United States by occupational groups  
(professionals and managers: 1982-1997)



immigration policy is what ultimately determines the number of highly-skilled Canadian émigrés to the United States. Canadian domestic economic conditions are secondary “push” factors, which serve mainly to increase the size of the queue of highly-skilled Canadians awaiting admission to the United States. What is different from previous decades is that this Canadian-induced queue now forms both in Canada and in the US itself, as Canadian-born temporary residents seek permanent visas. The Canadian push factors inducing this movement are both the differential tax rates that are talked about so much these days and a host of other economic forces. These non-tax forces include: dramatically different post-secondary educational subsidy levels between the two countries; employment conditions in Canada; and, in the 1990s, restrictive Canadian fiscal policies, both federal and provincial, that have reduced the demand for labour in the health, education and science sectors.

The primacy of United States immigration policy as a key conditioner of Canadian emigrant flows is made clear if we look at what happened during the recession of the early 1980s. Immigration was quiescent, even though Canadian post-secondary graduates had strong economic incentives to move to the United States, with its lower taxes, higher income and greater prospects for career advancement. But despite all this, a virtually closed immigration door for Canadians led to only 215 net managerial emigrants in 1982. Contrast that with the 1,655 managers who left in 1993 — after the change in immigration rules in 1989.

Figure 1 depicts the gross and net permanent flows of highly-skilled Canadians during the two eras, pre- and post-1989. It clearly demonstrates that when the US door has opened wider, Canadians have filed through it. As far as the composition of the migration is concerned, the flow of managers clearly grew after 1989, and became virtually one-way, Canada to the United States. Within the professions, the movement out of Canada is highly selective, with nurses, physicians and engineers representing the majority of movers by 1996/97.

Figure 2  
Canadian gross and net subsidies (1993/94 000's dollars) to the United States by occupational groups (professionals and managers: 1982-1997)

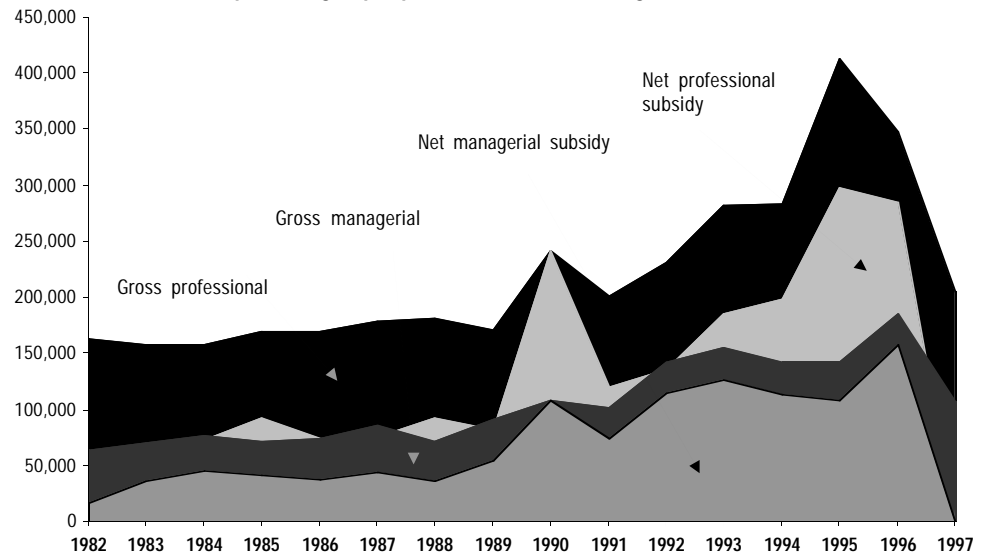


Figure 2 goes beyond the “balance of trade” or raw numbers approach to measure the public finance cost of Canada-US migration. Both the total resources devoted to training the people who left and the portion of this accounted for by taxpayer subsidies to post-secondary education are large and have been growing over time. Between 1989 and 1996 over \$6.6 billion (measured in 1994 dollars) in educational resources was embodied in the net flow of emigrants to the United States. The Canadian taxpayer’s share of this bill was \$2.9 billion. The loss of this \$2.9 billion subsidy is especially worrisome given Canada’s implicit but clear intergenerational education contract. It had been due to be reimbursed by these newly educated workers when they entered the Canadian labour market and paid taxes — taxes that could have gone to finance the education of subsequent generations of Canadian students.

To put the 1989-96 skilled outflow into perspective, the \$6.6 billion in transferred educational resources is more than three times the \$2.1 billion (in 1994 dollars) transferred during the last “brain drain,” that from 1950 to 1963. Alternatively, it is equivalent to the export of 2.5 Simon Fraser University annual operating budgets circa 1996-97.

Evidence is now mounting that Canadians who move to the United States outperform similarly trained US-born workers. Immigration is always highly selective and a few salient economic performance measures of recent Canadian émigrés to the

## Recent Canadian immigrants in the United States are the best and the brightest in terms of occupational choice and earnings performance relative to both resident Americans and previous Canadian immigrants to the United States.

United States make this truism evident. First, an analysis of the 1990 US census indicates the high degree of occupational segmentation of Canadians in the United States. Fifty-five per cent of resident Canadians aged 16-59 were in the managerial, professional, technical or administrative professions. Moreover, after controlling for a variety of their other attributes, the simple fact of being a Canadian immigrant on its own raised the earnings of Canadian residents in the United States by 10 per cent. Moreover, unlike other immigrant groups in the United States, more recent Canadian-born immigrants earn more than the older stock of Canadian immigrants resident in the US. In sum, recent Canadian immigrants in the United States are the best and the brightest in terms of occupational choice and earnings performance relative to both resident Americans and previous Canadian immigrants in the United States.

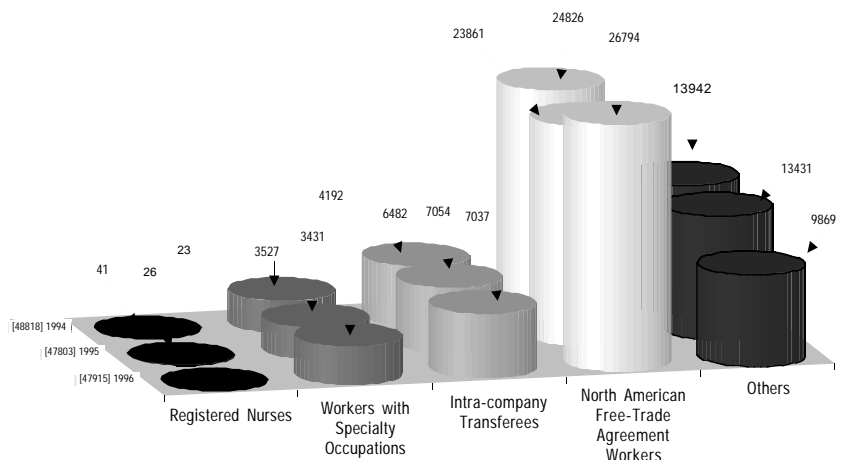
Because of the exclusive entry provisions of NAFTA, Canadian émigrés form a unique set of quasi-temporary entrants to the United States economy. So far, TN visas have been available only to highly-skilled Canadians with a *bona fide* job offer on a near immediate basis. Such entrants are subject to no quota limitations and no labour market displacement tests. This latter waiver is crucial. Canadian TN visa holders are not subjected to expensive and lengthy certification to insure that their arrival would not displace a similarly qualified US citizen. The TN visa thus represents a unique, low cost entryway, of virtually unlimited width. Moreover, it is renewable, thus allowing stays of indeterminate duration. In short, a TN visa means no

lawyers and no wait. It represents a clear structural break from the pre-1989 period, when only permanent visa entry or expensive and time-consuming applications leading to traditional temporary visas, which were subject to quotas and duration restrictions, were available.

Canadians are not restricted to the TN visa, of course. They (or their lawyers on their behalf) can compete with the rest of the world for other temporary visas or for the more traditional "L" visa for intra-company transfers and H-1 visas. Despite the low cost TN visa, Canadians do continue to use these traditional and more restrictive temporary visas. Between 1994 and 1996 over 20,570 intra-company transfers or visas were issued to Canadians. The "L" visa has become a transitional visa for many Canadians, allowing them, in effect, a probationary period before being permanently transferred by a parent Canadian company to its US outlet. More than 30 per cent of 1994/96 intra-company transferees have moved from temporary "L" visa status to a more permanent "E" visa. No doubt many people transferred by their Canadian company search for a better position in the US and then have their new employer assist them in obtaining an employment-based permanent visa.

This alphabet soup of temporary visas, far from diluting Canadian movement to the US, has allowed Canadians who choose not to wait in Canada in the permanent queue, as they would have had to do in the 1980s, to instead enter the US with a temporary visa and queue from there. Thus some fraction of these temporary movers represents part of the modern

Chart 3  
Distribution of non-immigrant movement from Canada to the United States FY 1994-96



brain drain and cannot be dismissed as simple trade-facilitating short-term movers.

Figure 3 reinforces the importance of temporary movement in more detail. To be sure, only an unknown fraction of the 48,000 Canadians who moved temporarily between 1994 and 1996 will become permanent movers. Still, NAFTA and FTA visas had grown from zero to almost 27,000 per annum by 1996, while "L" visas (intra-company transferees) and H-1 visas (others) represent an additional 20,000 visas. These temporary movers, who in effect, have their foot in the door, represent a new 1990s twist on the brain drain.

When, as often happens, the brain drain debate moves beyond numbers, and even the skeptics admit that the most highly skilled Canadians leave for the United States or Hong Kong, the excuse is offered that highly skilled Canadians have always been drawn by the siren call of career improvements beyond the ability of Canada's small market to provide. In other words, the movement is small, exceptional and impossible to counteract.

Is this trivializing of the United States pull factor to the single advantage of scale really accurate? Is it truly only a problem of a few superstars moving to a larger market? Clearly not. Canadians are not over-represented in the exceptional H-class visa, reserved for world-class talent wishing to enter the United States. Moreover, in the early 1980's, Canadian emigration to the US was small or trivial, hence putting the lie to the argument that Canada has been an historical victim of the alluring career development prospects of the United States. After the change in US immigration policies, university-trained Canadians have been leaving in large numbers across a variety of fields, including nursing, medicine, and academe. It is true that in interviews I conducted with 134 Canadian private firms experiencing the brain drain in the 1990's, all firms mentioned the prospect of career improvement in the United States as a motivation governing the transfer of their professionals. But the vice-presidents of human resources I talked to also strongly noted that career improvement is simply a road to greater income for mid-level professionals. Emigration for career improvement, far from being a unique event reserved for a few superstars, is simply another mundane pull force.

Other forces also hasten the exodus. When Canadian graduates emigrate in the 1990s they avoid repaying their subsidy while enjoying the rewards of a tight US labor market. Consider that by 1993/94 40 per cent of the entire 1990/91 graduating class from Canadian nursing schools had left for the United

## Low pay, unemployment and long hours, not to mention repaying the taxpayer loan on the cost of their education, are "sacrificed" when Canadian nurses emigrate to the United States.

States. In light of the shrinking Canadian labour market, why would young Canadians continue to seek training in nursing? Two obvious reasons. The training is highly subsidized, and relocation to the United States has become easier.

This is a clear case of moral hazard, which requires a policy response. Subsidies to nursing were designed in part to encourage Canadian student nurses to continue to enter the faltering, publicly-financed Canadian health sector. The suddenly greater accessibility of a nursing job in New York or Hawaii allows graduating nurses to break this implicit contract. Low pay, unemployment and long hours, not to mention repaying the taxpayer loan, are "sacrificed" when Canadian nurses emigrate to the United States.

But there is also an exodus in engineering. Though there is still an abundant demand for engineers in Canada, entire graduating classes of electrical engineers are often recruited by Americans. What is the motivation for a newly trained engineer to move? He or she may not have much of an education subsidy to pay back, since engineering is less subsidized than many other fields, but higher post-tax income and greater opportunities for career development are still attractive.

Finally, mature Canadian professionals who have already repaid their educational subsidy are likely to emigrate mainly to avoid higher marginal tax rates.

The point of these examples, which feature different occupations with different labour market conditions, is to illustrate that the motivation to move, and the remedial measures that may be necessary to repatriate highly skilled Canadians, can differ by occupation. In sum, the motivations to move to the United States are abundant and complex and vary by occupation and by where a person is in his or her career. But only rarely is the emigration of highly skilled Canadians motivated by

Table 1  
Balance of human capital payments for Canada 1989-96

Occupations	Immigrant inflow from ROW (1)	Cdn immigrant outflow to USA (2)	Net flow into Canada (3)=(1)-(2)	Net transfer (1994\$) (4)
Managers	25,443	20,177	5,266	\$948 million
Health Sciences	4,409	7,835	(-4,409)	(-1.2 billion)
Scientists/engin	20,726	20,595	131	\$33 million
Total	50,578	48,607	1,971	(-\$285 million)

unique advantages of a foreign market that can not be replicated in Canada.

Why should we be concerned about this modern “brain drain” to the United States if Canada receives skilled inflows from the rest of the world? After all, a simple head count comparing outflows from Canada to the US with inflows to Canada from other countries leads to skepticism about the brain drain. We import more brains than we export. But consider the following three points:

- First, immigrant inflows from the rest of the world may be an imperfect match for the Canadians emigrating to the United States, while the costs of settling immigrants and bringing them up to the productivity of those who have left may be substantial.
- Second, importing human capital from the rest of the world does not address the underlying economic forces that initiated this latest movement of Canadians to the United States.
- Finally, using the rest of the world to make up for Canada’s brain drain to the United States poses serious ethical problems. India and China are major source countries for engineers and graduate students to Canada (and the United States), which means that, in essence, Canada is asking peasant-taxpayers in these two poor countries to reimburse the Canadian taxpayer for human capital which has flowed to the United States. Even more worrying ethically, Bill Gates and other extremely rich American entrepreneurs are being subsidized by these very poor countries’ taxpayers.

If we ignore ethical questions, what is the purely economic verdict on using rest of the world’s human capital to replace skilled Canadian who move to the United States? Is the inflow from the rest of the world a costless substitute to repatriating skilled Canadians or keeping them at home in the first place? In fact, could the influx of highly skilled immigrants from the rest of the world accelerate the

outflow of Canadian trained workers by keeping wages low? Is there a productivity differential between Canadian leavers to the United States and their presumed replacements from the rest of the world, which results in declining Canadian GDP? What is the size of the associated “churning costs” of settling and retraining these immigrant replacements? Would the fraction of these settlement costs absorbed by Canadian taxpayers be better spent to entice Canadian-trained professionals back from the United States? Finally, if we removed the educational subsidy as an incentive to emigrate to the United States, how big would the compensating inflows from the rest of the world have to be?

All of these questions must be addressed before we can confidently play the numbers game and state that a skilled immigrant to Canada can replace a skilled emigrant to the United States. Table 1 provides answers to the above queries. It summarizes the absolute flows and the value of the associated human capital transfers to Canada for the years 1989-96. We report only the key occupations (managers, health and sciences) and first calculate a net balance of trade figure (see the third column). Only in the case of managers does there appear to be a balance of trade surplus — i.e., more immigrants from the rest of the world to Canada than Canadian emigrants to the United States. For health sciences (physicians and nurses) there is a substantial net outflow, while degree-equivalent scientists exhibit a small positive inflow. If we value all this exchange in terms of educational replacement costs, there is a deficit of \$285 million (in 1994 dollars) after summing the entries in the fourth column. The reason is that high-valued doctors are leaving in relatively large numbers.

There are two additional “churning costs” owing to this movement: public expenditures for settlement, which are minor at \$13,400 per immigrant, and substantial deadweight productivity losses, at \$229,000 per immigrant arrival. The latter cost represents the dif-

ference between the lifetime earnings of immigrants with post-secondary training and those of comparable Canadian stayers. For the 50,578 replacement immigrants who arrived circa 1989-96, the total cost from productivity loss, settlement and educational replacement cost is \$11.8 billion.

**H**ow could we reduce the churning and other costs arising from the brain drain? Three avenues are open: Reduce the skilled outflow to the United States (and Hong Kong); increase the quality of the immigrant replacements; or both. In the late 1960s, we reversed the outflow of Canadian professionals by offering a three-year federal tax rebate in the fourth year after Canadian émigrés returned for at least three years. This once-and-for-all loss of three years in federal taxes was more than offset by the future tax payments collected. Nor was there any productivity loss, and each returning émigré saved the Canadian taxpayer settlement costs.

Policy must also address the paradox that although high-skilled immigrants are coming to Canada industry reports a shortage of such workers. When firms judge that immigrant arrivals do not replace Canadian emigrants to the United States there is clearly a job

mismatch. Rather than attempting to discredit industry claims of a shortage, a policy of allotting visas to recognized high-technology firms who would recruit their own workers would insure a near perfect match. Bonding the firm and leaving health and security clearance in the hands of government would maintain the integrity of the immigration process. Should these measures fail then a contingent loan scheme for professional degrees would reduce the incentive to move. Simply stated, if you left Canada, the subsidy portion of a professional degree would have to be repaid. Otherwise not.

In sum, Canada is experiencing a serious outflow of highly skilled people to the United States, which is being offset by an inflow from the rest of the world that costs \$1.5 billion per year. This is only part of the story, however. The outflow would be even more serious if the recent return flow of the highly skilled to Hong Kong were given due weight. Canada must implement policies to retain Canadians and entice émigrés to return.

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## (BIG) DRAINED BRAIN ON BIG-BRAIN DRAIN

*Alberta-born Richard Taylor, who moved to the United States in 1952, and who won the Nobel prize for physics in 1990, in remarks upon accepting an honorary degree from Carleton University in June:*

*"I did not plan to talk about the brain drain today but on Tuesday the prime minister said I was a myth, so I'd like to give you just one statistic: of eight Canadian babies who were born around the same time I was and who went on to win Nobel prizes, seven of them did their prize-winning work in the US. So the myths are ahead seven to one, although there may be another period or two to play. I do agree with the prime minister's argument that reducing taxes to US levels isn't going to solve the mythical problem."*

*And in a later interview with the Toronto Star's Peter Calamai:*

*"The climate for growing Nobel prizes is better in the United States than it is in Canada ... I don't believe that we're shipping all the people who might win Nobel prizes to the States. I just think there's much more chance for any individual to end up with the prize if he's in the States compared to Canada because of the support ... I think that many people in Canada now have enough opportunity. I'm not arguing that we won't lose people, we will lose them. But I am arguing that we shouldn't lose them all ... I think there's still too much equality in Canada. Research is a highly elitist business. Your colleagues won't be happy if you start to get too successful at universities here ... It's the politics of jealousy. That doesn't exist much in the States, where you're supposed to get out there and kill."*

*To the Ottawa Citizen, he said: "It's not greed that drives people away. It's lack of opportunity."*