

**A Jurisdictional Competitiveness Framework  
for Thinking about System Capacity in Higher Education**

Invited Paper for the Higher Educational Quality Council of Ontario  
Tuesday, November 9, 2007

Ian D. Clark, Professor of Public Policy  
School of Public Policy and Governance  
University of Toronto

It is an honour to be asked to speak at the first planning retreat of the Higher Education Quality Council of Ontario. For this session on “Accessibility, demand for higher education, and the capacity of Ontario’s higher education system,” I have been asked to reflect on the question of *system capacity*.

I have entitled my remarks “A Jurisdictional Competitiveness Framework for Thinking about System Capacity in Higher Education.” In my remarks, I will draw on my experience at the federal government and the International Monetary Fund on jurisdictional productivity, at the Council of Ontario Universities (COU) as co-chair, with the provincial deputy, of the Working Group on University Capacity, and most recently at the University of Toronto as a professor in a new professional masters program.

**The key variables in system capacity: inputs, prices, quality and productivity**

If we think of system capacity as the total output that the constituent institutions are capable of delivering, it is important to include both enrolment and quality in system output. The total output depends on the productivity with which the inputs are utilized.

In equation form, the production function can be specified as follows:

$$O(N, Q) = f(p, F, S, M, K)$$

where O is system output, N is enrolment, Q is quality, p is productivity, F is number of faculty, S is number of non-faculty personnel, M is the volume of non-personnel inputs, and K is the amount of capital.

In this equation all the variables except p and Q are readily quantifiable. Governments tend to focus on two hard numbers: total enrolment, N, and total cost, C. This cost depends on the volume of each of the inputs and, of course, on their price.<sup>1</sup>

It is interesting to review how the government and the institutions approached the variables in this equation during the two recent exercises in university enrolment expansion: the increase in undergraduate places associated with the 2003 double cohort and the increase in graduate places associated with the commitment in the 2005 Reaching Higher plan to increase graduate enrolments by 12,000 places by

---

<sup>1</sup>  $C(N, Q) = fF + sS + mM + kK$

where f, s, m, and k represent the unit costs of faculty, other personnel, non-personnel inputs and capital.

2007-08. The relationship between the resource provider (government) and the enrolment supplier (universities) was different in the two instances.

In the case of undergraduate capacity expansion for the double cohort, the government was keener on enrolment expansion than the institutions. Many of the universities were reluctant to “take their system share” of the enrolment increase because of the perceived impact on quality at their institutions. During the double cohort planning, many alternatives for increasing productivity were examined, including more intensive application of learning technologies, more intensive use of capital plant (such as on weekends and holidays), and potential use of non-university venues on a temporary basis.

In the case of graduate expansion, the institutions were keener than the government, again because of the perceived impact on quality. All universities believed that more graduate activity would enhance the quality of the learning and research environment. It was, after all, the universities who had taken the initiative in making the case to the government that graduate enrolment needed to be dramatically increased in Ontario. Government was under less public pressure for this expansion because there is less parent-driven interest in graduate expansion than undergraduate expansion because fewer students are affected and, given the more international nature of graduate education, a higher fraction of Ontario graduate students expect to enrol in universities outside the province.

During these planning exercises, system capacity was viewed in terms of enrolment capacity, which can be defined as *the sum of the full-time equivalent students that each of the constituent institutions is willing to enrol, given their expectation of available resources.*

Each institution,  $i$ , had to look at its production function for enrolment, which can be represented as:

$$N_i = f_i (p_i, Q_i, F_i, S_i, M_i, K_i)$$

Enrolment management has interesting dynamics.  $F$ ,  $S$ ,  $M$  and  $K$  are target values. If, after the institution has accepted the students, the input numbers turn out to be different from the expected values because government funding is less than hoped the adjustment gets reflected not in the residual variables, productivity and quality. This means that there is a relationship between system capacity and system resources, but it is not linked in a chain-like fashion, and it operates with time lags.

Institutions usually put their advocacy emphasis on enhancing quality. They base their requests for more resources on interjurisdictional comparisons of the coefficients of production. For example, they point to Ontario’s comparatively low “net assignable square metres” per student and its declining faculty to student ratio. In contrast, as noted earlier, the government is most concerned with enrolment capacity (committed enrolment) and government funding.

By constraining funds while pressing for capacity expansion, the government implicitly tries to keep upward pressure on productivity and downward pressure on unit costs. Interestingly, however, in Ontario there has been almost no explicit discussion of these crucial components of the capacity equation, nor attempts to quantify them.

Similarly, neither side has been able to develop persuasive measures of quality. Michael Skolnick reminds us of just how difficult this is.

“Higher education researchers have sought for a long time to measure quality and demonstrate the relationship between quality and funding, but this has turned out to be nearly impossible to do. Indeed, had it been possible to demonstrate the harmful effects of lower funding – which is the opposite side of the coin from the beneficial effects of higher funding – Ontario’s universities and colleges might have been more successful over the past two decades in making their case for better funding.”<sup>2</sup>

And this was not for lack of trying but “because of the inherent conceptual and methodological problems.”<sup>3</sup>

There have been a number of efforts on the part of the universities to focus on productivity. In 2001 the administrative vice-presidents led a review of potential cost-reduction initiatives for submission to the government’s Investing in Students Task Force. In 2005, COU’s Quality and Productivity Task Force, led by academic vice presidents, produced a list of recommendations and best practices. It can be seen from the recommendations listed on the COU web site that universities have an easier time relating productivity to enhanced quality than to increased capacity.

### **Incorporating jurisdictional competitiveness into capacity planning**

Planning for capacity increases must take account of myriad objectives associated with higher education. These are expressed differently by different governments and university leaders but include: creating an educated citizenry, adding to knowledge, expanding individual opportunity, enhancing jurisdictional wealth, contributing to the quality of life, promoting local economies, and facilitating social harmony. In announcing the Reaching Higher plan, the Premier of Ontario stated:

“Let’s start with “why.” It’s been said that a passion for learning, diffused throughout a society, is the surest road to the achievement of its ideals. Our government is passionate about learning for Ontarians. We understand that education is much more than just the transmission of information from one generation to the next. It’s the foundation for an engaged citizenry and a strong democracy. It enriches the enjoyment of our lives – something my father, a professor of romantic poetry, impressed upon me. And it’s essential to our economic success. In today’s knowledge-based economy, the best jobs and the most investment will go to the places with the best-educated, most highly skilled people. The brains and know-how of a skilled workforce are the competitive edge of the 21st century.”<sup>4</sup>

Although jurisdictional competitiveness is not the only objective, it is clearly a principal one for Ontario governments.

---

<sup>2</sup>Skolnik, M. L: The Rae Review and the Structure of Postsecondary Education in Ontario in C. M. Beach (Ed.). *A Challenge for Higher Education in Ontario* (Kingston, ON: John Deutsch Institute for Economic Policy, Queen’s University & McGill-Queen’s University Press, 2005), 7-26.

<sup>3</sup>Skolnik, M. L. (1986). “If the Cut is So Deep, Where is the Blood? Problems in Research on the Impact of Financial Restraint,” *The Review of Higher Education*, vol. 9, no. 4, pp. 435-455.

<sup>4</sup>Remarks by Dalton McGuinty, Premier of Ontario to Ryerson University Students on Postsecondary Education, May 13, 2005

If one's primary objective in expanding system capacity (defined to include both quantity and quality) was to increase Ontario's competitiveness, what considerations should be taken into account?

A good place to start is to identify the principal socio-economic trends that are affecting postsecondary education throughout the world. I suggest the six most important are: 1) globalization, 2) returns to education, 3) technology, 4) demography, 5) research funding, and 6) governance expectations.

### 1. **Globalization**

The increasingly competitive markets for goods, services, capital, people, data, information and ideas requires an increasingly quality-oriented, performance-oriented posture for all of our educational institutions. What might this mean for plans to expand capacity?

I suggest it means that:

- Universities should operate with the greatest possible operating autonomy with the most possible flexibility, least possible red tape, and earliest possible indication of funds for the year, and the longest possible number of years of multi-year funding commitment.
- Differentiation and constructive competition among institutions should be encouraged.
- Collaboration to capture economies of scale and scope should be encouraged.
- Performance-oriented assessment processes should be encouraged, particularly for faculty.
- Faculty compensation should become increasingly market-based.

### 2. **Returns from education**

Governments of different political stripes, and individual university leaders, start from different places on the question of who should pay for higher education. But it is clear that the knowledge society is increasing the personal returns from higher education, and it is also increasing the disparities in income and wealth.

I suggest that this has three important implications for capacity planning:

- Wherever one starts on the spectrum of the appropriate balance between taxpayer and personal investment in higher education, the fact of the increasing private returns to education should push one toward more personal investment. Those who can afford it should pay a higher portion of the cost of their education.
- At the same time, it puts an onus on government to pay a higher portion for those who could not otherwise afford to go to university.
- A further policy implication of the higher returns, and of the general trend to increased disparity in income and wealth, is that there is an increased opportunity and responsibility for those who have benefited greatly to give back in later years to expand capacity for the next generation. Both governments and institutions should take initiatives to encourage private giving to universities.

### 3. **Technology**

Technological change is creating opportunities for productivity and quality improvement at a faster rate than most institutions and individuals normally would normally adopt. The implication is that universities and perhaps governments should, in capacity expansion efforts, encourage even more rapid adoption of new technology within universities.

### 4. **Demography**

Demographic trends are crucial in planning for capacity increases in different areas of the province, as well as in different academic programs. Key factors include the provincial and sub-provincial projections of the university-aged population, changes in labour market demand, and changes in the propensity to travel outside the commuter-shed (some of which may be associated with changing socio-demographic make-up of the applicant pool). The dominant conclusion from a jurisdictional competitiveness standpoint is that capacity should be built roughly in accordance with student demand.

### 5. **Research funding**

This paper is about capacity expansion for teaching, not for research. But in planning for increase in teaching capacity it is crucial to take account of the impact of investments in research. Increased inter-jurisdictional competition for investment and highly qualified people is driving most governments to invest heavily in university research. This changes the traditional balance of sources of funding in our universities and changes the incentive structures for division of effort between research and teaching. The implication for policy is that additional incentives are needed to ensure that appropriate efforts are directed at the teaching mission of universities.

### 6. **Governance expectations**

Finally, in planning for capacity expansion, it is important to note that societal expectations for the behaviour for all institutions are changing. Ontarians are becoming more demanding with regard to transparency and accountability. Universities are among the most transparent and participative institutions around, and tend to have competent boards and well-developed reporting mechanisms. But there is more that can be done, including building on the COU's CUDO initiative to establish common data elements for reporting matters of interest to students and the public.

## **Implications for system design, privilege, transparency, professional education, and pedagogy**

The logic of a jurisdictional competitiveness framework to capacity expansion has implications for many issues in higher education. Let me mention just five: system design, addressing privilege, enhancing transparency, training public sector professionals, and pedagogy.

### 1. **System structure**

I would recommend that all participants at the retreat reread Michael Skolnick's excellent commentary on what the Rae Review did and did not do. He noted that:

“Over the years, many observers have suggested modifying the design, or what I shall refer to as the structure, of higher education in Ontario in such a way as to make it more cost efficient. Suggestions for structural reform have included assigning a transfer role to the community colleges, changing the mandate of some universities to make them predominantly undergraduate

teaching institutions, and establishing an open university. Pedagogically speaking, there are pros and cons to all these suggestions. What appealed to many of their proponents was that these reforms were seen as a means to ensuring that Ontario could afford to fund at least a handful of its universities at a level comparable to the best in the world...Given that there is no totally happy choice to be made in this arena, it might have been useful to widen the range of options to include reforms of structure as well as reforms of funding, especially since both were part of the mandate of the Review.

“...One of the most basic decisions in the design of a system of postsecondary education is whether to have any special mission institutions, for example those that concentrate on certain functions like undergraduate teaching; on a limited range of disciplinary fields like a technical university; or on serving a particular clientele like the hearing impaired or people of particular language, culture or religion. Creating special purpose institutions, or converting comprehensive institutions into special purpose institutions, is one of the most common ways of achieving greater institutional differentiation in postsecondary education. ... More than almost all other North American jurisdictions, Ontario has opted, in both the degree and non-degree sectors, for comprehensive postsecondary institutions that cover a wide range of functions, fields, purposes, and clientele.”<sup>5</sup>

Would it be feasible to increase differentiation through a performance-based funding mechanism? In the 2004 conference convened by Frank Iacobucci and Carolyn Tuohy<sup>6</sup>, Ron Daniels and Michael Trebilcock<sup>7</sup> proposed a mechanism for distributing operating grants on the basis of government-administered performance measures at the program level.

I suggested at the conference that, given Ontario’s university history and political values, we just could not get there from here. Or, to be more precise, if we were to get there, we would not stay there for long.

I tried to imagine what I would face if I were the unlucky government official charged with trying to implement such a scheme. I would know from the public policy literature that attempts to introduce results-based budgeting in a variety of sectors over the last half century by many governments around the world have never worked. I would know from work such as that by Michael Skolnick<sup>8</sup> and by Janice Stein<sup>9</sup> how illusive is the relation between academic quality and quantifiable indices. I would learn from articles such as that by Dan Lang<sup>10</sup> that many governments have attempted to tie operating funding to performance measures, and most have either abandoned the attempt or scaled back to affect a relatively small portion of overall budgets.

---

<sup>5</sup> Skolnik, M.L.: The Rae Review and the Structure of Postsecondary Education in Ontario in C. M. Beach (Ed.). *A Challenge for Higher Education in Ontario* (Kingston, Ontario: John Deutsch Institute for Economic Policy, Queen’s University & McGill-Queen’s University Press, 2005), 7-26.

<sup>6</sup> The Challenges Confronting Public Universities at the University of Toronto Conference, Taking Public Universities Seriously, December 3-4, 2004, published as Iacobucci, Frank and Carolyn Tuohy, eds., *Taking public universities seriously*, Toronto, University of Toronto Press, 2005, 614 p.

<sup>7</sup> Daniels, Ronald J. and Michael J. Trebilcock, Towards a New Compact in University Education in Ontario, in Iacobucci, Frank and Carolyn Tuohy, eds, op cit

<sup>8</sup> Skolnick, 1986, op cit.

<sup>9</sup> Stein, Janice, The Unbearable Lightness of Being: Universities as Performers, in Iacobucci, Frank and Carolyn Tuohy, eds, op cit.

<sup>10</sup> Lang, Dan, The Political Economy of Performance Funding, in Iacobucci, Frank and Carolyn Tuohy, eds, op cit.

But, if I were instructed to introduce such a scheme for university operating grants in Ontario, this is how I would expect the scenario to unfold. The first thing that would happen is that the ministry and the universities would engage in a lengthy debate about fundamental public finance principles – whether public funds should be directed toward those programs with inherited advantages or whether they would be better invested in programs in need of improvement. Then we would have an extensive debate on how to specify the criteria for performance and how to relate measurable indicators to these criteria. Next we would debate the cost factors in achieving success on these performance measures in various areas of the province. During this period there would be a complete breakdown of the universities' ability to provide coherent, consensus-based advice to government on a range of policy design issues.

Then, as we moved to the implementation phase, I would have to oversee the development of highly detailed form-filling regulations and add substantial ministry staff to monitor compliance and the influence of perverse incentives. All the while, I would be waiting with trepidation for the political fall-out from the first year's calculation that would substantially reduce the relative per-student grant that a number of universities were to receive. The governing boards of the adversely affected institutions would introduce a single performance measure for the university president – to reverse the unfair impacts of the funding change. The president would mobilize the institution's most able analysts, skilful advocates, and most influential supporters to impress on mayors, local MPPs and cabinet ministers the arbitrary and conceptually flawed nature of the measurement system I had just introduced. Within a year, the adversely affected universities would have developed an equally compelling set of additional indicators that they would insist the government should adopt to respond to special regional requirements, to meet the special requirements of the student body it serves, and to correct historical inequities.

By that time, I mercifully would have moved on to other duties as would most of the public servants who helped me design the original scheme. What would remain is the politics of unequal funding for students taking the same program. In five or so years, there would be a serious conference to address the inequities, to reduce the monitoring costs, and to eliminate the perverse incentives that by then would be generally recognized as being associated with my performance measurement system. The conference would include a paper presenting recent research showing that the most important factors in enhancing university performance were leadership, professional pride, and passion for teaching and research. The paper would note that these factors were actually diminished by government-dictated performance measures.

Another paper would outline the competitive pressures in modern academic world and the impressive annual hours of work by the majority of the professoriate. It would show that these pressures and behaviours exist regardless of performance funding. A third paper would analyze the incentives for performance inherent in the complex governance system that universities have evolved over the decades. Paraphrasing Winston Churchill, the author would conclude that the governance system used in most Ontario universities is the "least efficient form of governance except for all those others that have been tried." But the most important paper would be the one demonstrating with charts, graphs and bullet lists that the most efficient way to allocate provincial operating support would also be the simplest – give the same amount of public money for each student, weighted by program. This would eliminate the regulatory costs and the perverse incentives, and would permit university administrators to invest these predictable funds in a strategic ways to take full advantage of the professional commitment of faculty to produce the best performance with the resources available.

Within a mere seven years, if we were lucky, we would be back to where we started.

I continue to think Ontario would be ill advised to try to increase differentiation among its universities through a performance-based funding mechanism. But this does leave the question of whether the Ontario government should use its funding levers to encourage a more differentiated system, and if so, what mechanism would be best for jurisdictional competitiveness.

I will not offer advice on this question today, other than to hope that any new funding mechanism would be operated in a fashion that would do the least damage to the tradition of inter-institutional collaboration which has been a strength of the Ontario system. There have been many impressive collaborative successes that enhance Ontario's competitiveness as a jurisdiction. Examples include the Ontario digital library whereby a professor at Lakehead can go into the system from his office computer and have virtually the same interface and access to electronic journals and the books of the Robarts Library as a U of T professor. Ontario universities have common financial reporting and statistical collection standards. They have made much of this available to students and parents through the on-line tool CUDO, offering key data about individual universities in a common format. There are numerous consortial arrangements for purchasing and for providing information to the schools and the public. Ontario universities use a common application timetable, and oversee a common application centre that processes essentially all undergraduate applications. There is a self-regulated quality assurance and approval process for all graduate programs and an audit process for undergraduate program reviews. The work of the Council of Ontario Universities and its affiliates has for decades helped universities achieve economies of scale and dissemination of best practices through meetings, seminars and collective research.

## 2. Addressing privilege

Designing capacity expansion with jurisdictional competitiveness in mind will reinforce one of the distressing trends I noted earlier – the polarization of incomes. Walter Benn Michaels has highlighted this development, including a contention that higher education institutions in the United States have been major contributors.<sup>11</sup>

He notes:

“White is not better than black, but rich is definitely better than poor. Poor people are an endangered species in elite universities not because the universities put quotas on them ... and not even because they can't afford to go to them (Harvard will lend you or even give you the money you need to go there) but because they can't get into them. Hence the irrelevance of most of the proposed solutions to the systematic exclusion of poor people from elite universities, which involve ideas like increased financial aid for students who can't afford the high tuition, support systems for the few poor students who manage to end up there anyway, and, in general, an effort to increase the “cultural capital” of the poor. Today, says David Brooks, “the rich don't exploit the poor, they just out-compete them.” And if out-competing people means tying their ankles together and loading them down with extra weight while hiring yourself the most expensive coaches and the best practice facilities, he's right. The entire U.S. school system, from pre-K up, is structured from the very start to enable the rich to out-compete the poor, which is to say, the

---

<sup>11</sup> Michaels, Walter Benn, *The Trouble with Diversity: How we learned to love identity and ignore inequality*, Metropolitan Books, New York, 2006



race is fixed. And the kinds of solutions that might actually make a difference – financing every school district equally, abolishing private schools, making high-quality child care available to every family – are treated as if they were positively un-American.”<sup>12</sup>

Although few in Canada are recommending the abolition of private schools, we do have the advantage in of having financing school districts reasonably equally and providing more help for child care than is generally available south of the border. The fraction of able students going to private schools seems to be increasing in Ontario and there are at least anecdotal indications that an increasing percent of the best-ranked graduates of these schools are going to US elite universities rather than to Ontario universities as their counterparts did a generation ago.

To maximize Ontario’s competitiveness ways should be found to ensure that Ontario universities can attract more of Ontario’s best students. But to do this would privilege those who are already advantaged with innate ability and often with socio-economic position. They and their parents are likely to insist on having a university experience that is among the best available. If we want to retain these students we have to be prepared to provide places within the Ontario university system where a merit-driven selection process will provide them that experience.

Perhaps the guideline for university policy should be to provide more support for the meritorious and mobile, even though they are by definition already privileged, but to resist providing more public resources than that competitively necessary for those who are in a privileged position but whose work is not so meritorious. This applies to faculty as well as students. University teachers are already paid well relative to their fellow Ontarians and the high demand for talented human capital already gives those with an advanced degree a substantial economic advantage over their fellow citizens. In this context, it is hard to see the ethical justification for artificially strengthening the economic power of faculty members through collective bargaining arrangements. Competitive market forces should now be sufficient to provide a substantial income to productive performers in our universities and colleges. Governments would do well to support institutions in initiatives they might take to make faculty compensation more merit-based.

### 3. **Transparency and analytical rigour**

If one is going to address any policy matter in a way that relies on facts and evidence and is driven by individual choice, it is important for governments and institutions alike to be forthcoming with relevant information and to be rigorous in their analysis and discussion of the implications of how public money is to be invested. Both facts and rigour have sometimes been inadequate in discussion of the two trends with perhaps huge implications for capacity planning: 1) the increasing demand for university education relative to college education and 2) the increasing demand for postsecondary education in the GTA relative to most other areas in Ontario.<sup>13</sup> These trends are understandably sensitive in communities and institutions in the weaker demand areas since the allocation of system resources among institutions could

---

<sup>12</sup> Walter Benn Michaels, *The American Prospect*, August 13, 2006

<sup>13</sup> It has, for example, been difficult for the public to get timely data from the government on college enrolments. And perhaps the best recent example of wishful thinking trumping evidence was found in the way the government of the day implied that colleges would have a significant role in accommodating the double cohort. Elementary logic – not to mention the comments of parents and students at meetings with government and institutions – made it clear that the elimination of Grade 13, which had been designed primarily for university-bound students, was going to have its impact almost exclusively at the universities.

be affected. However, because these are matters of concern to all Ontarians, community and institutional sensitivity is not a sufficient reason for keeping information on the trends out of public view.

#### 4. **Training public sector professionals**

Is it possible that concerns about institutional autonomy in Canadian universities impede sensible capacity planning? Universities recognize that governments around the world have frequently attempted to direct capacity expansion toward areas of projected employment demand only to find that the economy and the labour market turns out very differently from predictions. If universities are justifiably leery about doing joint planning with government on the matter of discipline capacity, they are even more averse to including governments in the planning of curricula.

Nevertheless, government has an obligation to project the human capital needs of its jurisdiction and government is in a reasonably good position to predict the human capital requirements of government itself, including the broader public sector, both in terms of numbers and in skill requirements.

As a specific instance, let us look at how well our universities have been doing in offering professional preparation for the practice of public policy.

Iris Geva-May and Allan Maslove have examined in some detail how universities in Canada, the United States and Europe have addressed the profession of public policy. It is difficult to judge the efforts in Canada to be more than barely adequate. Geva-May and Maslove gently pose the question of “why it took so long (a time lag of almost 40 years) between U.S. and Canadian sectors) for the policy analysis field and policy studies to develop within Canadian higher education institutions.”<sup>14</sup>

Consider two thought experiments. The first was a question I asked myself in the early 1970s: Given that in 1969 Harvard University joined Princeton and Berkeley by investing heavily in the creation of a school of public policy by engaging leading scholars from a variety of disciplines, how many years would it take before Canada’s major universities made a comparable effort? Answer: Almost forty – in 2007, of Canada’s ten universities with the highest dollar value of sponsored research, only the University of Toronto and the University of Ottawa had schools of public policy, and these have only been recently created. Canadians are used to delays of 5-10 years for societal advances pioneered in the U.S. to cross the border – but they usually don’t have to wait four decades! It is not as if good government is less important in this country, where citizens pride themselves on favouring a larger role for the public sector than do their continental neighbours. And it is not as if the impetus to develop the public policy profession has proven to be a passing fad. Geva-May and Maslove show that the efforts in the U.S. have continued to expand, and that they have been taken up, with interesting variations, in most European countries.

The second thought experiment is a question that could be posed by anyone who is offended by poor public policy and governance – by flawed program designs, failed reorganizations, useless evaluations, badly-managed projects, and the imposition of surreal reporting requirements: How many hundreds of millions of taxpayers’ dollars would have been saved if senior public servants in Canada had received MPP-level professional training? Imagine how different things could have been if most of those bright

---

<sup>14</sup> Geva-May and Allan Maslove in *Policy Analysis in Canada: The State of the Art*; Edited by Laurent Dobuzinkis, Michael Howlett and David Laycock. Toronto: University of Toronto Press 2007 (p. 190)

young people hired since the early 1970s and destined to rise to positions of authority in federal, provincial, and municipal government had: 1) a solid grasp of microeconomics with a really good understanding of the nature of public goods and logic of collective action; 2) a reasonable familiarity with probability theory and the implications of decision-making under uncertainty; 3) enough knowledge of organizational, social and political theory to be able to anticipate the completely predictable reactions of real people and real institutions; and 4) a strong foundation in the legal and constitutional underpinnings of Westminster government and Canadian federalism. This is not rocket science requiring a double doctorate in physics and engineering. This is master's-level applied social science – it is professional training. The basic concepts of public policy and Canadian governance are well known and, with the help of research-oriented faculty and real-life examples provided by practitioners, could be taught to intelligent, motivated students in two years. But Canada's universities and governments have not made nearly as much progress as their American universities in professionalizing their programs and curricula.

Geva-May and Maslove point out that relative to their Canadian counterparts, American universities: 1) have “a more open and welcoming environment ... towards individuals who do not regard academia as their lifetime vocation;” 2) have put “more emphasis on management and analytical techniques, while Canadian programs tend to contain more theory, and are perhaps more abstract;” 3) “actively engage in *doing* as well as *teaching* policy analysis through research centres attached to their policy analysis schools;” and 4) have opted for “the enhanced professionalism associated with program accreditation,” particularly in master's programs “which are accredited against a set of standards that largely focused on defining a core.”<sup>15</sup>

Canada is a difficult country in which to coordinate nation-wide efforts at professionalization. But academics and practitioners should at least be able to work together to specify what should constitute the core for Canadian master's programs in public policy. Would this be a threat to institutional autonomy or academic freedom? As a first step in addressing this challenge, the School of Public Policy and Governance, in conjunction with the Canadian Association of Programs in Public Administration and invited scholars and practitioners from across the country, will be creating a “public policy and governance portal” to compile and comment on the core concepts and skills that a master's graduate is expected to master. The concepts will be ranked by both students and practitioners for their insight and real-world applicability. It is hoped to make a version of this portal public in early 2009.

## 5. Science and pedagogy

The last implication I would like to raise relates to the teaching of technical matters including mathematics, the physical sciences, and the quantitative parts of the social sciences. There is a growing worry about the implications for jurisdictional competitiveness of inadequate numeracy and scientific literacy in Western countries. Alan Greenspan addresses this in his recent book.<sup>16</sup> These concerns coincide with some encouraging pedagogical research on how to improve the teaching of technical subjects in our colleges and universities.

In his article in the latest issue of the journal, *Change*, Nobel Prize winning physicist, Carl Wieman, describes the work he is doing at UBC and the University of Colorado on developing methodology and

---

<sup>15</sup> Geva-May and Allan Maslove, op cit, (pp. 196-198)

<sup>16</sup> Greenspan, Alan, *The Age of Turbulence: Adventures in a New World*, New York : Penguin Press, 2007

tools for better teaching. Wieman lists the three key components of an approach to substantially higher quality (and more productive) science education:

- “- Practices and conclusions based on objective data rather than – as is frequently the case in education – anecdote or tradition. This includes using the results of prior research, such as work on how people learn.
- Disseminating results in a scholarly manner and copying and building upon what works. Too often in education, particularly at the postsecondary level, everything is reinvented, often in a highly flawed form, every time a different instructor teaches a course.
- Fully utilizing modern technology. Just as we are always looking for ways to use technology to advance scientific research, we need to do the same in education.”<sup>17</sup>

Wieman claims that there is strong evidence to demonstrate that application of this methodology can 1) increase the retention of information from a lecture from 10% to more than 90%; 2) increase the gain in conceptual understanding in a course from 25% to 50-70%; and 3) prevent deterioration in expert-style beliefs about science and problem solving.<sup>18</sup>

If these claims are valid, there should be a clear imperative to adopt the new practices as quickly as possible. But Wieman notes that there are daunting obstacles to implementing these quality improvements:

“First, in universities there is generally no connection between the incentives in the system and student learning ... we have almost no authentic assessments of what students actually learn, so it is impossible to broadly measure that learning and hence impossible to connect it to resources and incentives. The second challenge is that while we know how to develop the necessary tools for assessing student learning in a practical, widespread way at the university level, carrying this out would require a significant investment. Introducing effective research-based teaching in all college science courses – by, for instance, developing and testing pedagogically effective materials, supporting technology, and providing for faculty development – would also require resources. But the budget for R&D and the implementation of improved educational methods at most universities is essentially zero. More generally, there is not the political will on campus to take the steps required to bring about cultural change in organizations like science departments.”

Wieman’s focus on incentives, including monetary ones, echoes Greenspan’s proposition that some of the problem could be addressed by increasing the relative pay of mathematics and science teachers who are in short supply at all levels, from elementary school to university.

This suggests that one line of inquiry for the Higher Education Quality Council would be to determine how much quality improvement could be achieved by evidence-based pedagogical reforms and what kind of mechanisms would be most effective in getting them adopted in Ontario’s colleges and universities.

Thank you and good luck.

---

<sup>17</sup> Wieman, Carl, Why not Try: A Scientific Approach to Science Education, Change September/October 2007, p 10.

<sup>18</sup> Wieman, op cit, p 15.