THE POLITICAL ECONOMY OF CANADA'S TRANSPORTATION POLICIES IN 2015: THE “WHAT” IS EASY; THE “HOW” IS HARD

by

BRIAN FLEMMING, CM, QC
SENIOR FELLOW,
VAN HORNE INSTITUTE,
CALGARY, ALBERTA.

Keynote Address,
Delivered to the Atlantic Provinces Transportation Forum 2015, on May 20, 2015, at Memorial University, St. John's, Newfoundland and Labrador.

I. INTRODUCTION

Let me begin by explaining the difference between the “what” and the “how” in public policy questions. Nearly 40 years ago --- when politics in Gomorrah-on-the-Rideau, a.k.a. Ottawa, was considerably different than it is today --- I worked in Pierre Trudeau's Prime Minister's Office. One of my titles was “Policy Advisor.” When people asked me what a policy advisor did, I told them an apocryphal story from World War Two.

When the Battle of the Atlantic was at its worst for the Allies, and merchant ships were being sunk at an intolerable rate, Prime Minister Churchill held regular meetings on the U-Boat menace in the North Atlantic. A man, who regularly attended these meetings but said nothing at them, one day suddenly said, “I know how to defeat the German submarines.” Everyone fell silent and Churchill exclaimed, “Well, man, tell us how we can do this!” The man said it was easy: one simply heated the North Atlantic to 212 degrees Fahrenheit and boiled all the Germans in their subs. But, Churchill said, “How do we do that? How do we heat the ocean to boiling point?” The man replied, “Well, I can't tell you that because I am a “policy advisor”, not an “operational” person. How you implement my policy is <u>your</u> problem.”

So, the “what” in Churchill's war rooms was easy but the “how” was hard. In broad outline, everyone knows the “what” of deteriorating infrastructure around the world, including Canada. It is when you turn to the “how” --- that is to say, “how” to fix it --- that the discussion becomes more difficult.

I will start today's paper by describing the Economic State We Are All In or the “Big What.” I will then turn to the “what” in the transportation sector in North America in general and Canada in particular. Then, I will address the “Big How” by asking: How Can We Get the People to Pay the Infrastructure Piper? This will include a discussion of the sad story of tolling or road pricing in Canada and “how” cities in Canada are proposing to deal with their infrastructure issues. I will then leap into the future by grappling with the “whats” --- the “Black Swans” --- that are coming at us very fast and how they will dramatically change the transportation “game.”

II. THE STATE WE ARE ALL IN; OR "THE BIG WHAT"

In a recent report in *The Telegraph* of London, the International Monetary Fund (IMF) warned that an "exhausted world [was] stuck in permanent stagnation." This august international institution claimed that the world generally had seen a "persistent reduction" in its growth rate since the Great Recession.

> "...the world...shows no sign of returning to normal, marking a fundamental break in historical patterns. This exposes the global economic system to a host of pathologies that may be hard to combat, and leaves it acutely vulnerable to a fresh recession. It is unclear what the authorities could do next to fight off a slump given that debt ratios are already at record highs and central banks are running out of ammunition."

> "The great hope is that booming asset prices will trigger a surge of investment, allowing economic fundamentals to catch up with markets. But it is far from certain that this will happen unless governments change policy and *launch a blitz of spending on infrastructure and research to unlock frozen capital and set off a virtuous circle* (Italics added)."

Quantitative easing has boosted asset prices but is a "very blunt tool" for the real economy and is struggling to counter the effects of fiscal austerity in many countries, including Canada. Productivity everywhere is not growing but is dropping. The "great leap forward from the computer age and the internet is already over and little more can be squeezed out of universities as "the marginal return to additional education" keeps falling.

Despite the cheery claims by our current political masters in Ottawa, Canada is not in much better shape than the world at large. In a story headlined *Economic stagnation is here to stay, The Globe and Mail's* Lawrence Martin last month wrote that Canada has "experienced its lowest run of economic growth since the 1930s. Gross domestic product grew at an average of only 1.9 per cent per year." Interviews that Martin conducted with economists across the country claimed this low growth trend --- despite last year's 2.7 growth rate --- would last for another five to ten years. But, he wrote, "no one seems to be too jacked up about it...[it] seems we're living under the illusion that we're doing reasonably [well]...but doing better than some rivals doesn't necessarily mean you're doing well yourself."

One economist told Martin that our business class was "neither aggressive nor entrepreneurial...[that] consumer demand is inhibited by high household debt and [that] we have an ageing labour force that is only going to grow at about 1 per cent a year." There appears to be no silver bullet for any government at any level. "For those who think the fix lies with great heaps of public investment [in things like infrastructure], the Conservatives have made such a possibility less likely. [Thanks to] their tax-cutting initiatives, they have substantially shrunk the federal revenue base." Several economists said too much political energy and capital had been expended on balancing the budget. All called for a debate over the *real* issue, namely, the "slow-growth trap in the Canadian economy that is not being addressed."

Lest you think I am some kind of Gloomy Gus who, like many old guys, delights in wallowing in dire predictions that claim that the golden age I lived through is gone, never to return, let me say that a cold, dispassionate review of the world in the last two years would judge them to have been the best years in human history. The economic output of the world --- in the neighbourhood of US$75 trillion each year --- was extraordinary. Despite ranting by the political class about rising inequality at the national level, the United Nations' plan to halve the number of humans living on $1 a day by 2015 was achieved six years ago, in 2009.

Access to drinking water and building better sanitation facilities proceeds apace around the world. When I first visited China in 1980, about 85 per cent of its population lived in extreme poverty; now, only 10 per cent do. Life expectancy --- everywhere, even in the poorest countries --- is soaring. The availability of energy --- the foundation of economic growth --- is growing exponentially. And the world is today awash in energy supplies. As we celebrated --- nearly two weeks ago --- the end of a savage world war that killed tens of millions and destroyed trillions of dollars worth of assets, I should note that international violence --- despite the violence that is happening in parts of the Middle East and Africa --- is probably at its lowest level ever, certainly in my long lifetime. And no *uniformed* armies are battling other *uniformed* armies anywhere. Insurgents like ISIL are being fought, not regular armies.

Politicians who are anxious to gain or keep power are trying to make everyone believe that a few crazies around the world are an existential threat to Western civilization. They are not. Trying to find new ways for advanced economies like Canada to regain their mojos, and building the infrastructure that will get us to a new golden age, not keeping Omar Kahdr in jail, are the real challenges for our leaders. We must demand that they concentrate on the *real* dangers facing us, not the frivolous ones like the War on ISIS or ISIL.

Finally, while I am trying to describe the “New Normal” in our political economy, I cannot leave the subject without mentioning the Damoclean sword of sovereign debt that former U.S. treasury secretary Larry Summers says “...is increasing in a way that is without precedent except in times of total war.” *The Globe and Mail* last Thursday carried a story about global debt. The story said government-related debt around the world last year added up to US$58 trillion. Since the Great Recession, sovereign debt has been growing faster than the economy in every developed nation. Central bankers have almost used up their ammunition to deal with this problem.

The existence of this Damoclean sword means that much-needed infrastructure investment in Canada and abroad can no longer rely completely on the “pillow” of traditional funding, using the so-called “tool-boxes” of options like real property taxes, federal and provincial gasoline taxes and central government grants. New, and less popular, ways of financing infrastructure projects are being suggested. In Vancouver, a referendum that, if passed, will increase the sales tax by .5 percent to pay for transit improvements is currently in progress. We will find out at the end of the month how successful it will have been. I predict it will fail because the politicians and officials failed to prepare Vancouverians properly for the vote.

Other unpopular ideas include various forms of road pricing and tolling of existing or new infrastructure. For the last two years in my province of Nova Scotia, the Liberal Minister of Transportation and Infrastructure has sent up a trial balloon that suggests new twinned highways will only be built in future by tolling them. Not surprisingly, Bluenoses have not rushed forward to support this idea.

III. THE AMERICAN AND CANADIAN TRANSPORTATION "WHAT"

Strangely, the issue of infrastructure renewal is one that cuts across all political lines --- left, right and centre. The current Conservative government, the New Democrat opposition and the Liberals are all calling for more money to be spent on infrastructure. Provincial governments are doing the same. The real difference between the political parties lies in where that money will come from and how much will be committed.

Two years ago, an important Canadian think tank --- the Canada West Foundation --- pegged the "infrastructure deficit" in Canada at $123 billion for existing infrastructure and $110 billion for new infrastructure --- not including current provincial and federal infrastructure debt. (4) This estimate by Canada West is of the same order of magnitude as that contained in a 2012 "report card" issued by the Federation of Canadian Municipalities. A more extreme estimate of the deficit was published by an emeritus professor of civil engineering from McGill University in 2012. Dr. Said Mirza claimed the Canadian infrastructure deficit was closer to $400 billion and noted that 30 per cent of Canada's infrastructure was close to 100 years old. Several years ago, Benjamin Tal and Avery Shenfeld of CIBC World Markets in Toronto made claims of deficits that were similar to those of Canada West and the FCM.

In February of 2013, the Canadian Chamber of Commerce declared that, to remain competitive, Canada needed to develop a long-term national infrastructure investment plan that includes strong and diversified funding models and increased private sector investment. The bottom line is that most informed commentators agree on the existence of a gigantic "infrastructure deficit." That is the "what." The "how" to cure the problem is the stumbling block in a country where there is no coherent national plan for infrastructure building and renewal to take the place of the scattered and *ad hoc* systems we currently have in place.

In the United States, things are even worse than they are in Canada. Their airports and ports desperately need the kind of renewal Canada was forced to adopt in the mid-1990s when we "commercialized" them. AMTRAK is a shambles. Witness last week's wreck in Philadelphia and the fact that the same day of the accident the House of Representatives refused to vote for funds to keep AMTRAK running properly. Only a few years ago, in the 1980s, thanks in part to the Highway Trust Fund,American transportation infrastructure was performing well. By the 1990s, excess capacity in rail and on the roads of America had disappeared and everyone became aware of increased congestion everywhere. Plans for new highways were suggested and then binned. After the Great Recession began, money really dried up and debt and deficits came to be viewed by many in the Political Class as more dangerous than decaying infrastructure. Then, came 9/11 and the extra need to ensure that infrastructure was "secure." [One of the unintended voids in "Vision and Balance", my CTAR Panel report of 2001, was its failure to address the security issue, a flaw my British naval officer brother-in-law pointed out when I gave him --- before 9/11! --- a copy of my report to read.] And then there is new value of "sustainability" which adds another piece to the puzzle.

As transport guru Stephen Blank notes: many communities in North America have begun to look upon transportation infrastructure as "contentious." As Blank wisely says, "NIMBY has morphed into BANANA ("Build Absolutely Nothing Anywhere Near Anything") and new highways, pipelines, electric lines and railroads have become points of resistance rather than exciting symbols of modern life." And all this while the U.S. is staring at an "infrastructure deficit" of $3.6 trillion. Whichever part of the transportation "map" one examines in the U.S., the "what" is easy to discern and to describe. As in the case of Canada, the "how" is hard.

Federal gas taxes have not been increased in more than 20 years in America. Two-thirds of Americans oppose raising gas taxes "...to fund the repair, replacement or expansion of roads and bridges. By 2-to-1, they oppose permitting private companies to build new roads and bridges and then charge tolls. Twice as many oppose a usage tax, based on how many miles a vehicle drives as those that support it." A deadlock has developed over the funding of the Highway Trust Fund. Various politicians, left and right, have suggested creation of infrastructure banks of various kinds to solve the problem but, to date, nothing has come of these suggestions. So, the "what" marches on, unaided by any "how."

IV. THE "BIG HOW" OR HOW CAN WE GET THE PEOPLE TO PAY THE INFRASTRUCTURE PIPER?

Whenever the subject of paying the infrastructure piper comes up in polite company, the idea of tolling or road pricing always steps forward. These sensible "hows" are usually promoted by academic economists. My good friends, Jack Mintz and Philip Bazel, for example, gave an excellent paper on these "hows" at a conference in Calgary in October, 2013. They clearly outlined "...the economic implications of municipal reluctance to utilize user pay funding models for infrastructure." They correctly concluded that "the absence of pricing leads to an over utilization of public infrastructure, and diminishes incentives to ration publicly provided goods and services. This results in a level of demand for private transport, sprawling suburban development, and accompanying municipal infrastructure which is simply not optimal or efficient." Quite simply, they said, "In the absence of pricing, individuals have little or no incentive to moderate their use of public infrastructure or services." And, in case you needed to know it: there is only one principle of economics to be used in solving the "Big How", namely PRTI or People/Politicians Respond To Incentives.

I have been beating this economic drum, and thinking about it, since 2001 when the late Bill Waters and I wrote Chapter Ten of "Vision and Balance", the report of CTAR 2000-1. The chapter was entitled "Paying for Roads." It was an attempt to answer the "Big How" in a politically do-able way. It asked many of the same questions that Mintz, Bazel and others have asked, and gave similar answers. Here is part of what we said in "Vision and Balance":

> "Roads --- and the cars, trucks and buses that use them --- are the core of the transportation system and [are] likely to remain so for the foreseeable future...Most passenger travel is entirely by road, using private vehicles, or, much less frequently, bus service (urban transit, school, chartered or scheduled intercity buses). Of all freight traffic, something approaching half makes its entire journey by truck, and most of the remainder that is hauled by train, ship or aircraft relies on truck traffic at one or both ends of its trip."

These words are still largely true. Indeed, since they were written, road traffic has continued to grow at a rate faster than the general economy. According to a 2012 study by Ross McKitrick for the Macdonald-Laurier Institute:

> "In 2005, 74 % of Canadian adults reported going everywhere by car, up from 68 % in 1992. In 2012, 82 % of Canadians commuted to work by car, 12 % took public transit, and 6 % walked or cycled. Trips between cities are also mainly by car."

So, road traffic continues to be the principal transport problem today --- and I fearlessly predict it will continue to occupy that position in the years to come. Studies also keep telling us that the cost of public transit appears not to change the preferences of car drivers who steadfastly want to stay in their car cocoons. And cars get people to where they want to go twice as fast as public transit. Convenience thus plays a big part in transport choices. So, any proposals for renewal of transport-related infrastructure must start and end with roads and who pays for them; who maintains them; who owns them; and the most important question --- the "Big How" --- can users eventually be made to pay for the *real costs* --- including all the externalities --- they impose on the road system? Can the Canadian public ever be weaned from thinking of roads as free, public goods?

As all governments struggle with debt and deficit --- and there continues to be a hardening of public attitudes against general taxation increases [stand up Stephen Harper and Justin Trudeau] --- conversations about transport infrastructure renewal usually start with discussions about gas tax sharing and end with proposals to charge users for road use. As David Lewis said at the Calgary roundtable in 2011,

> "Traditional mechanisms for financing infrastructure via fuel taxes and property taxes will not meet financing needs in the future. What are the alternatives?...Both new financing approaches and new revenue streams are needed to solve the infrastructure problem."

Congestion pricing and tolling were at the top of Lewis' list of potential new revenue sources. Another distinguished Canadian transport economist, Robin Lindsay, said road pricing must be implemented.

> "Fuel taxes are effective at targeting greenhouse gas emissions, but they are crude instruments for targeting congestion and other externalities that

> vary strongly with location, time of day and population density. Road pricing in some form is a much more flexible instrument."

The history of tolling roads and bridges in Canada is neither a pretty picture nor is it a history that gives one much confidence that using tolls and road pricing are serious mechanisms to solve the "how" problem. Polls tell us that Canadians --- by a slim majority --- *might* be willing to pay tolls but only if *tangible benefits* can be proved to emanate from tolling --- as they demonstrably do on Highwayt 407 in Ontario. So, what is the backstory on Canadian tolling so far?

In Nova Scotia, the Liberal provincial government in the 1990s decided to build a new toll-road in the northern part of the province. It was called the "Cobequid Pass" and was designed to circumvent an old "highway of death" through the Wentworth Valley. It cost $113 million. People went crazy and campaigned hard against it. The Liberal government stayed the course and lost the next election. The loss of political capital was enormous and --- wait for it --- the government agreed to stop collecting tolls when the debt incurred to build the Cobequid Pass was paid off in 2019, a mere four years from now. In next door New Brunswick, at about the same time, the Progressive Conservative government built an excellent new highway from Moncton to Fredericton. It was supposed to be tolled but the outcry was sufficiently strong that the government cancelled the tolling. (They are still paying "shadow tolls" for the highway to its builders --- weird!) The tolls to cross the causeway to Cape Breton were cancelled around 2000 and the Saint John River Bridge had its tolls removed in 2010.

In British Columbia, the Coquehalla Highway was built with borrowed money but the provincial government, as in Nova Scotia, agreed to cancel the tolls when they debt was paid. This occurred in 2008 and the highway is now toll-free. When I was doing a call-in show two years ago in B.C., a truck driver called in to say that the highway was deteriorating badly because there was no new money for maintenance. He said he's be glad to pay a toll again if it meant the highway would be maintained properly. The Champlain Bridge in Montreal saw tolls being removed many years ago. Now, it is falling down and a new bridge is being built to replace it. Will it be tolled? The Link to P.E.I. is tolled and has been a great success. I have not checked to see whether tolls will be removed when the debt that was incurred to build the bridge is paid off.

This spring and last spring, the Nova Scotia Minister of Highways and Infrastructure has come out publicly and said the province could not pay for significant and needed 100-series highway improvements without considering tolls on the roads. The public response to this idea has been less than enthusiastic. The “How” in Bluenoseland is just as hard as it is everywhere else. By the way, when significant bridge repairs were scheduled for the ancient bridges over Halifax Harbour this year, the province borrowed $150 million and gave it to the bridge commission. Tolls currently don't come close to paying for the repairs and general upkeep of these bridges. There was no public discussion about this “tolling” question when the money was borrowed and handed over. Our political masters and the bridge authorities simply expressed delight in how low the interest rate was for the borrowing.

After I wrote a White Paper following the Calgary roundtable in 2011, I led a series of roundtables in six major cities across Canada in 2013 where the White Paper was discussed. Not surprisingly, the people who came to these roundtables from civic government, provincial governments, industry and academia did not want to address the *political economy* of infrastructure renewal, with emphasis on the *political* part of that phrase.

That was surprising to me because most of those who attended our roundtables knew that continued reliance on unpredictable and “lumpy” government assistance *alone* for funding infrastructure was not an option any more. More of the “tools” available in the so-called “toolbox of options” had to be considered. Vancouver's transport authority --- TransLink --- in 2011, enumerated no fewer than 30 “tools”, including various kinds of bonds and infrastructure banks that could be used. Toronto's transit authority --- MetroLinx --- in 2013 enumerated seven principal “tools” that it claimed were needed to cure Toronto's huge neglect of its transportation infrastructure for 30 years. Many of these tax-based “tools” met with stiff public opposition, especially the one that suggested an extra point or two be added across Ontario to its sales tax to pay for Toronto's problems. Not surprisingly, folks in Thunder Bay and Kingston couldn't get their minds around paying for Toronto's infrastructure woes.

One theme that emerged in the roundtables was a strong call for depoliticizing infrastructure decision-making. That was one of the objectives of Chapter Ten of “Vision and Balance.” The most egregious recent example of why this is needed happened before Hon. Jim Flaherty died. As a long time friend and political ally of Toronto's Ford family, Flaherty announced the federal government would contribute $600 million to the building of a subway to Scarborough, a project that not all

Torontonians thought was a good one but that then-Mayor Rob Ford thought was a good idea. Flaherty made this announcement even though it nearly gutted one of the many (confusing) pots of federal infrastructure money. Throughout my lifetime of being close to the political process in Canada, I have been told many times by provincial politicians that cabinet rooms would clear when the subject at the table was education, or universities, or social welfare --- but would be packed when the subject of roads and highways was on the table. And everyone knows that repairing roads, or neglecting them, has long been a way of rewarding one's voters, or punishing the other parties' voters who had the temerity to vote against the incumbent government.

A major policy question for smaller cities like my own, and perhaps for St. John's too, is whether coordinating bodies like TransLink and MetroLinx should be created in these cities. Another big policy question relates to the role of the federal government because more than 95 per cent of Canada's infrastructure spending is controlled by provinces, territories and municipalities. The federal government in 2015 is really a bystander. It has no ongoing liability for projects financed by its Building Canada money. But a more activist, visionary government in Ottawa could do much more. It could --- through some form of infrastructure bank or Crown Corporation responsible for infrastructure financing --- put its good credit rating and low debt servicing costs at the service of tapped-out provinces and cities. It could also partner with our large pension funds which are famous for being among the most savvy infrastructure investors anywhere in the world.

A key question, as I said earlier, will be whether parish pump politics can be removed from the mix. It has been done in other parts of the infrastructure world. As Mintz and Bazel said in the Calgary paper I referred to earlier,

> “The contrast between urban infrastructure problems and other infrastructure issues in Canada is quite striking. Communication, power, commercial rail and air transportation infrastructure seems adequately provided in Canada. Prices generally cover costs, a necessity for private ownership as in the case of commercial rail and communications, but also in the case of non-profit supply, such as local airport authorities.”

The most radical, and insane, extension of that philosophy would be the privatization of all the main highways and roads in Canada by selling them to an infrastructure investment company, like one or more of Canada's large pension funds or Macquarie's The roads could then be priced in the same way as rail has been since CN was privatized --- on a variable, dynamic model that caused the new road company to pay for the upkeep of the road system. CN and CP pay billions of dollars of shareholders' money to do the same for railway rights-of-way. [Sidebar: Imagine if CN were still a Crown Corporation, looking for the Canadian taxpayer to pay for this upkeep from the public purse.]

A less radical approach might see politicians and bureaucrats in the transport sector telling the public that today's roads, and vehicles on those roads, were “stupid”, compared to infrastructure operations like NAVCAN or systems used by transporters of goods by sea. Most urgently, Canadians need to become aware of what is happening in the western United States and in Europe where driverless or automated vehicles --- including a week or two ago, an 18-wheeler --- are already navigating the highways --- and where laws have already been revised to allow such vehicles to drive on public roads. Car and bus “trains” are about to appear.

I and three others recently wrote a paper, entitled *Automated Vehicles: The Coming of the Next Disruptive Technology. (*You can find the paper at the websites of both the Van Horne Institute in Calgary and the Conference Boad of Canada in Toronto and Ottawa.) The paper claims that the arrival of the automated vehicle in its many forms: cars, buses, trucks, taxis and trains will profoundly change the societies into which they are introduced. Big Data analytics and super fast and powerful computers --- and soon the quantum computer --- will give managers of road transport systems and the automated vehicles on them very sophisticated tools for finding out what is happening on any system and using that information to make roads work better than they do today. Indeed, so fast are these new technologies coming at us that no new subway, superhighway or LRT should be built with doing an “automated vehicle impact study” to ensure that projects that are supposed to last for decades are not overbuilt.

The public might respond favourably to a call to make our road system “smarter” and to accept some form of road pricing for that purpose. A visonary politician --- a very rare animal these days --- might even couch this all in terms of a New National Dream, one that would allow a great activist role for the federal government, and might become the 21st century version of the dream that created Canada in the 19th century.

Something new and original will certainly be needed at a time when public attitudes towards government and the Political Class are at an all time low. We in Canada don't think about politicians and bureaucrats as a “class.” But they do in Britain where class conciousness is still rampant. Accordingly, the best book I have read on how well the Political Class has been taking care of itself is Peter Oborne's *The Triumph of the Political Class*, written in 2007. Oborne, a top political journalist in Britain, describes how the long tradition of integrity, collegiality and duty that characterized British public life for much of the 19th and 20th centuries has been abandoned for a crude, anti-democratic *All Politics All the Time* system that the current Harper government has made into an art form. I hate to tell you that I don't think this approach will change much if a Liberal government or an NDP or NDP-Liberal coalition comes to power later this year. New weapons that work successfully in warfare (or politics) for one side are often quickly adopted by the other side.

Major influences in future on any new ways of financing infrastructure will be confronted by these uncomfortable on-the-ground facts: (1) the middle class is shrinking, not as much as in the U.S., but shrinking nonetheless; (2) most peoples' incomes are stagnant --- and more than 50 per cent of Canadians live paycheque-to-paycheque (that is why this same group is saving nothing these days); (3) deference to authority has evaporated; and (4) our demographics, particularly our region of Canada, are terrible. It will, therefore, take an heroic effort by our rulers to convince most voters that everyone should, for example, pay for their commute from the suburbs or ex-urbs every day --- something they are not doing now. All of these issues are set in a time in history when belief in government's ability to spend money “efficiently” is at an all time low. A recent study in Europe produced some cruelly judgmental statistics on that subject.

Many participants at the 2013 roundtables suggested that all that was needed to cure the infrastructure deficit was more “leadership” or “political will” from our political and bureaucratic “masters.” Well, let me remind you of one of the greatest acts of political leadership in the last several decades, namely, the imposition of the 7 % GST by my old law school classmate and debating partner, Rt. Hon. Martin Brian Mulroney. That courageous act of “leadership” was one of the major factors in saving Canada from going off the fiscal cliff in the 1990s. But it destroyed the federal Progressive Conservative Party of Canada --- the party that created this country in 1867 --- and the PC Party is not coming back at the federal level. It is deader than John Cleese's parrot.

You may bet your bottom dollar that every sentient politician in Canada today either actively remembers that fact, or has it lodged somewhere in his or her reptilian brain. So, despite some polling that claims a slim majority of citizens may now be prepared to pay for road-related infrastructure through tolls, your average politician will tread *very, very* carefully before taking a position on this issue. I offer the Hon. Geoff MacLellan, the Nova Scotia transportation minister I mentioned earlier, as Exhibit "A" for that proposition.

V. **THE FUTURE: WHAT BLACK SWANS THIS WAY SWIM?**

The most obvious and now predictable change in transportation infrastructure will, I believe, be driven by the automated vehicle in its various forms and the immense computer power that will be available to make these vehicles work efficiently and effectively. To get up to speed on this subject I recommend you get yours hands on *The Second Machine Age: Work, Progress and Prosperity in a Time of Brilliant Technologies*, by MIT professors Erik Brynjolfsson and Andrew McAfee. In a nutshell, their message is: anything that can be done routinely by humans will soon be done by a computer, if it is not already being done by one. That includes the vehicles I have already mentioned, doctors' diagnoses, lawyer's tasks, investment advice and many other functions being done today by humans.

To balance the enthusiastic message of this book, look at *The Glass Cage: Automation and Us* by Nicholas Carr. In his book, Carr explores the human costs of granting computers control of our work and leisure time. One review of this book said, "The factory of the future will have only two employees: a man and a dog. The man will be there to feed the dog and the dog will be there to keep the man from touching the machines." If nearly half the jobs in North America --- like those of truck drivers, for example --- are about to be taken by machines, we should be worried about the effect of these massive job losses on society, and the famous middle class our politicians seem to be in love with these days. In other words, there is a huge ethical issue coming at us that most, particularly the teckies, are neither aware of nor care much about.

If indeed the automated vehicle is our future and if indeed these vehicles will be with us in about a decade or two then how we build and maintain roads and run transit systems will change dramatically. Transit systems may morph into Uber-like operations that are run and paid for completely differently than today's transit models. They may suddenly become profit-centres rather than loss-making models. A tax credit system that allows poorer people to take advantage of these vehicles will be the way the state may then take part in their operations. One can imagine state-owned and managed automated vehicles but the likelihood, given the costs of building and maintaining these computer-driven systems, is that automated vehicles will all be privately run. If that is to be so, then the task and expense of building and maintaining the roads on which these vehicles will run will pass from the public to the private sector.

However Canadians decide to grapple with these infrastructure issues, we know that the future will be a foreign country where things will be done quite differently than they are now. The long-ago entry of Google onto the automated vehicle turf is already here. Tesla and Elon Musk are making significant moves to join Google. And, most revolutionary of all, the recent announcement that Apple --- with a war chest in cash of US$179 billion --- intends to enter the automated vehicle field will be the most dramatic “game-changer” of all.

One kind of institution that will be needed to help finance much of the coming revolution will be the infrastructure bank or iBank. iBanks are being created all over the world. The most famous one created in recent months has been the Asian Infrastructure Investment Bank (AIIB) in China. Dozens of countries --- not Canada --- have rushed to join the Bank and to be in a position to borrow some of the US$100 billion that has been allocated by the Chinese government to the Bank. Many in the United States have been calling for the creation of iBanks for years but, thanks to political gridlock there, no national iBank has yet come into being in America.

As the October election in Canada draws near, we will hear many proposals for fixing our infrastructure from our political class. Rt. Hon. Stephen Harper made an announcement of a $150 million fund for “commmunity projects” just last week in Nova Scotia. Hon. Scott Brison, the Liberal point-person on infrastructure, says a detailed plan, based on using pension fund money, will soon be rolled out by the Grits. It will be interesting to see the plan because the one thing I have learned from talking to the great pension funds, the insurance companies and companies like Macquarie Infrastructure is that there is no shortage of money in Canada for infrastucture projects. But there is a shortage of good deals, meaning deals that are viable economic transactions like the Cobequid Pass in Nova Scotia, Highway 407 in Ontario and the Link to PEI. As I said earlier, paying tolls of any kind is not exactly a treasured Canadian pastime. Maybe the Liberals will suggest a purely public infrastructure bank that is funded by the federal government by using money from the sale of non-core public assets like the airports and ports of Canada --- a $20 billion deal --- and is free of direct manipulation by parish pump politicians. We shall see shortly what the Liberal “animal” will look like. It should be interesting. I wrote a paper two years ago on the subject of iBanks for the Van Horne Institute. It is available at their website.

I think I may now have used us my allotted time today. I trust I have stirred up enough controversy and thrown out enough outrageous ideas to stimulate good discussions in the panel and breakout sessions that will now follow.