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Stuart L. Smith

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The Canadian Challenge — Tools of Industrial Policy

*Dr. Stuart L. Smith**

There is a major league battle going on between the United States and Japan and I am here to talk about whether or not we can safely supply some gloves to a minor league team. We are niche players in Canada. When we talk about industrial policy, we are not talking about changing the basic structure of banking and the general environment for industry; we are still talking about the old issue of whether we are allowed collectively to make some choices and determine which particular kinds of industries give us the best opportunities for niche participation in the global economy.

That is what my talk is about today. The point I want to make is that, while it makes sense in the United States to worry about the general environment and let market forces take care of themselves, that is not sufficient in Canada. To understand why it is not sufficient in Canada, innovation has to be looked at a little more carefully and we have to realize that we Canadians have a particular problem.

Trade policy is not in itself an industrial policy for Canada. It could conceivably be, in itself, an industrial policy for the United States because you have such a diversified industrial base here. You have representation in every aspect of industry, low, medium, and high value added. You have both suppliers and customers in every area. It is a small jump for many of your higher value added producers to move into super high value added. You are now worried about working between industrial groups so you can use the same enabling technologies in different situations.

In our situation, we have to jump from a low value commodity producing economy to an ultra high value added, and we do not have all the steps in between. It is one thing to go from a standing start, it is another to go from a start where you are actually down with tons of earth on top of you. The difficulty that we have, therefore, is to make sure we do not get left behind as the commodity-based economy becomes, relatively speaking, a slower moving economy and while most of the rest of the world gets into the knowledge based high-value added industries.

Our preoccupations are very different from yours. We do have ex-

* President, RockCliffe Research & Technology, Inc., Ottawa, Ontario. Former Chairman of the Science Council of Canada.

The following text was compiled from the transcript of the remarks made by Dr. S. Smith at the Conference.

cellent niche players who should be part of the consortia that you are describing and planning to create. Canadians can play a very useful role and we can advance better together than we might separately. However, we still have a very big problem, and that is to take an economy that is largely based on commodities and reorient it to knowledge intensive kinds of industries.

This is just not going to happen simply because we introduce a free trade agreement. As my colleague from Quebec said yesterday, a cold shower will not suddenly get us to become high value added players. For example, our banks are not used to it. Now that we have had the Olympia and York fiasco, our bankers are at least willing to talk to me when I mention the word "technology". They were not embarrassed — as recently as eighteen months ago — to look at one of the companies that I was proposing to them, and say "This is superb but we do not understand technology." For one of the leading banks in the country to admit they do not understand technology when technology is what the new world economy is about is mind boggling. You can understand we are starting from a totally different level.

The most obvious industrial policy tool, and one that has the most effect around the world, is the cultural one. You are pretty well obliged, in some parts of the world, to enter joint ventures with local companies because otherwise you just get frozen out somehow. That is a very effective industrial policy. We can not possibly do that vis-a-vis each other, so it is kind of a non-starter, except in Quebec. I will get back to that further.

The second most important tool is the use of the government market. Although we heard yesterday that defense has perhaps preoccupied your industries to such a point they have missed other opportunities, we in Canada we do not shed too many tears about that. As far as we can make out, you were able to use your defense capacity in the United States to back a lot of development that we simply could not do in Canada. Clearly the provision of a government market is an important tool with respect to innovation, and I will be describing that in a moment.

The setting of standards so as to protect your own particular inventions and keep out other people's is well known. Of course, Canada is way too small to play that game in a serious manner.

Another tool is tariffs, but these are obsolete and few people can take them particularly seriously. Nobody is using tariffs as a means of industrial policy anymore, so this decision to lower tariffs little by little over the course of time did not get me too excited. I was far more worried about the other kinds of government means to encourage particular niches in the economy.

There are incentives of various kinds, of course, and help with Research and Development ("R&D") is the one we use most of the time

in Canada. Other incentives include help in financial risk sharing for new ventures in innovative areas. There are sectoral approaches being discussed. We are meeting sector by sector to see if we can find ways to improve the general state of technology in each sector. Finally, of course, there is the one that everybody loves to hate, and that is the "bribes"; governments give money to companies to locate in this or that area, this or that state or province. Ontario has such incentives for industry to come. We heard about all the training grants and property tax relief and so on that the different states have available. These make no sense but they are going to continue.

The fact that governments are always going to be doing stupid things like bail-outs or location incentives is not a reason to say the governments can not do anything positive of a selective nature. Keeping markets free of government makes sense for a large diverse economy, but it may not be sensible for a small economy that needs to find new niches.

Let me say a little bit about innovation because that is what the topic was supposed to be, "The Context for Innovation." Let us understand that there are two different types of innovation. There is the innovation which allows you to do what you are already doing, but to do so more efficiently or more cheaply. That type of innovation is easy to get to market. Nobody has to change much in order to accommodate that kind of innovation. You do not need much of a policy context for that either.

On the other hand, you have innovations which allow you to do things that you could never do before, totally new functionality. They are very difficult to market because you have to do market development before you can actually do marketing. There, a policy framework can be very helpful. If we understand that distinction, then we can understand why it is that opening ourselves to market forces is a very good way to stimulate the first kind of innovation: it is because competitive forces will oblige you to look for the cheapest and best way to do what you are already doing. However, opening yourself by trade policy to international competitive forces does not lead you to become active in niches where you are not already present. It is difficult for people to get started with new kinds of innovations that require market development. You need larger and earlier stage investments than you do for the first type of innovation.

It is hard enough to get a new product into an existing company, but to grow new high-valued added companies from scratch is more difficult by an order of magnitude. The failure to distinguish between these two types of innovation is perhaps one reason we have an "anti-policy" attitude on the part of economists.

Government-incentive programs have certainly been bureaucratic and unsuccessful for the most part. I can understand why they are re-

ferred to as a kind of quack medicine compared to the proven medicine of the marketplace. The U.S., I would say, should stick to the proven medicine of the marketplace. You have hundreds of flowers blooming, and it is not a bad thing to let nature take its course. When you have rocky soil, however, and only one or two seeds, the notion of letting nature take its course becomes a bit silly. If modern medicine gives you six months to live, it is not unreasonable to look to quack remedies and to see whether you can find one or two that might work better.

In our case, it is not that I believe that any government is better at choosing sectors and choosing policies than the marketplace. I do not believe that. What I believe is that, for a small country, badly under-represented in many areas, the marketplace may well come up with a decision you do not like. The marketplace may well decide that your role ought to be one of being a commodity producer, doing it better than you have ever done before. What if it just happens you can not support twenty-seven million people doing that? Well, that is just tough luck. The market has spoken. Therefore, your dollar will go to thirty cents or twenty cents. Ultimately, as the shower gets cold enough, you will miraculously decide to move into new fields, namely, the area of low wage industries.

My own feeling is that it is entirely unfair to the people you leave behind. The people should have the right to move where the money has gone and if the savings are going out of the country, then the people should be allowed to go as well. That is why I think we are going to have to deal with the movement of people between Canada and the U.S.

My worry is that the creation of the North American Free Trade Agreement ("NAFTA") has been precisely to prevent the movement of people, namely from Mexico to the United States. Canada may not find it easy to gain access to the United States' jobs. We will see. Of course the other side of that argument is that American people who are ill may wish to come to Canada for our medical care. That might be a serious problem, but one which perhaps President and Mrs. Clinton will solve.

The Department of Finance in Canada very much opposes selectivity on the part of government officials. They are fed up with governments wasting money on things like Hibernia or bailouts for various kinds of industries. They really do not want any part of picking winners because they are convinced that if you let governments do any kind of picking whatsoever, they will end up picking losers. Well, yes, I understand that, but as I said earlier, governments are going to pick losers anyway, so we might as well at least try on occasion to pick some winners. I have lost this argument in Canada many times, you should understand.

The other question we have to focus on briefly is the issue of na-

tionalism, which is a very important part of industrial policy. Capital is, of course, very footloose today, but some feet are looser than others, and we Canadians have the loosest feet of all. There is simply nobody in Canada, at least in English Canada, that will sacrifice one or two basis points in the name of the national good. Most countries have capitalists who will do that. We do not.

I went to Sweden when I became head of the Science Council because I wondered how they came from being a commodity-producing nation to being a high-value added nation. I received two answers. The first was that their commodities were not very good. They found that their wood could not compete with Canadian wood and their iron ore was not as good as what had just been discovered in the Ruhr valley. So, they moved upstream and downstream. They started selling saws instead of trees. They moved from there to ballbearings and so on. In the case of their steel, they moved into stainless steel and blades and things of this nature. They moved into design, using steel and wood for different products that were useful and attractive.

Canadians never had to make this kind of shift. We just cut another stand of timber somewhere. Our ore is of high quality and we have many other minerals and natural resources.

Except for fish, our resources will never catastrophically fail. We will never find ourselves suddenly in a position where we must move to sell something else because we cannot sell the nickel or the gold or the wood. We will never have that experience. We have ups and downs. The trend may be steadily down, but each experience of an "up" is enough to convince us that everything will be fine again. We wait out cycles and the fact that it is going steadily down is simply not noticed.

The second answer in Sweden is also interesting and relates to the banks. A Swedish authority told me that, back in the 1930s, the Wallenburg family called together the banks of Sweden and said there was far too much foreign ownership of Swedish industry. They were going to lose control and become a branch plant economy which, of course, Canada has become. The banks each put into a pot a certain amount of money to repatriate Swedish industry. That is nationalistic capital, right? Those of you from Canada will know how humorous the notion is that the Canadian banks would tax themselves for the repatriation of Canadian companies. A communiqué from our banks would demand the more rapid buyout of Canadian industry by foreign interests, using Canadian savings to accomplish it.

Nationalistic capital is important. I know that it is not a topic for polite conversation, but it does matter. There are Japanese investors who will be convinced to take less interest on their money if it is in the interest of Japan. There are German investors who will do that. There are even American investors who are nationalistic in their own way. There are no Canadians of that type, outside of Quebec.

In Quebec, there are those who will make a sacrifice for the nation or collective good. Unfortunately, they define the collective and the nation as within the boundaries of Quebec.

It is peculiar in a way. The argument in Canada is always going on that Quebec should be a part of Canada because it would suffer economically if it left, even though it might be able to protect its language better by leaving. The truth is the exact opposite. There is a much better linguistic reason for Quebec to stay in Canada than there is an economic reason. In fact, Quebec could probably do reasonably well economically on its own, but linguistically their language would be doomed within a generation.

Let me give examples of the second kind of innovation, i.e. where markets need to be developed. Canadians have this type of problem. One of the companies with which I am involved is able to do spot repair of sewers without digging. You send your TV camera into the sewer, you see a crack, you can put in a little sleeve and the thing is done. It is repaired, structurally strengthened, and good for twenty-five years. It is very cheap, a couple of hundred dollars and it is fixed. "A stitch in time saves nine." "Ounce of prevention . . ." All of these wonderful things, right? Unfortunately not.

There is nothing wrong with the technology, I assure you. It has worked everywhere it has been used, and it is being used here and there throughout the United States and Canada. There is no large market for this, however, because the cities do not have budgets for such things. Such things were never possible before, so why would you budget for them? The budget in the city goes for the sewers that have already collapsed or for sewers that are about to collapse. We need to tell everybody that there is such a thing as a sewer spot repair so you should allocate maybe ten or fifteen percent of your budget for such repairs. Ultimately people will. In the meantime, however, a small under-capitalized Canadian company will likely go broke. The technology will eventually be picked up by somebody, and it will happen. I am just saying this is what happens when you have market development problems. You have to have the money to survive the long time that it takes to create a market for the product.

Take another example. We are involved in a company that transforms biomass into an inexpensive liquid fuel much cheaper than oil. This liquid fuel contains a very high percentage of a certain chemical called hydroxyacetaldehyde. Hydroxyacetaldehyde acts like formaldehyde but it is not volatile, and it should have many, many uses as a crosslinker or in resins in the chemical industry. The problem is that it has never before been available. It is a molecule that could not be synthesized except by extremely expensive means. Its cost is thirty-two dollars a gram. We can produce many tons a day from waste wood. The problem is, of course, that the world market will be saturated in

the first minute and a half and that would be the end of it. Everybody admits that it is a lovely chemical. "If we would have only known it existed, maybe we would have used it instead of formaldehyde. We really ought to start testing it in some of our plastics. Perhaps we will try it in some formulations. It looks awfully interesting." I am sure that five years from now, there will be a huge market for this stuff, but we have to survive; so, in the meantime, we are selling it as a fuel and burning it. That is what happens when you have to do market development. There is a big difference between selling a solution which lets people do more cheaply what they are already doing, as opposed to trying to get a product into the marketplace where you have to develop a new market for it. Only big companies can do that second type. In Canada we do not have big companies in these fields to do it. This is another one of the serious problems that we have.

Let me say very briefly some of the things we do have which assist innovation. We have many incentives for R&D in our country. These include refundable tax credits for R&D, which are very good for small companies. Even if they do not pay taxes, they receive their R&D tax credits, and this often is their only source of income while they are developing a new niche product. We have help from the National Research Council with respect to R&D, the very popular Industrial Research Assistance Program ("IRAP"), which emphasizes the development side of R&D. We have no help for marketing, however, and we have only a few provincial programs that actually help with respect to venture capital. These are very popular and helpful but they tend to focus within their own boundaries, thereby further fragmenting an already small Canadian capital market.

We often have self-inflicted wounds in Canada. We are just as bad as anybody else in this respect. For example, we tax options, in the year in which they are exercised rather than when the stock is sold. If you have an option which you have been given as an incentive, and you decide to exercise that option, you have to sell the stock; otherwise, you cannot afford to pay the taxes. It defeats the whole purpose of having the options to encourage long-term loyalties.

We also have unrealistically low limits on the number of options that companies are allowed to give. I am a director of a software company that is listed on the Toronto Stock Exchange, and we have trouble keeping people because of the fact we have used up our limits on options. In the software industry, that is how you get the best people.

We, in Canada, have problems with venture capital because we are not used to funding things outside the field of real estate, resources, retailing and so on. I will give you an example. A study was done by Mary MacDonald which shows that the average venture investment in the U.S. last year was four million whereas the average venture investment in Canada was \$700,000. Our small companies are undercapital-

ized. There is also a big gap in the proportion directed to technology. In the United States in 1989, seventy percent of risk capital was invested in knowledge-based firms; in Canada, less than twenty-five percent was invested in such firms! We have a cultural problem. We are a commodity-producing economy with conservative bankers and investors and we are not well-oriented to the new technologies.

The best protection that we can see is in the government creating an initial market for the products and services of innovative companies. Governments can rarely be more useful than in the creation of such initial markets. When we speak of industrial policy, that is what some of us are talking about. It requires knowledgeable government employees and perhaps there are not many such people. You are going to have many failures, of course. A Department wants something now and they want something that works. They do not want a new invention by some Canadian. They want something that is well-proven.

In the United States, you learned how to use government Defense procurement to develop new technologies. We have never been able to do that because there is no one such public purpose which has sufficient public support to permit mistakes to be made without an outcry. Nonetheless, I believe our government could be much more innovative in its use of the procurement arm.

In my view, free trade has increased the need for a policy to support diversification; it did not eliminate that need. Free trade certainly got us to the point where we must be more competitive. That is all to the good, but that stimulates just one form of innovation. As to the form of innovation that requires new firms to create new markets, we cannot do that by leaving it to market forces alone. I am not sure we can do it by government policy either, but we have to try.