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The Way Ahead

Brzustowski, Tom

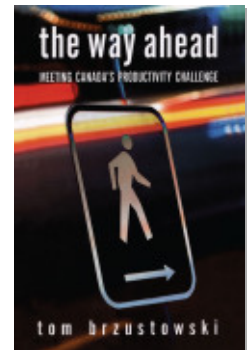
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Preface

This is a practical book about economic change. Specifically, it is about the changes that I believe we must make to accelerate our productivity growth and make Canadians' high quality of life sustainable. More particularly still, it describes the important role of science and engineering in meeting the productivity challenge.

Canada is a prosperous country, but it needs to become even more so if we are to maintain our quality of life. Our society is aging, and as the "Baby Boomers" retire and grow older they will not only stop creating wealth in productive work in the economy but will also consume more of society's wealth for their own health care. And whenever we open a newspaper or turn on the TV, we hear about many big and urgent problems beyond health care that already require billions of dollars to solve, and will require even more.

When viewed against this background, our poor record of low productivity growth and the continuing erosion of our purchasing power are a challenge and a warning. Our economy seems a curious mixture of the old and the new. We have a big appetite for the fruits of research and technology available in the modern knowledge-based open global economy, and we

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import and buy them in large quantities, but our own wealth creation largely depends on economic activity that belongs to an earlier age. We are good at science and engineering, but only a small number of our businesses translate that capability into commercial success. Broadly speaking, we have yet to master using our learning to create prosperity. As a result, we are slowly declining while many other countries are surging ahead. This may seem painless in the short term, but it spells disaster in the long term. Given the financial pressures we already see, we must act now to reverse the productivity trend, and bolster our wealth creation.

The good news is that we have the necessary conditions to do that. Canadians are a civil, peaceful, welcoming and generous society. We attract immigrants, and many among them bring important skills. We have a good education system that includes some world-class universities, excellent research in many important fields of science and engineering, and governments continuing to invest in them. We have very good engineers, strengths in many areas of manufacturing and construction, and we know how to build and manage engineering gigaprojects.¹ We have some splendid examples of technology companies that have become major global successes. And the country is endowed with massive amounts of widely varied natural resources.

But the bad news is that necessary conditions are not sufficient. We must do much more of those things that we know how to do better than anyone else in the world, and we must do much better in all the areas that have been the mainstay of our economy. I think that the right measure in both cases is the value created by Canadians. I believe that we need nothing less than a national commitment to use all the assets at our disposal to create more value across the entire Canadian economy.

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Good news, bad news, and now good news again. Solving those formidable problems will not be a one-shot affair. On the contrary, as we go about solving them, Canadians will be learning a great deal. As a result, we will acquire new capabilities and create new capacities that will be of great use in the future. And, in turn, the solutions will open up myriad opportunities for further advancement. If we keep seizing those opportunities, Canada could be riding the economist's "virtuous cycle" (or the engineer's "positive feedback loop") to a very attractive future.

As I set out to write on this subject, I must confess to having some biases. These are beliefs that I have acquired in a variety of ways. Some are based on facts that have been established by research, and some are compelling conjectures that have so far eluded proof. Some others are elements of conventional wisdom that have gone unquestioned for so long that they now seem obvious, and help me make sense of a complex world. And, of course, like anyone else I have biases that are personal values reflecting who I am.

Here are four biases that bear on the subject of this book. To begin with, I believe that it is only the private sector that creates wealth. The public sector consumes wealth as it plays two different roles. First, it provides a supportive and normative framework for wealth creation by the private sector in various appropriate ways, through laws, regulations, treaties, incentives, etc. And, second, it is a concentrator of resources assembled through the tax system. In this role, it pays for the essential activities of society as a whole, such as education, health care and social assistance, which redistribute those concentrated resources. But it also does the very opposite, focusing those resources when it makes investments in major projects.

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Secondly, I believe in the essential importance of striving for excellence in everything that we set out to do. In the simplest terms, excellence is being better than anyone else in whatever activity on the scale that is appropriate to that activity (e.g., individual, team, group, company, sector, country, etc.). Excellence begins with competence gained through learning, and it emerges through competition. I don't believe that there are degrees of excellence; either one is excellent or one is not. If Canadians decide to enter some arena for strategic or other reasons, then we must make every effort to achieve excellence in it—to become the best in the world. And if excellence turns out to be beyond reach, then we should recognize that, admit it, and either invest enough time, effort, and resources to reach the necessary level, or vacate the field and move on to something different. I am offended by the caricature of Canadians as people who always “go for bronze,” and would relish washing it away with a flood of examples to the contrary.

My third bias might seem a far cry from a discussion of technological and economic issues. I believe that one of the most important measures that a society can take to provide for its future prosperity and well-being is to invest in the development of its children into competent adults. This must begin with providing appropriate advice and care for expectant mothers, continue with good neonatal care for babies, and move on to high-quality early childhood education that makes children intellectually and socially ready for kindergarten. Elementary school is also very important and, in particular, I believe that children should be introduced to science and mathematics by elementary school teachers who themselves have studied science and mathematics at the university level. Even though I can't provide a number for the ideal return on investment, the

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benefits of such a strategy seem obvious. Children who become competent adults will be able to assume productive roles and contribute to society. In contrast, those whose development is neglected will not only contribute less, but may need to draw on the resources of society through various programs of assistance and care, and in some cases possibly even through the justice system.

The fourth bias can be put as “First make it, then spend it.” This is not some theoretical quarrel with Keynesian economists; it’s much more visceral than that. In my years in government service, I have too often seen deficits build up the public debt, and then the cost of servicing that debt squeeze some very important expenditures out of the budget. Two priorities that are particularly vulnerable under such circumstances are investments for the long term and current spending on measures that need to be taken now in order to prevent problems later on. My concern with wealth creation is conditioned by this frustrating experience.

This book deals with what Canadians do in their work, how they add value, and how they create wealth. Most of the time, the unit of analysis is the enterprise. I am well aware that there are differences among regions in many aspects of what enterprises do and how they do it, and that federal and provincial jurisdictions affect their activities, but except for the last part of the final chapter, I leave both the regional and the federal-provincial nuances to those who know more about them than I do. My main points can be made treating Canada as a whole. So when I use phrases such as “Canada should” do something or “Canada needs” something, I refer broadly to any and all possible actors, from the individual worker to the top of the federal government, leaving any more particular reference to be inferred

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from the situation in question. Likewise, I often say “We” as shorthand for “We Canadians” or “Canada.”

I also realize that some ideas in this book might belong in the political realm, but the book is not a partisan statement. Where my ideas agree with a policy or plank in the platform of one or another political party, then we obviously see things the same way. And if an idea in the book specifically opposes some such initiative, nobody should take that as partisan criticism. It simply means that my reasoning has led me to the opposite conclusion; if that proves persuasive, then so much the better. There may also be ideas in this book that could be new and attractive to certain political parties. In that case, they are welcome to adopt them. In fact, I would be delighted if all political parties found ideas in this book that they wanted to make their own.

Much of the material that follows builds on what I have learned from the work of others. In cases where I can trace my learning to a single source, I provide the reference in the traditional way. But I have also learned by listening to wise persons who themselves synthesized the work of many scholars, and created a big picture for others to see. There, I found the referencing more difficult, with one exception. I have learned a great deal from Dr. J. Fraser Mustard, the founding president of the Canadian Institute for Advanced Research (CIFAR), and a leading thinker about today’s most important social and economic issues, and their interplay. Mustard is a visionary who can scan the landscape of research results in many different fields and distil from it what he calls “a framework of understanding.” My thinking and learning owes much to Fraser Mustard, particularly in the role he played through the late 1980s and early 1990s on the Ontario Premier’s Council, and it is for that reason that I dedicate this book to him.

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Finally, let me express my appreciation to the Telfer School of Management and to the University of Ottawa, and particularly to Dean Micheal Kelly and President Gilles Patry for giving me the opportunity to reinvent myself as a management professor, eighteen years after I left the university world as a professor of mechanical engineering. The appointment at the Telfer school has given me the time to pursue in depth some of the subjects to which my eyes had been opened during my years in the provincial and federal public service, namely innovation, commercialization, and wealth creation. It also gave me the invaluable company of new colleagues and students with whom, and from whom, to learn more.

I also want to express my appreciation to the Royal Bank of Canada Financial Group for sponsoring the Professorship in the Commercialization of Innovations to which I have been appointed. I think it is very important that the country's largest financial institution should so visibly associate itself with an area that is crucial to Canada's economic future, and yet remains largely invisible to the public. As thousands of students pass through the Telfer School of Management, I am sure that this far-sighted gesture by RBC will prove of strategic value, by showing them that innovation and commercialization are vital elements of the economic environment in which they will be making their contributions.

Last and most important, I wish to express my wholehearted gratitude to my wife Louise. Her patient support of my work was essential during the writing of this book, just as it has been for all the accomplishments of my working life.

Tom Brzustowski
Ottawa, November 2007

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NOTE:

- 1 Megaprojects are no longer impressive; you don't get much of a project for a few million ("mega") dollars these days. Today's big ones cost billions—hence "giga."