

**A PIVOT TO MANUFACTURING JOBS IN BRITISH COLUMBIA: IMAGINING WHAT IT WOULD TAKE**

Written by Kenneth J. McFarlane  
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Vancouver, B. C., Canada  
May, 2015

*[Ken McFarlane’s academic and professional background is in economics and law. He is a Rhodes Scholar and has been an associate at several major think-tanks, including the Brookings Institution. After a diverse career in the public, non-profit and university sectors (including senior positions with the federal government and a number of royal commissions of inquiry) he founded The Katalysis Group Inc. Over the course of twenty years, this company was involved in the development and implementation of nine successful industrial technology ventures in Europe and North America.]*

How can British Columbia become less economically dependent on the extraction and exportation of raw natural resources? How can we create good jobs for a much broader spectrum of our citizens than is currently the case? These related questions have been for many years the main issues confronting economic policy-makers in British Columbia.

We all answer questions based on our background and experience. So when I confront these matters I do so from the perspective of someone who has, for several decades, been operating at the nexus of entrepreneurial activity, public-private partnerships and economic development policy as these related to the creation of manufacturing operations in various parts of the world.

I see no reason why British Columbia, and Canada in general, need to persist in the belief that their only comparative economic advantage, according to the cliché, is to be perennial hewers of wood and drawers of water, with all the inherent volatility that approach entails. However, it is impossible for the advantages of alternatives to be realized by adhering to free market principles alone. Government must reassert itself through the development of smart policies that are crisply and effectively implemented.

I believe this can be said without sounding irresponsible or even controversial. After all, the economic melt-down which began in 2008 and eventually became known as the “Great Recession” left little doubt that the “invisible hand” of free enterprise is fallible. The subsequent failed efforts to bring about full recovery and new prosperity have shown the limitations of standard monetary, fiscal and regulatory policies. British Columbia, and Canada in general, have been inexplicably slow -- unlike other industrialized countries – to re-introduce and advance the notion of industrial strategy by government and (perish the thought) “picking winners” to redefine both their comparative and competitive advantages.

Economists disagree on many things, but one point on which there is little diversion of opinion is the fact that in comparison to other areas of economic activity a strong manufacturing sector, whether broadly or narrowly defined, creates the largest number of good jobs and the other key economic spin-offs necessary for a vibrant and sustainable regional economy. (Generally, what both the academic and popular literature means by “good jobs” are ones which involve security, at least living wages, adequate job training, potential for upward mobility and benefits necessary to sustain a healthy work-life balance).

In fact, if one looks at the great economies of the world, one finds that they are built around interconnected communities with medium-sized, specialized manufacturing operations that employ local people while eschewing off-shoring as much as possible. (More on that below.)

It needs to be emphasized from the outset, in case there is any confusion on the point, that modern advanced manufacturing is “clean” and “sustainable” in all senses of those words. It is research and development based and employs primarily technical personnel at various levels of expertise, many of whom are from the so-called STEM disciplines (Science, Technology, Engineering and Mathematics).

The goal of this paper is to demonstrate how the advantages of a manufacturing based economy can be realized in British Columbia. Accomplishing this will take nothing less than a revitalized and rebalanced political economy for the province that re-establishes an essential role for government. Fortunately, the necessary tools are readily at hand if we choose to use them. These will be discussed later, but first it is necessary to set the scene.

#### ECONOMIC DEVELOPMENT THEORY REVISTED

It never hurts to look at what the scholars in the academy have observed and concluded when it comes to anything related to economics and public policy. However, the story around strategies for industrial development is a curious one. Well regarded academics, even when conducting official government evaluations, often come to very different conclusions about the lessons of the past 30 years. After allowing for differences in methodology, one cannot help but think that there is considerable ideological bias at play.

An analyst that has had a great deal of influence among both public and private policy-makers in the past five years is Josh Lerner, the Jacob H. Schiff Professor of Investment Banking at the Harvard Business School with joint appointments in finance and entrepreneurial management. Aside from high level government contract work, he has written several persuasive books such as “Innovation and Its Discontents” (Princeton), “The Venture Capital Cycle” (MIT) and then, in 2010, “Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed – and What to Do About It” (Princeton).

You can do no better than read Lerner’s books if you want a comprehensive summary of what has been the standard approach to economic development in recent decades as dictated by the tenets of neo-liberal economic doctrine. Governments of all political persuasions have paid homage to this set of perspectives and it has greatly influenced their policy decisions.

According to Lerner, governments are at their best when they adhere to what he calls “the neglected art of setting the table”. It’s all about enabling entrepreneurs to do their thing as well as possible through public policies aimed at getting the relevant laws right, ensuring access to cutting-edge technologies, creating tax incentives (or removing barriers), maintaining optimal infrastructure and training potential managers and employees.

In short, there is an important role for government in “priming the pump” and doing the early heavy lifting to unleash innovative market activity, but he cautions against any overbearingness by the public sector. Governments need to listen carefully to venture markets and understand their complexities, while fostering an international orientation and prudently structuring incentives and evaluation tools. In particular, their enabling policies must be broad-based and not focussed on specific sectors or industries. The choice of actual business opportunities is to be left to “standard” market forces.

This is pretty well known stuff for anyone who has been even vaguely paying attention. It’s been a good part of the playbook for decades by most Canadian provinces trying to re-structure their economies. But where is the evidence it has worked in creating good jobs, equitable communities and broad-based prosperity in Canada? Such evidence does not exist.

And it must be said that Josh Lerner is highly restrictive in terms of the definitions of success and failure when citing specific examples in his writings. Many of the standard macro-economic indicators he emphasizes have absolutely nothing to do with enhancing the quality of life for ordinary people. As we will discuss later, it has only been recently, as a new generation of entrepreneurs begins to emerge, that good job creation has become a real consideration, if not a priority, for at least some business owners after decades when this was anything but the case.

In the end, Lerner is disingenuous in concluding that the public sector has generally failed to properly prime the economic pump and that he knows how to make things right in the future. His recommendations amount to little more than saying: “keep doing what you have been doing for the past 30 years and hopefully, if you dig down a lot deeper, we’ll finally get it right.”

#### AN ALTERNATIVE PERSPECTIVE

Other academic analysts have a considerably different take on the past generation of industrial innovation and entrepreneurial activity. In 2013 Mariana Mazzucato, professor of economics at the University of Sussex and the RM Phillips Chair in Science and Technology wrote a book entitled “The Entrepreneurial State: Debunking Public vs. Private Sector Myths” (Anthem Press). Her fresh take on an old subject has, over the past two years, led to her being much in demand as a commentator both in Europe and North America.

Professor Mazzucato does a credible job in undercutting the stereotype of government as a bureaucratic organization only needed for “fixing” market failures, stimulating demand and getting the basics right (i.e. Lerner’s “setting the table”) while leaving dynamic entrepreneurship and innovation to the private sector. Case studies on the funding behind developments as diverse as Apple’s iPhone, the bio-technology and pharmaceutical industries, nano-technology, and the global renewable energy sector reveal the opposite situation, in which the private sector only invests after the entrepreneurial State has made the high-risk, bold investments in science, technology, people and infrastructure.

Mazzucato asks a key question which is: “Why are all the profits from this socialized risk going private?” She recommends the building of innovation “ecosystems” and decentralized networks that result in symbiotic public-private partnerships rather than parasitic ones, while avoiding the “financialization” that

imperils all sectors in the “real” economy. Increased investments by government in these ecosystems must not cause the private sector to invest less and focus on internal rates of return or boosting stock prices rather than forward-looking human capital formation and R & D. And the public purse must get a healthy return on its investment that transparently shows up in the public services citizens need.

The risk-reward framework must evolve into something quite different than the dominant one of the past thirty years. All of this is reflected in some of Professor Mazzucato’s concrete suggestions such as: (1) government should receive healthy royalties from applied technological breakthroughs to sustain “innovation funds” (2) the use of income-contingent loans and primary equity positions and (3) public development banks structured to lead and not follow in enterprise financing, by emphasizing early stage venture investment where private money is risk-averse.

I agree with the general spirit of Mariana Mazzucato’s conclusions based on what I have seen as a “practitioner” in the world of business development. Vitally important economic choices must be made by the public sector and cannot be left to the free market. No jurisdiction that I am aware of has ever developed a successful industrial base, and reaped the benefits from it, by doing anything less.

My difficulty with her analysis is that it fails to adequately make the full connection between what government can and should be doing and what is required by ordinary people in real communities in terms of job creation and economic development. The case studies Professor Mazzucato cites are the standard so-called success stories that are trotted out by commentators of all political stripes, with the main disagreement being around whether it is government or entrepreneurs who deserve the most credit.

Most of her specific proposals for the future -- both in her book and subsequent writings -- similarly involve industries where there is an inherent tendency, if not requirement, for managers and investors to minimize the number of jobs involved while internally capturing most potential economic spin-offs. In the recent past, public investments in such industries follow from massive lobbying campaigns by corporate interests with no input from labour market specialists or groups representing the broader public interest in good jobs.

Exhorting governments to simply cut better public-private partnership deals in the future does not strike me as being entirely adequate if government is not intimately involved in choosing what industrial activity happens in their jurisdiction. I am hardly the first to say that “everything has changed” on so many levels since the Great Recession. Progressives like Professor Mazzucato need to aggressively exploit that fact, and describe precisely what that entails.

Motivations of business people can now be “manipulated” in the positive sense of the term. At least some of them, mainly a younger, emerging generation, already respond to different signals and embrace different values and aspirations. In short, there are now business people who are already attuned to their essential social responsibilities and how these merit a claim on revenues, and then there are others who don’t understand the new reality or choose not to recognize it in the first place. Some have a clear notion

of “how much is enough” in terms of returns -on-investment for owners and shareholders, while keeping their companies both competitive and profitable. Others will need to be reoriented.

All to say, business people can no longer all be painted with the same brush and governments therefore have the opportunity to choose who they want to work with. Historically, entrepreneurs, investors and owners have sooner or later adapted to circumstances around them, regardless of how much they initially protested or resisted doing so. Give them a plan – even an industrial strategy – and they will find a way to thrive within it.

If a British Columbia comes to embrace the fact that important and durable industrial clusters only come about when government does both the initial kick-starting and risk-taking while having a hand in the follow-through, then it would be well advised to pay close attention to key considerations that ensure the attainment of the biggest bang for the buck in terms of the well-being of their citizens. These will include the type of manufacturing operations involved, the nature of the corporate structures developed, investor expectations and the leadership for implementation. I will return to this key point later.

#### JUSTIFYING A NEW APPROACH

Nothing about any of this will be uncontroversial, so it is important to put all of this in context and carefully consider the case for aggressive government intervention around good job creation before we give further consideration to what that would look like.

By the time the 21<sup>st</sup> century arrived, brutal globalized competition and distorted financial norms had meant that businesses of any size were primarily about profit maximization and the distribution of company earnings to as small a group of people (mainly owners) as possible. That’s a fact – no moralizing is necessary. As a result, unemployment and underemployment have become structural rather than cyclical. Jobless growth is a standard fact of life. Real wages have been falling for decades. These facts literally cry out for correction by government.

At the same time, the relationship between corporate interests and municipal, regional, provincial and national interests has become much more tenuous. The interplay of globalization and technological change fundamentally shifted the balance between labour and capital, setting in motion the slow erosion of the post-war middle class in North America and Europe.

People with jobs requiring mid-level skill and offering mid-level compensation are the backbone of cities and communities everywhere. However, many corporations capable of taking on the large-scale projects necessary to turn economies around, have come to believe they have no vested interest in or responsibility for encouraging this demographic cohort to thrive in their home jurisdictions. It has been my observation that even small and medium size enterprises have adopted this perspective, which is completely at odds with key parts of the “social compact” which existed for much of the latter half of the 20<sup>th</sup> century.

In such a world, why would any government assume that continuing to throw public resources at business through broad-based, unfocussed programs (such as those touted by Josh Lerner) would lead to more and

better jobs for its citizens, particularly when it has become de rigueur to involve private sector delivery partners to ensure “financial discipline”, a euphemism for economically restrictive behaviour of various kinds? It is essential that public leaders decide to eschew all that and focus on economic activity that is optimal for the broadest possible base of people while placing the enrichment of owners as an important but nonetheless secondary consideration.

Put another way, the B.C. government should not lend its support to corporate interests that increasingly have very little to do with the prosperity and happiness of ordinary British Columbians. As noted above, a significant portion of a new generation of business people who have been taking over the reins from boomers for much of the past decade are infused with values and aspirations that might well make for healthier public-private relationships. That’s good news and it should be exploited by the powers-that-be in any B.C. government. In other words, if you’re going to invest in certain types of business then carefully choose your partners and make your expectations for job creation and other community-based economic gains a foundational principle in doing so.

From the standpoint of public finance theory, aggressive government intervention for the purpose of ameliorating “negative externalities” or creating “positive externalities” makes sense. When confronted with structural unemployment and underemployment any government is justified in intervening to counteract these negative externalities created by free market forces aimed at increasingly narrow business goals as well as excessive corporate “rent-seeking”.

Alternatively, if we do whatever is prudently necessary to develop advanced manufacturing clusters in British Columbia by supporting and facilitating the firms that go along with an agreed upon industrial strategy (through the provision of various direct advantages by government) then we are also creating the ancillary positive externalities of creating stable communities and good jobs for our citizens. This would be analogous to investing in pollution control equipment or subsidizing solar power fixtures because these create a positive environmental benefit for all of us.

#### LESSONS FROM THE FIELD

If the British Columbia government decided to pivot to manufacturing jobs via a strategy that targeted certain industrial clusters with good job prospects, what are the key considerations that follow from such a decision? It will be no small matter for B.C. to build, from the ground up, a strong manufacturing sector that produces medium to high value goods for which there are adequate and not ephemeral domestic and international markets.

In the absence of very few readily available or even conceivable options, it is worthwhile and necessary to explore which parts of the manufacturing sector can be relied upon for a dramatic economic transformation and what is required to get them to flourish in British Columbia. What follows is an outline of my suggestions, based on my professional experience, for confronting some of the difficult questions that will need to be answered.

Some are based on what is successfully happening in other parts of the world while others are simply what I strongly believe would work best in British Columbia regardless of a lack of any precedents that I

am aware of. Taken in aggregate (after the necessary interconnections have been made) they are, in my opinion, the core of what it will take to develop a good job-creating industrial strategy for British Columbia.

I will not attempt to suggest any particular industrial clusters that would be appropriate for British Columbia because I have not done the considerable amount of work, as reflected in the points below, necessary to come to these conclusions. What I have done here is provide something of a road-map to accomplish that task for those with the necessary resources. This will be no small feat. But if we are to avoid the failures of the past, where half-baked and ill-advised economic paths are chosen after grossly inadequate preparation, then the task must be undertaken.

1. If our research institutions are given the necessary resources to carve out certain areas where they can become “world-class” and cutting edge, if not uniquely qualified, then we will have the makings for an economic regeneration. This assumes, of course, that we can also build capacity for follow-through and street-level implementation that captures as many potential benefits as possible for the B.C. economy from these innovations. (More on that later in several sections below.)

The fact that there have been, for at least the past 20 years, many technology transfer agreements taking home grown innovations out of the province (and, most often, out of the country) speaks volumes about the current lack of capacity for follow-through. In addition, industrial clusters for which there is already real or nascent local strength -- in B.C.’s case, bio-technology, information technology value-added resource products and even clean / green tech – have become virtually blocked from further development because of global market saturation, centred in other countries, due to what finance theory specialists call “herding” by institutional investors. In short we entered these areas too late and without the necessary local traction to benefit from the entire development and commercialization process.

2. Unlike 30 years ago, governments now have access to at least as good information as private entrepreneurs and business innovators in terms of the relevant economic, social, demographic and geo-political factors that go into the forecasting models concerning consumer preferences, product life-cycles, community/ industrial infrastructure requirements and global competition. “Big Data” and the rest of the outcomes from the information technology revolution have levelled the playing field and undercut the long-standing reality which saw “insider information” as the path to success for only a relatively small number of private business people who were “in the know”.

Therefore, there is every reason to think that, with the right type of human resources in place, the public sector can be equally adept as the private sector in determining what to research, develop and then manufacture, as well as where to do it, when and how. As behavioural economists tell us, innovative business investment is a function of “animal spirits”, but the exercise of gut instincts about growth prospects are hardly the province of only business people, when asymmetrical information is not an issue.

3. Public policies that strive for broad-based economic prosperity through modest but nuanced strategic goals and plans rather than grandiose ones aimed at, for example, creating the next Silicon Valley, are not

only the most effective in the short, medium and long run, but are also deemed most credible by taxpayers.

4. In determining what to manufacture, it is fruitful to focus attention on the typical needs, in terms of hard goods, for individuals and families in a “normal” North American and European tradition, and hence what they are prepared to pay hard-earned cash for. Needs must be carefully distinguished from wants, particularly those generated by hyper-ventilated marketing efforts. Boring as it sounds on the surface, developing local infrastructure for creating goods that people can actually afford and use, while knowing this creates jobs for themselves and their neighbours, is a surprisingly compelling (if not sexy) proposition.

For example -- among many that could be cited -- when people start to seriously ask what the real reasons (as opposed to the assumed ones) are for why basic household goods like pots, pans, cutlery, crockery and textiles of various kinds supposedly cannot be effectively manufactured in places like British Columbia by British Columbians, things really start to happen in terms of generating practical ideas. Price points would become less relevant to consumers if these were put up against concrete economic advantages for communities, including good jobs. Cheaper goods from low-wage countries would therefore become much less attractive. (This has been the experience in South Korea, Japan and Singapore, countries that also have strong export performance.)

As a specific industrial strategy for manufacturing rolls out, one of the significant economic spin-offs will be the opportunity for new and established local businesses to create various specialized components as well as service / maintenance protocols for the tailor-made infrastructure and production facilities that will be required to make the targeted clusters come to life. More on this below.

5. The revolutionary design, development, prototyping, and small-scale manufacturing options afforded by 3-D printing, nano-creation and bio-manufacturing technologies are well worth embracing with alacrity, in the quest to find durable goods for personal, industrial and commercial use that lend themselves to scaling up to larger scale production for domestic and international markets. Bringing down the cost of failed attempts in product development increases the likelihood of broad-based success at the necessary scale to warrant the construction of actual factories.

Marrying this to a full-fledged embrace of the scientific, technological and engineering revolution facilitated by the rapidly emerging spectrum of advanced materials available for clean fabrication and demanding applications of all types, provides the platform for a 21<sup>st</sup> century manufacturing sector. British Columbia’s abundant supply of built and potential hydro-electric energy facilities would ensure the overall environmental sustainability of the sector.

6. British Columbia, and particularly the Lower Mainland, currently embraces the notion of encouraging soft-ware development, despite the fact that such primarily entertainment based ventures rarely stay in the province once they become successful. In the world described here, this sector would be re-focused on key industrial enablers such as embedded sensors, chain matrixes and technical circuitry that bring advanced manufacturing opportunities to optimal life while creating both direct and spin-off employment opportunities. Being intimately connected to local manufacturing operations through a symbiotic local



supply chain arrangement, such business operations would be unlikely to relocate away from B.C. What is to be avoided is the development of applications and soft-ware, such as those related to excessive automation, which actually put people out of work, while contributing very little to overall productivity, competitiveness or economic success in any particular manufacturing sector.

7. The reality of globalized supply chains, made possible by the proliferation of information-communication-technology processes, often disperses production stages that previously had to be performed in close proximity. Therefore, identifying whole sectors for industrial policy support is important, but no more so than focussing on the different stages in the overall production process in which an economy such as British Columbia can develop a comparative advantage. Policy must be based on a sophisticated understanding of these global value chains in the interest of capturing as much benefit as possible for British Columbians.

This would include, in particular, the identification of those sectors where a regular and steady flow of information and feedback between research and development, product design and manufacturing is enhanced by close proximity. These connections are particularly important where there is rapid innovation in the means by which new products are developed and productivity evolves. Identifying which sectors and technologies gain competitive advantage from comprehensive regional or locally clustered activity is an important task in developing an effective industrial and technology policy for British Columbia.

More to the point, this is also the sort of careful planning that nets the largest numbers of good jobs for a variety of skill levels. In short, the quality of B.C.’s R&D base will not be enough to compete in a global system of product creation. The capability to rapidly translate novel emerging technology R&D into product development and the ability to coordinate the complex industrial systems necessary to locally produce saleable commodities are the critical factors for capturing maximum value from manufacturing-based industries.

8. To focus down even further on the points above, sustainable high-value manufacturing of all types requires inputs from an extended set of actors: small and medium sized enterprises providing high value components, specialist engineering consultancies, R&D service providers and advanced equipment manufacturers. The “health” and competitiveness of these broader manufacturing “ecosystems” within British Columbia must be considered if the province is to attain the optimal benefit from any pivot to manufacturing around targeted clusters rather than exporting technology advances to other jurisdictions where these key factors flourish.

An important part of the strategy should, therefore, be to systematically scan across all possible manufacturing sectors to better identify and understand cross-cutting manufacturing challenges and opportunities, common innovation infrastructure requirements, emerging skills needs, technological priorities and competing (and compatible) demands for resources. This sort of planning creates an entirely new set of job-creating options and ensures that local capabilities are up to the task of supporting and enhancing the relevant sort of industrial technology firms to start-up or relocate to B.C. to carry out an industrial strategy around targeted manufacturing. It also means that we can not only successfully

“make bets” on specific and complementary local clusters but also have the capability to respond to overtures from elsewhere for specialized support, technology development, commercialization and full-scale cluster implementation.

9. Embracing the notion of consciously factoring in to the cost structure for the manufacture of specific products the value of creating as many good jobs as possible is the only way to break the unfortunate cycle whereby products are created that fewer people help produce and can afford to purchase. The limits to mechanization and robotics (and eventually artificial intelligence) will not be found in technical or scientific considerations, but rather public policies sensitive to primary sociological and cultural considerations that consciously lead to a new perspective on essential economic factors.

For example, what does it take to get a manufacturer who is building a new factory or retrofitting an old one to decide to choose a level of mechanization that makes only 50 workers redundant instead of 100, while remaining competitive and moving towards higher-skilled, better paid positions? It is fruitful to deeply consider what are the motivations, incentives and realities that would cause that manufacturer to grapple with such an important question, and then create public policies that exploit that decision matrix in favour of the BC economy. “Technological unemployment” must be seen as a matter of public choice rather than an inevitability.

All economies are now competing for the “jobs of the future” that require complex tasks, judgement and decision-making as opposed to “routine” jobs that involve limited sets of rule-based tasks. It is currently uncertain as to whether or not there are limits to the number of higher-end jobs, but it cannot be denied that any jurisdiction that does not pursue them is doing a disservice to its citizens. Smart policies and regulations limiting extreme automation would facilitate the retention of as many of these jobs as possible for as long as possible in British Columbia while allowing firms to remain competitive. This approach has been standard in South Korea, Japan and Singapore for some time, and these countries continue to have reputations for creating goods of the highest quality while maintaining good wages for workers.

10. The now standard sops to attract business investment to any jurisdiction, i.e., broad-based tax incentives, free land, and cross-the-board deregulation (the so-called pump-priming reflected in the writings of Josh Lerner, as discussed above) are now deeply discredited, on many levels, as failed public policy initiatives. In the end, they encourage a race to the bottom among jurisdictions, while rewarding the owners of the companies which play the game, with little direct advantage being created for local communities .

To focus the creative juices necessary to awaken and harness true innovation, while maximizing all possible multiplier effects for the benefit of tax-payers, much more is needed. Nothing will do, short of government becoming involved in tailor-made, purpose-built infrastructure, targeted education / training programs with an emphasis on STEM disciplines, and nuanced research and development platforms tied to aggressive technology transfer arrangements around carefully selected finished product clusters. Such public investments are the primary source of leverage in carefully crafted agreements to ensure the

maximization of job creation while guaranteeing that corporations which locate in British Columbia stay put and do not re-locate any part of their operation elsewhere unless exceptional factors dictate.

11. If such policies and programs are properly crafted and implemented, economic advantages and spin-offs of a general nature such as good job creation and enhanced communities will result. But there can be no doubt that they will also significantly enhance the bottom-lines of the private sector firms partnering with the BC government on the designated clusters. Therefore, the provision of such tailor-made public goods demands detailed quid pro quos from private partners that specifically relate to the achievement of short, medium and long-term economic and social development goals for British Columbia. To point, essential public services should not go wanting in a province that hosts a high value manufacturing sector. Tax and royalty structures would need to be rebalanced.

12. In cases where we cannot capture all economic aspects of a targeted industrial cluster and do not have an adequate innovation base for full-spectrum production, we might consider developing “special relationships” with smaller economies that are particularly productive in the industrial technology world. In such arrangements they would get preferred access to a larger market, i.e. Canada through British Columbia, and we would be assured good jobs by taking over key aspects of their manufacturing matrix. This would work well with countries like Israel, Sweden and Singapore which have large reservoirs of creative human capital through impeccable higher education, but also have national economies too small to realize the full value of that advantage. This sort of arrangement would take the concept of economic “complementarity” to new levels.

13. Tax incentives should primarily be used to restore the relationship between wage increases and productivity gains or the direct creation of jobs. The profits of firms that share the benefits of productivity increases with their workers should be taxed at lower rates than firms whose executives and shareholders pocket the gains while ignoring the workforce. Alternatively, tax credits would be given to companies that created new jobs at a living wage or when it could be objectively shown that by choosing to retain certain good jobs they might well put themselves at a disadvantage relative to their competitors. Similarly, mimicking what is done in Norway, Finland and Germany, companies that hold onto employees during economic down-turns, because they see the value of retaining them for when business picks up, should be given appropriate tax concessions.

14. Most North American and European jurisdictions are now questioning the usefulness of R&D tax credits and rightly so. Far from remedying a market failure, what has frequently happened is that R&D spending by the private sector actually decreases and the economic benefits are therefore minimal. Companies capable of fitting the necessary criteria often work out the means by which they do not have to actually change their behaviour to receive the cash which can readily be spent on internal rearrangements, acquisitions or dividends rather than what was intended.

British Columbia, in conjunction with the federal government, will need to tighten up such programs, attaching stringent conditions. In the alternative, it may choose to re-focus all of its R&D funding exclusively on universities and research institutions (without industry collaboration) where it can retain a

proprietary interest in outcomes and then demand significant cash contributions or royalties from corporations to benefit in the follow-through innovations and commercialization.

15. The British Columbia government must lobby the federal government and other provinces to adopt full employment as a high priority goal of general macro-economic policy in order to garner the wage increases such policies would generate. Because medium to large businesses will find it difficult to raise prices, higher wages would likely come out of profits for corporations, which now stand at an excessive share of national income in any event. This might prove problematic if businesses were short of capital for investment. But the reverse is the case, at least for the larger firms and many medium-sized ones which have been accumulating huge stocks of retained earnings that languish on the side-lines or are used to fund mergers and stock buy-outs. If companies such as these, be they local or from outside the province, want to be partners in a valuable industrial strategy for B.C. then they should be required to change in their behaviour as part of the “price of admission”.

16. The power of government procurement contracts must be strategically and solidly linked to any initiative that embraces the above-noted considerations. To the greatest extent possible, companies that create reasonable quantities of good jobs must be given priority when it comes to purchase agreements funded by the public purse. Also, much can be learned from the practice in Germany, Britain and the USA where governments enter into “customer innovation contracts”, around select R&D efforts, as a source of funding for start-ups when venture capital funding is not readily available.

17. Government must take the lead to facilitate the vital synergies among research institutions and universities, education and training colleges, business entities, manufacturing operations, merchant banks and venture capital firms, essential infrastructure, government agencies, residences, shops and services by producing creative development plans to allow for essential close proximity among these entities. This requires the thoughtful planning and development of what have become known as “innovation districts” within our cities but also smaller communities where appropriate.

Dynamic examples of these shrewdly planned neighbourhoods are springing up throughout the USA and Europe. The phenomena was carefully documented by Bruce Katz and Jennifer Bradley in their 2013 book, “The Metropolitan Revolution: How Towns, Cities and Metros are Fixing our Broken Politics and Fragile Economy” (Brookings Institution). In British Columbia this would require, of course, a significant level of coordination that does not currently exist among the provincial, regional and municipal governments, non-developer business people and potential manufacturers. Departing from current practice, property developers and financial services would only be brought into the conversation after the best interests of local communities had been clearly delineated.

#### A KEY PRE-CONDITION

To accomplish the economic evolution discussed above, nothing less will do than the return of government itself as a truly effective force within British Columbia. As part of this, a re-calibration of what is understood as the proper role for government is in order. To that end, the political economy of the

province will need to be significantly rebalanced. Capacity will have to be re-built after decades – really generations – of emasculating what was once one of the best public sectors in the world. British Columbia needs to pivot (back?) toward what some influential writers are calling “mission-oriented government”.

Re-forging a more appropriate relationship between the corporate sector and government requires the recruitment and empowerment of people, at all levels of responsibility, who are the best of the best. They must have the ability to do the qualitative and quantitative analysis necessary to effectively spot, respond to and then materialize economic development opportunities, while subsequently providing smart oversight and regulation. Careful attention to institutional design and enabling legislation will be essential and must reflect best theory and practice from around the world. Transparency will be key.

I fully understand the political challenges that would be created for any government or aspiring political party in re-establishing true effectiveness in the public sector. Clear, crisp public communication around what it really takes to create good jobs in British Columbia, as opposed to the various flights-of-fancy which have dominated political discourse for some time, will be essential. Pointing to what other jurisdictions around the world are doing to create more broadly-based prosperity will also help, and I will touch on that below.

#### OPTIONS FOR COMMERCIALIZATION

Most of what I have written above assumes a continued reliance on private sector business entities for venture implementation even if government adopts a firm hands-on approach in the pre-commercialization phases and benefits from sharper expectations around returns on any public investment. If this were to come about, it would be a significant improvement on what has passed for economic development efforts for the past 30 years, at least in North America.

For a long time government efforts have involved determining how to incentivize the private sector to do what the public sector wants it to do in the interests of its citizens. A carrot-and-stick approach (in practice, more carrot than stick) has been utilized but, as discussed above, normally with mediocre results at best. In the end, commercial interests have generally decided which business clusters they will pursue, on what terms and in which jurisdiction.

Maximizing the creation of good jobs or various local economic spin-offs has not been a key focal point in corporate business planning for three or four decades. Of course, positive community benefits often have resulted from private manufacturing sectors around the globe, but by- and-large providing maximum returns to shareholders is what matters most.

All to say, is there any good reason to believe that private corporations will actually go along with a government led effort in British Columbia to bring about a pivot to manufacturing through a full-fledged industrial strategy that emphasizes citizen benefit? Simply put, corporate priorities may not adequately line up with provincial goals, even after careful negotiations.

There are traditionally two primary means to develop private commercial vehicles to make publicly sponsored R&D efforts, infrastructure investments and so forth come to life. B.C. niche investors can

kick-start it all with initial support to start-ups or early-stage expansions that then attract serious money from elsewhere. Alternatively, government officials can troll for relevant corporations from abroad to make a move to British Columbia to help implement the plan. In either case, maximizing the public benefits would require the involvement of business people who take a more enlightened approach than has been the standard in recent decades.

As noted above, the appearance in North America of a new generation of business leaders, investors and venture capitalists who balance significant social and environmental goals with their pursuit of personal enrichment is an important and encouraging development. Much of this mimics the well-established traditions in certain European countries where deep seated cultural and sociological realities support a socially responsible approach to commerce that emphasizes self-restraint in profit allocation. And it should not be forgotten that in the post-WWII period up to the 1970's both labour unions and government were a major force in the North American economy and therefore corporations more readily recognized and embraced their community responsibilities.

Certainly there is no shortage of aspiring young business people in British Columbia who have business plans incorporating social responsibility which they are trying to commercialize. If the necessary fundamentals were in place, many of them might well be tempted to consider developing and launching advanced manufacturing operations. The real difficulty begins when they attempt to get their ventures funded.

It has been my observation that while there is much talk about such a “new” approach to conducting investments in British Columbia, there is very little real action along those lines among the very small group of firms and individuals with adequate resources to kick-start a pivot to manufacturing or anything else for that matter. The current pool of risk-taking entrepreneurs and investors in B.C. is primarily focussed on real estate development, the film industry, information technology, building and maintenance of infrastructure and resource extraction, with little indication that they have the expertise or desire to divert to other priorities. Similarly, the line-up of big deal oriented merchant bankers, venture capitalists and financial specialists in the province (outside money generally follows local champions) is woefully thin, technically challenged and likely incapable of delivering the arrangements necessary to facilitate a large-scale pivot to a manufacturing based economy, assuming they could be convinced to attempt this in the first place.

That being the case, the alternative, as mentioned, is to aggressively attract to B.C. established and adequately financed companies from outside the province (or at least progressive venture capital firms to fund a certain type of local entrepreneur) which buy into the notion of a government-led industrial strategy centred on manufacturing and are also prepared to embrace their responsibilities to the communities that host them. This is a real possibility if done intelligently and aggressively and should not be dismissed out of hand. But it also has its costs in terms of key economic benefits not being retained locally and this must be carefully considered.

At its worst, if we don't have the means to locally follow through and capture an adequate amount of the downstream advantages that flow from B.C. based research and development then we are simply

continuing a well-established Canadian tradition of exporting our ideas, prototypes and technologies with commercialization benefits being realized elsewhere.

Unfortunately, this has been the experience for many Canadian business people who have benefitted from technology transfer arrangements in this country and then created successful manufacturing operations in Europe and the USA. Often, it was not from a lack of trying and serious effort that these companies were not able to remain in Canada. The necessary local factors were simply not in place to make it viable.

Some analysts have said that the lack of local venture capital to initiate or attract businesses to implement an industrial strategy in B.C. can be remedied by large public investments in business development banks and government led financial institutions. Perhaps. But much would have to be learned from analyzing the past failed attempts with these sorts of institutions both here and abroad. I am sceptical that the inherent weaknesses of such financial institutions can be adequately corrected as part of detailed economic policy for the province. I prefer another alternative which I will now discuss.

#### THE RETURN OF PUBLIC ENTERPRISE?

The spectrum of options available to commercialize an advanced manufacturing industrial strategy opens up, if the primary goal of government funded economic activity is to ensure that as many benefits as possible – including good job creation – flow through to local communities. The time may well be at hand when the B.C. government should draw on its proud tradition of crown corporations and public enterprises of all kinds to effect a pivot to manufacturing in the province. The return of a truly mixed economy would restore the advantages of financial balance and synergy in British Columbia.

Public enterprises are the most reliable means to ensure that manufacturing operations remain in the province once they are established and that corporate earnings are used for human resource development and local public services rather than primarily for the enrichment of private owners. Also, the use of crown corporations cuts out the need for risky (and sometimes nonsensical) inter-sector negotiations around who gets the down-stream benefits from the up-front heavy lifting carried out by government. Nothing about any of this would undermine the capability of crown corporations to be as efficient and effective as necessary to be competitive on the world stage.

Similarly, the cost-benefit analysis that has been done, both here and around the world, on public-private partnerships reveals unsatisfactory results. Crown corporations allow for the choice of industrial sectors that create as many good jobs as possible without the need to ensure traditional financial returns to share-holders. And public enterprises would be able to take the “long view” in their business planning rather than succumbing to the short-term perspectives required by share-holders in most businesses today.

Of course, important questions must be seriously posed and carefully answered. Is there something inherently compelling about private-sector management techniques and risk / incentive structures that make these absolutely essential to developing and commercializing technological and scientific breakthroughs? Are managers on the public payroll fundamentally incapable of mastering the techniques

and processes required in the new era of advanced manufacturing? Does government organization and culture preclude accurate risk analysis and financial success? The history and state-of-the-art with public enterprise around the world would need to be consulted. But, in the end, the answer to questions such as these depends on the level of craftsmanship and alacrity displayed in the essential re-construction of government capabilities, as referenced above.

It must also be said that the current state-of-the-art in public finance theory -- and a sober assessment of where the “real money” usually lies in terms of cash available for ready deployment --tends to lean against the use of publicly controlled institutions as the pivot-points in economic development efforts. But if local investors and entrepreneurs in B.C. and elsewhere only want to pursue self-serving ventures rather than community building ones, what alternative does a well-meaning government have? In any event, given the current and long-running economic doldrums, at least some influential economists are beginning to question the standard theories.

And with the B.C. government books in better macro-economic shape than many other jurisdictions (this, of course, has very little to do with whether or not the majority of our citizens are prospering or are at least “above water”) there is an excellent chance that public and private borrowing and investments will be on equal footing with no crowding out, one against the other. This allows for vibrant public and private enterprise to co-exist and even for true inter-sector partnerships involving respectful synergy on both risks and rewards. There is no reason to believe that deleterious macro or micro economic effects would result. More likely, if the public sector shows its determination to rebalance the political economy of the province, the private sector will adapt appropriately as it always has at critical junctures in the past.

Utilizing crown corporations, in the context I am talking about, will not be primarily about achieving economies of scale as in the past when large public infrastructure projects were necessary and could not be otherwise financed, although it could be argued that is certainly important when kick-starting an entirely new manufacturing sector for the first time. (As noted above, at its best a smart industrial strategy builds capacity that cuts across the sub-sectors of the manufacturing spectrum to maximize current and potential opportunities). As has been shown in other parts of the world, public enterprise can exist at whatever scale is necessary when if the goals are sound and strategic plans are feasible.

Today, launching public enterprises in B.C. should be about nothing more nor less than determining how net revenues can best be utilized to create the maximum number of good jobs and other local economic spin-offs while remaining competitive in all senses of the word. Simply put, if you cut out the need for pay-outs to private share-holders and management, you have an awful lot of resources to work with to reinvest in the economy to improve conditions in B.C. communities.

Essentially, what I am saying is that a B.C. government, progressive or otherwise, needs to break out of the standard path of the past three or four decades and think disruptive thoughts because those are the ones that are vitally needed in 2015 and beyond.



#### WHAT’S HAPPENING ELSEWHERE?

While many leaders in the U.S.A., Britain and Europe have continued to talk the neo-liberal talk, they no longer walk the walk. The fact is, most of them are committed to doing whatever it takes to create good jobs for their people. They have come to realize that when their people are hurting they can’t remain dogmatic about not boldly intervening in the economy. They have also come to terms with the fact that the Great Recession really did change everything and this must be taken seriously.

It is unfortunate that many government leaders in Canada have not come to the same conclusions and made the necessary shifts towards a rejuvenated political economy. Our banking system weathered the initial storm and complacency has prevailed ever since. But the negative ripple effects of the recession as they relate to the job market should have been anticipated and taken seriously as many respected analysts were urging.

Much has been written about the approach, in certain parts of Europe, to organizing national and regional economies and, in particular, human resource strategies. In most cases this involves an unabashed interventionist role for government, a significant reliance on public enterprise, balanced public-private partnerships (via shrewd financing arrangements and targeted regulation) and clear expectations around the need for corporations to invest in both their employees and the communities they operate within.

What’s more, this way of doing things within say the Scandinavian countries has, by and large, stood the test of time. Business people operating factories there speak of being both the beneficiaries and willing participants within full-on industrial strategies and an economic system that has clearly defined requirements around the social responsibilities of corporations. Such business people have seriously considered the question of “how much is enough?”, in terms of owner enrichment, and have come to decisions that are currently unheard of in North America (including British Columbia) in respect to stakeholder rights, including those of employees.

Further, Germany’s continued high performance in the face of unprecedented global challenges is impressive, reflecting an approach that has been finely tuned for several generations. In particular, their skills training system which is intimately connected to specific industrial requirements and employee centred labour laws, is quite remarkable. The owners of manufacturing operations accept the expectations and then reap the benefits of the German way of doing things. They are happy partners in the well-established state-sponsored partnership among labour, business and government which hones, on an ongoing basis, the details of a highly specific national industrial strategy.

Similarly, South Korea and Japan have more than 20% of their economies built around manufacturing. Labour costs in these countries are high and yet they still have managed to create and sustain strong, highly competitive manufacturing economies, leveraging their only true resources which are a highly educated population and highly effective government agencies. They are also some of the top exporting economies, sending their finished products around the world.

Again, all of this has been carefully documented and reports of various types are readily available. Nothing would be served by my referring to it further here. But current (or potential) decision-makers in British Columbia would avoid doing their homework on this at their peril.

The tools I listed in the section above, “Lessons from the Field”, give a summary of what I think will work in British Columbia from what I have learned in doing business and dealing with governments both in North America, Europe and elsewhere. Not all of what Canadian business-people have experienced abroad is adaptable to Canada, but much of it is.

Also important to consider from a Canadian perspective are the initiatives within the USA which draw upon, where prudent, the European experience and then go the extra mile in terms of plans appropriate to North American conditions. Again, current and aspiring leaders in British Columbia could do no better than to conduct a careful review of an initiative begun by the Obama Administration in 2010 known as the “Advanced Manufacturing Partnership”. (Of course, with this program the Americans are doing a “re-set” based on a grand tradition of manufacturing and a business culture that is historically very flexible when the need arises). This aggressive and well-funded program by a broad-based group of federal, state and municipal agencies, which have become effectively synchronised, has launched advanced manufacturing research centres that have, in turn, led to regional manufacturing hubs.

These regional entities operate in a manner that is less than deferential to long-standing vested interests, being remarkably focussed on the development and commercialization of specific product clusters and local prosperity through the creation of good jobs and other economic spin-offs. Of particular note, is how various levels of government have re-built necessary capacity to make it all happen in a relatively short amount of time through carefully crafted agreements with the private sector. The willingness of the private sector in the United States to engage in such arrangements precludes the need for public enterprise to be at the centre of it all.

This initiative in the USA has made considerable progress in just five years although it has not received the attention it deserves from the main-stream media. Various reports coming out of The Brookings Institution are probably the best source of detailed and reliable information on the Advanced Manufacturing Partnership.

## CONCLUSION

Nothing about attempting a pivot to manufacturing in British Columbia should be considered simple or without considerable risk. On the other hand, if our leaders maintain the status quo – which is basically to do very little while letting the market rule -- the medium and long term outcomes will be bleak.

In my opinion, anything is possible with careful attention to best practices from around the world, the recruitment of top-notch government management, the re-building of government capacity in a comprehensive manner and crisp, smart execution of detailed strategic plans.



