**Mining the 'Raw Materials of the 21st Century Economy': Innovation and
Economic Development in Canada**

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Abstract

This thesis examines the Canadian state's role in securing the conditions required for stable capital accumulation in an emergent post-Fordist knowledge-based economy. Specifically, it charts the appearance of an "innovation policy paradigm" at the level of the federal government since the early-mid 1990s, and considers its role in shaping development policy. At the heart of this paradigm is the conviction that firms must become continuously innovative in order to remain competitive, and that states have a role to play in fostering the conditions required to stimulate innovation. However, this thesis argues that the version of the paradigm adopted thus far has been undermined by various structural features of the Canadian political economy, many of which have resulted from Canada's historic patterns of economic development, as well as certain contradictions of the paradigm itself. The federal government's recent "Innovation Strategy" points in the right direction, but is insufficient.

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Chapter One: Introduction

“To secure our continued success in the 21st century, Canadians must be among the first to generate new knowledge and put it to use. Our objective should be no less than to be recognized as one of the most innovative countries in the world. Achieving this will require a comprehensive approach and the support and participation of all governments, businesses, educational institutions, and individual Canadians. We must strive for Canada to become one of the top five countries for research and development performance by 2010.”

Canadian Speech from the Throne 2001

“A slow sort of country” said the Red Queen. “Now here, you see, it takes all the running you can do to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!”

Lewis Carrol, Alice Through the Looking Glass

By the time the federal government published its “Innovation Strategy” in 2001, the improvement of Canadian competitiveness and productivity through innovation had long been a key feature of its economic development strategy.¹ Indeed, the goal of making Canada “one of the most innovative countries in the world” as pledged in the 2001 Speech from the Throne had been a central plank of the state’s development strategy since the early 1990s. Throughout the 1990s, a stream of programs and policies were launched, all of which aimed at encouraging research and development (R&D) investments in the private sector, commercializing research done at universities and other R&D institutions, increasing the application of science and technology (S&T) across all sectors of the economy, and developing a highly-skilled and flexible labour-force capable of competing in a “new economy.” Canadian capital would become more globally

¹ The Innovation Strategy comprises *Achieving Excellence: Investing in People, Knowledge and Opportunity* (Industry Canada 2001) and *Knowledge Matters: Skills and Learning for Canadians* (Human Resources Development Canada 2001).

competitive, develop leading technologies and industries and, in turn, the Canadian economy would expand and provide high-paying jobs to all.

Despite the Canadian state's attempts to make the economy more innovative, the evidence suggests that Canada's performance has not improved very much at all. In fact, the country is still regarded as suffering from an "innovation gap" (or alternately a "productivity gap") in relation to other OECD countries, and in particular the US (Industry Canada 2001, 16; Standing Committee on Industry, Science, and Technology 2001, xvi).² Scholars have also identified this gap, as well as the sense of urgency that it provokes. For example, Britton et al. write that Canada's task "of catching up to some of the leading nations is urgent and is made the more pressing because the substantial and growing commitment to S&T by governments and firms in other industrialized countries is producing impressive growth in their economic capability" (1996, 434). Thus, though the two-part Innovation Strategy details the steps the state, the private sector, and post-secondary education and research institutions must take in order to close the innovation gap, it would seem that Canada had already become what Alice's Red Queen disdained: a "slow sort of country," guilty of not running quite fast enough.

This thesis considers the emergence of an innovation agenda in Canada from the early 1990s to 2001's Innovation Strategy, and is guided by the central question: does the federal government's innovation-centred development strategy constitute a suitable

² Rounding out the image of Canada's gap troubles is the argument that the country also suffers from a "strategic research gap," or a lack of private sector investment in medium- to long-term strategic research and development (Standing Committee on Industry 1997, in its *Review of Science and Technology and the Innovation Gap in Canada*, p.8).

framework for Canadian economic growth? The question is not simply academic, for given the degree to which the state has accepted the central premises of innovation-led growth over the last decade much depends on whether the development strategy it has engendered can respond to the particularities of the Canadian political economy. This in turn raises a number of important and interesting questions: Can the Innovation Strategy encourage Canadian firms to become more innovative? If so, will Canadians benefit from the new jobs created in high-technology sectors? If not, what are the consequences for labour, then? Is the state focusing on the right areas, and can Canadians be assured that the resources expended to assist capital become more globally competitive yield real public returns? Answering the central research question requires a theorization of how the innovation agenda has come to constitute such an important component of economic development strategy in the North Atlantic capitalist economies, and the role of the state in fostering the conditions for growth. For this, I situate this research project in both “real world” and academic contexts.

A Question of Context: Situating the Project

That Canada should adopt a development strategy based on fostering innovation is hardly unique among advanced capitalist countries. The Canadian case must therefore be seen in relation to wider trends. This project begins with the economic crisis of the 1970s and 1980s, and the end of the long post-war model of development known as Fordism. As jobs were lost, capital accumulation slowed down, profits plunged, and an all-around economic malaise affected advanced capitalist economies, capital sought new alternatives

(Chapter Two elaborates on this discussion). The Regulation Approach and the work of Jessop in particular offers a useful theoretical framework within which to situate my case, since it provides a conceptualization of “real world” capitalist development, the breakdown of Fordism and the emergence of a post-Fordist knowledge-based economy (KBE), and the role of the state in securing the conditions for growth.

The Regulation Approach (RA) emphasizes the “improbability of capitalist reproduction,” and attempts to identify the “changing conditions which (allow) production and consumption to be combined temporarily into a virtuous circle of accumulation” (Jessop 1997, 505). The temporary “virtuous circle of accumulation” that followed the Second World War, Fordism, had by the 1970s begun to disintegrate. The crisis in the Fordist mode of production has become more pronounced since the 1980s, as neoliberal prescriptions have largely not led to restored expansion (see Jessop 1993, 1994; Macdonald 1991; Amin 1994). As Macdonald has written, while there is considerable debate as to an exact post-Fordist configuration, “there is a common conviction that a new regime of accumulation and a different mode of regulation, which will stabilize the next round of capital accumulation on both a national and international scale, are being established” (1991, 183). While not universally agreed upon, it has been suggested by many observers including Jessop that we are witnessing the emergence of a new cycle of capitalist accumulation often referred to as post-Fordism. This term is usefully combined with the KBE, a concept intended to focus attention on the newly-important roles knowledge and learning play in economic processes today. Of the many features of a post-Fordist KBE, this thesis focuses on two: first, the fundamental role

innovation and knowledge are seen to play in production (particularly in knowledge-based industries in the services and newer manufacturing sectors), and second, the new sites at which this production occurs.

With the emergence of post-Fordism, capitalist states as leading “regulators” of capital accumulation have struggled to devise a set of policies to restore productivity gains, growth, and employment—a struggle that continues to this day. The dominant response by states in North Atlantic economies has been a neoliberal one. In neoliberalism, capital is made more competitive by way of market “discipline,” and the state is rolled back accordingly so as to eliminate the conditions that were seen to have made capital uncompetitive (i.e. subsidies, tariffs; see Chapter Two for this discussion). In this context, how does the state figure in the regulation (or, to use a term more comfortable to Jessop, the regularization) of capitalist reproduction? For Jessop, this question is dealt with by considering the state-form: identifying the changes in the form and function of states corresponding (in complex ways) to the overall transition from Fordism to a post-Fordist KBE.

We can observe a new form of state emerging in conjunction with the way in which economic, political, and social forces have begun to respond to the crisis-tendencies racking Atlantic Fordism (Jessop 2003, 5). Thus a transformation of North Atlantic capitalist states has been underway since the Fordist crisis, in which the previous Keynesian Welfare National State (KWNS) is being replaced by an emergent Schumpeterian Workfare post-National Regime (SWPR) (Jessop 2003, chapter three

generally). The Schumpeterian state denotes a “tendential crystallization of a distinctive form of state concerned to promote economic and extra-economic conditions deemed appropriate to the emerging post-Fordist accumulation regime” (Jessop 2003, 95). This new form of state has specific economic and social objectives, including, broadly, the promotion of innovation, supply-side intervention, and “the subordination of social policy to the demands of labour market flexibility and structural competitiveness” (Jessop 1993, 9). I employ the SWPR as a template for the transformation of the Canadian state.

Still, at what point did the focus on innovation appear? I turn to a second main literature, systems of innovation theory, to describe the “innovation policy paradigm” that emerged by the early 1990s. As I discuss in Chapter Two below, the innovation policy paradigm gained authority among state managers not only in Canada, but across most advanced capitalist economies as well. Systems of innovation theory provides a useful conceptualization of the way in which innovation is generated in an economy, and focuses on the role played by knowledge and interactive relationships among firms and R&D institutions. Based on the conviction that economic growth was intimately related to the degree of innovativeness in an economy, the paradigm came to play an enormous role in states’ policy-making as they continued their search for that strategy that would lead to restored economic growth and productivity, as well as employment, in the emergent post-Fordist KBE. Competitiveness based on continuous innovation had come to be understood as the path to growth, and states had a role in securing the conditions that would foster innovation across the economy.

Therefore, that Canada should adopt an economic development strategy based on the core tenets of the innovation policy paradigm is not at all odd; indeed, it has become the dominant strategy throughout advanced capitalist economies over the last decade. For example, in the US, former President Clinton remarked that “American technology must move in a new direction.... [and] (w)e must aim directly at these new challenges and focus our efforts on the new opportunities before us, recognizing that government can play a key role helping private firms develop and profit from innovations” (Clinton and Gore Jr., 1993, 1). For his part, UK Prime Minister Tony Blair, referring to new technologies and the challenges of a knowledge-based economy, remarked that “[o]ur success depends on how well we exploit our most valuable assets: our knowledge, skills and creativity.” These things, says Blair, “are the key to designing high-value goods and services and advanced business practices [that are] at the heart of a modern, knowledge driven economy” (quoted in Jessop 2000, 1). Reflecting these sentiments are scholars like Vonortas and Tolnay, who note that, in coming years, “the economies that perform the best will be those whose governments help develop and manage their knowledge assets most effectively for innovation” (2001, 375). Expanding on this, they add:

“The gradual emergence of the knowledge-based economy, in combination with mounting competitive pressures and a better understanding of the innovation process, has led to a very significant shift in the science and technology policy orientation of most industrialized countries over the course of the past few decades.” (Vonortas and Tolnay 2001, 393)

Thus, this project’s subject should be seen to reflect real-world issues, since the turn towards innovation-led growth strategies has been much in evidence throughout the OECD. At the same time, this theoretical framework is insufficient, for if we are to

determine whether the innovation policy paradigm and the development strategy it supports is suitable to the Canadian case, we must gain an understanding of the pattern of Canadian economic development over time. Of particular importance is Canada's experience with Fordism and the KWNS, since both constitute the foundations on which the post-Fordist KBE and SWPR are being established. To add this dimension to the framework, I turn to insights developed by a tradition in Canadian political economy scholarship. Ultimately, it is hoped that this project might also contribute in its own small way to a long-standing dialogue within Canadian political economy, and thus it can be situated academically as well as in relation to the wider context outlined above.

One of my goals is to situate this project within the discussion in Canadian political economy on the national state and economic development strategies. As such, it attempts to interact with the insights advanced by the "new Canadian political economy" (NCPE) literature of the 1970s and 1980s, which grew out of the staples analyses of Innis and Mackintosh and was infused in the later post-war years with elements of Latin American dependency theory and critical analyses of the state (see Mahon 1993; Albo and Jenson 1989; Clement and Williams 1989). This thesis finds the core research agenda of the NCPE a useful analytical framework with which to view modern-day Canadian economic development. In particular, the NCPE's analysis of "permeable Fordism" (Jenson 1989) provides extremely useful insights, as discussed below and in Chapter Three.

By constructing a theoretical framework in this way, then, I intend to answer the guiding research question introduced above: does the Canadian government's version of the

innovation policy paradigm constitute a suitable framework for development strategy in Canada? I aim also to situate the project within the literatures described above, especially within Canadian political economy. For despite the fact that the NCPE emerged thirty years ago, I contend that much analytical value obtains today, since Canada's historic patterns of development largely influence the shape of present-day and future development. This brings us to the thesis itself.

The Way Forward: Towards a Hypothesis and its Resolution

This thesis begins with the assertion that the innovation policy paradigm, and the economic development strategy it supports, constitutes the latest attempt on the part of the Canadian state to secure the conditions needed to restore stable capital accumulation in an emergent post-Fordist knowledge-based economy (KBE). The latter, though still consolidating in the wake of the Fordist-Keynesian crisis of the 1970s and 1980s, involves new competitive challenges for capital, as well as for the states serving as key regulators of the conditions for capital accumulation. However, this thesis argues that it is not at all certain that a development strategy based on the version of the innovation paradigm adopted in Canada can yield the type of innovation-led growth envisioned by Canadian policy makers and industry leaders alike.

This hypothesis therefore departs from the idea that innovation performance can be easily improved through considered policy, such as vastly increasing S&T and R&D expenditures as pledged in the 2001 *Speech from the Throne*. In this version, innovation

is seen by the state as “a race that is run over and over again as other nations continue to invest in their capacity to innovate,” (Industry Canada 2001, 31). It would seem, then, that Canada needs only to heed the Red Queen’s advice and run twice as fast as it has been in order to close the gap. If Canada’s goal is to be among top five in the OECD in R&D funding by the year 2010, it will have to increase gross expenditures on R&D (GERD) as a ratio of GDP to about 3%. However, the Standing Committee on Industry, Science, and Technology notes that other countries are proceeding much faster: Finland and Sweden are both expected to have GERD-GDP ratios around 4%, leaving some doubt if doubling expenditures on R&D will be enough (2001, 38). Would running three times as fast be sufficient, then?

However, it may be that doubling or even tripling expenditures on R&D will not improve Canada’s innovation performance. Indeed, there is a possibility that one or more other factors might account for Canada’s poor innovation record. I hypothesize that the innovation policy paradigm and the development strategy pursued by the state since the early-mid 1990s have in fact been undermined by certain factors that have little to do with resource allocation. First, Canadian development has followed certain historical patterns that have resulted in structural qualities that may pose serious challenges to innovation-driven growth. Second, the paradigm itself, especially as applied to the Canadian political economy, contains many contradictions that can only undermine its efficacy. As a result, the Canadian state must make a deeper commitment to fostering the conditions for sustained innovation-led capital accumulation if Canada is to overcome the barriers and make a fuller transition to the post-Fordist KBE. Moreover, while the

Innovation Strategy of 2001 points in this direction, it is insufficient by itself. Instead, the state may have to chart a more interventionist course in the years ahead by becoming more actively engaged in creating the conditions and factors for innovation to flourish. I develop this argument in the following way.

In Chapter Two I establish the theoretical framework by introducing the RA as an overarching methodological structure. The “real world” of capitalist development is depicted as being inherently unstable and crisis-prone, and a brief overview of the crisis in Fordism and emergence of the post-Fordist KBE is provided. The latter is a term offered to describe the qualities of capital accumulation in the advanced economies of the North Atlantic. Two themes in particular are drawn out from this conceptualization of the Fordist-post-Fordist transition. First, I consider both Fordism and post-Fordism from the perspective of the dominant features of industrial production, and second, I consider the spatial features of that production. These two themes are maintained throughout this thesis as a means of organizing the discussion. In short, capital and its regulation are seen to have become “deterritorialized and reterritorialized” (Hunt 2001, 130) in a post-Fordist KBE.

States, as key agents in the regulation of capital accumulation, have also been implicated in the transition to a post-Fordist KBE, and the chapter continues by introducing Jessop’s theorization of the state-form. Thus, the contours of the SWPR are matched up with the concept of the post-Fordist KBE, and its main features are established as a template for the Canadian state. Finally, in order to offer a way of conceptualizing the transformation

of ideas into policy, Hall's "policy paradigm" is added to the framework. The policy paradigm is applied to the innovation context, and I argue that the innovation policy paradigm gained authority in the early 1990s.

Extending the theoretical framework developed in the second chapter to the Canadian case is the task of Chapters Three and Four. Therefore, Chapter Three can be said to "Canadianize" the regulationist insights by examining the Canadian experience with both Fordist development and the KWNS in the post-war era. By drawing primarily upon the NCPE literature of the 1970s and 1980s, this chapter identifies key features of Canada's pattern of economic development both prior to and during its "permeable Fordist" phase (Jenson 1989). The key features identified conform to the two themes of production and spatiality, and thus I identify the dependence on staples export and the underdeveloped nature of industry stemming from the high percentage of foreign-owned branch-plants in Canadian manufacturing, as well as the highly regionalized nature of Canadian development. In addition to these features of Canadian permeable Fordism, this chapter identifies the core aspects of the KWNS as the political compromise serving to sustain capital accumulation. Understanding the key features of development in Canada, particularly during permeable Fordism, is essential since this pattern of development constitutes the foundation upon which the post-Fordist KBE is being established.

Chapter Four considers the second key analytical tool established thus far, the innovation policy paradigm. Thus, the goal of this chapter is to demonstrate that an innovation paradigm has indeed emerged within policy-making circles at the level of the Canadian

state. I consider key examples of government rhetoric throughout the 1990s, and pay particular attention to the Innovation Strategy of 2001. It will be shown that the state's development strategy was increasingly articulated according to the central tenets of the innovation paradigm. Moreover, this chapter also identifies some of the most important policy decisions while "under the influence" of the paradigm. Altogether, I intend to prove that the development strategy pursued from the early 1990s onwards has had innovation as its main goal.

The Fifth Chapter attempts to weave together the discussion thus far. It is here where I develop my hypothesis that the Canadian state's innovation-centred development strategy has been undermined as a result of the two factors introduced above. First, drawing on the insights of the NCPE introduced in Chapter Three, the current version of the innovation policy paradigm is seen as unsuitable for Canada due to the structural qualities of the Canadian political economy resulting from its pattern of development, especially during permeable Fordism. Second, I introduce the argument that the innovation policy paradigm as applied in the Canadian context contains too many contradictions. It is argued that these two factors combined have led to Canada's poor innovation performance thus far, as well as an obstacle to successful innovation-driven growth in the future.

I proceed from a discussion of the barriers to Canadian innovation to argue that the Canadian state will have to make a deeper commitment to fostering the conditions required for innovation. The Innovation Strategy of 2001 is regarded as a "Janus-faced"

document in Canada's progression towards a post-Fordist KBE. It looks backward to an innovation strategy that has not managed to narrow the innovation gap, and could therefore be seen as an uninspiring addition to the government's innovation rhetoric. At the same time, it looks forward, too. The Strategy contains features that suggest the government may yet successfully adapt a version of the innovation policy paradigm to the Canadian experience. While promising in certain respects, the Strategy is not enough. The Canadian state must become more active if innovation-driven growth is to lead economic expansion in the years ahead. I consider a number of areas in which the state must correct for the types of barriers that follow from the historic pattern of Canadian economic development.

Finally, Chapter Six concludes the project. As such, it summarizes the argument thus far, but it also offers another perspective of the innovation paradigm by considering it for its own qualities as opposed to as a strategy vis-à-vis the Canadian context. A development strategy the center of which is innovation-driven growth will be seen to be suspect for a number of reasons. However, perhaps the most important of these reasons can be phrased as a question; I ask: innovation for *whom*? At this time I present a number of questions that might constitute starting points for future research, and claim an important role for the social sciences and political economy in particular.

Chapter Two: Towards a Theoretical Framework

“We have to innovate to get ahead.”

Former Industry Minister John Manley (Industry Canada 1994, v)

“...poor discontents.
Which gape and rub the elbow at the news
Of hurly-burly innovation.”

Shakespeare (Henry IV)

In Chapter One, I suggested that the Canadian state has begun to assume the form and function of the “Schumpeterian Workfare post-National Regime” (SWPR) conducive to regulating the conditions required for capital accumulation in a post-Fordist knowledge-based economy. In this chapter I begin to explore this process by theorizing capitalist development and the role played by the state’s economic development strategy in securing stable periods of growth. In the case of Canada, the state maintained in the 1990s certain key elements of the neoliberal economic development strategy first established in response to the Fordist crisis ten years earlier by the Mulroney governments. It has remained committed to core neoliberal features such as market discipline, competition, and encouraging commodification, to name but three, while at the same time adopting an “innovation policy paradigm,” in which economic growth is understood to derive from constant innovation throughout all sectors of the economy. The innovation policy paradigm represents not a new strategy in its own right, but rather the latest effort on the part of the Canadian state to continue the “neoliberalization” (Peck and Tickell 2002, cited in Brenner and Theodore 2002, 353) of the Canadian political economy in a manner consistent with the new terms of competitiveness and growth in a post-Fordist knowledge-based economy. It is, in short, an economic development

strategy for the contemporary era. The question is, is such an innovation-inspired development strategy suitable for the Canadian experience? If this is the central research question of this thesis, this chapter is concerned instead with establishing the theoretical framework needed to pursue it.

In the first section, I introduce the Regulation Approach (RA), particularly useful for how it periodizes capital accumulation, and accordingly I draw out particular understandings of the concepts of Fordism and post-Fordism. I do this by focusing my discussion around the two main themes that organize the bulk of this thesis. First, I consider both Fordism and post-Fordism from the perspective of the dominant features of industrial production, and second, I consider the spatial features of that production. Before turning to the next section, I add the concept of the knowledge-based economy to post-Fordism so as to draw out the key points of interest in this thesis. Section two introduces Jessop's state-forms; I examine the features of the SWPR from the perspective of production and spatiality. The final two sections conceptualize the way in which paradigms gain authority over state managers' imaginations. I turn to Hall's work on "policy paradigms," before finally examining the main features of an innovation policy paradigm. Ultimately, this chapter constructs a methodological framework in which states in the advanced capitalist countries of the North Atlantic can be seen to have taken on new neoliberal functions as demanded by post-Fordism and the KBE, and as described by an innovation policy paradigm. I apply this framework to the Canadian case in the next two chapters.

Capitalist Development and the Regulation Approach

Many theoretical literatures have sought to characterize the epochal changes at work in advanced capitalist political economies since the 1970s. The Regulation Approach (hereafter RA) offers a particularly useful conceptualization of this crisis by understanding it as reflective of the instability and crisis-tendencies of the capitalist mode of production itself. Indeed, regulationists assume the very “*improbability* of capitalist reproduction” (Jessop 1997, 505). Of course, capitalism is not always in crisis; in fact, the long periods of relatively stable capital accumulation punctuated by regular (but not quite predictable) periods of upheaval in which the prevailing mechanisms of regulation break down serve as the “problem” regulationists seek to explain (Amin 1994, 7).¹

The RA posits that capital accumulation requires regulation along economic, social, and spatial lines if the tendency of the rate of profit to fall (TRPF) is to be countered. A period in which stable accumulation occurs is understood as the result of finding the most suitable “mode of regulation” to match the prevailing “regime of accumulation.” A regime of accumulation refers to a “relatively stable and reproducible relationship between production and consumption defined at the level of the economy as a whole” (Hirst and Zeitlin 1991, 18). The means by which an accumulation regime is stabilized is the mode of regulation. While not dismissive of the essentially anarchic nature of market forces that prevail in capitalist relations, the RA nevertheless focuses on the “complementary functions of other mechanisms” including institutions, norms, and

¹ The term regulation loses some of its meaning in its translation from the French; in fact, the term should be understood as regularization (Jessop 1995, 309).

procedures in the regulation of the accumulation regime (Jessop 1997, 506). Together these factors constitute the mode of regulation, and act across numerous spaces such as the law and social expectations, but also state policy (Amin 1994, 8). This thesis is concerned with the specific role played by the state in the regulation enterprise, a role made visible by examining how the state chooses one economic development strategy over other possible ones. It is in the realm of ideas, theories, assumptions, motivations, and ultimately policies of a development strategy that the state's regulation project is defined.

Stable periods of capitalist expansion occur when an appropriate mode of regulation is capable of resolving enough of an accumulation regime's crisis-tendencies and contradictions. Viewed this way, the RA "periodizes" capitalist development as a series of discontinuities between one "model of development" (long, stable periods of accumulation) and the next. Currently, it is held that capitalist economies are experiencing the waning, crisis phase of the Fordist model of development that has characterized industrial capitalism since 1945, and the emergence of a new period, that of post-Fordism.² To be sure, both Fordism and post-Fordism describe many related features across a variety of functions, and it is a difficult task to describe both terms in their most inclusive senses. Jessop does just this, though, by examining each term on four ideal-typical levels of analysis: as a labour process, a regime of accumulation, a

² Although the terminology and underlying assumptions are debated, there is widespread agreement that the Fordist period of capitalist accumulation has long been experiencing a crisis, the results of which have been observable restructuring effects at the economic and state levels; see MacDonald (1991) and Amin (1994) for an overview of these debates.

mode of regulation, and a mode of societalization (Jessop 2001).³ Another difficulty relates to determining exactly where Fordism ends and post-Fordism begins, since post-Fordism has not likely replaced Fordism on each of Jessop's four levels at the same time. Ideally, I would employ "postfordism-ization" to denote its still emerging nature; instead, post-Fordism will refer to the significant changes and pressures that both contributed to the crisis of Fordism, and describe conditions since.

Although Jessop refers to his four levels of analysis, I refer back to the two themes introduced in the previous chapter and identify Fordism and post-Fordism in terms of the dominant features of industrial production on the one hand, and the spatial features of this production and its regulation on the other. First, Fordist industrial production did not rely on innovation or knowledge first and foremost; the dominant production norm can be described as mass production of consumer goods within factories governed by a strict division of labour and characterized by assembly-line techniques usually operated by unskilled or semi-skilled workers (Jessop 2001, 32). This production norm involved "a virtuous circle of growth based on mass production and mass consumption" in relatively closed economies characterized by economies of scale and the causal relationship between rising productivity, rising wages, and rising domestic demand (ibid. 33). As Jessop makes clear, however, even more open economies in which rising wages and increasing consumption are/were based on exports of goods and services to pay for imports of consumer durables can be labeled Fordist (1994, 253). As for the second of our two themes, that of the spatial location of production and regulation, Fordist

³ Elsewhere Jessop refers to five separate but related levels of analysis; see Jessop 1993; 1994.

production was organized primarily at the national scale, and capital was largely anchored to nation-states; this feature and Fordist regulation will be discussed below in my analysis of the role of the state.

Fordist growth remained relatively stable until the 1970s. At this time, regulationists argue the Fordist regime of accumulation/mode of regulation dialectic entered a period of crisis in which productivity fell, unemployment increased, and the overall mass production-mass consumption dynamic began to fall apart. As for countering this slide, Keynesian regulationist mechanisms were proving inadequate: as Jessop writes, a significant contributing factor to the crisis was the “undermining of the national economy as an object of state management—notably through the internationalisation of trade, investment, and finance,” resulting in the discovery that traditional forms of (demand-side) intervention by the state were now ineffective (2000, 5). Keynesian regulation techniques such as the institutionalized social wage led to a shift in the balance of class forces in favour of organized labour, resulting over time in a “brake on profits” for capital (Jessop 1994, 256). Post-Fordism, or the post-Fordist KBE, is used to denote the new era of capital accumulation that is emerging in the wake of Fordism’s prolonged crisis, and can therefore be seen to represent an attempt to counteract the TRPF through the search for new production processes and models of economic organization, as well as corresponding regulationist mechanisms.

In contrast to Fordist production norms, post-Fordism is defined as “a flexible production process based on flexible machines or systems and an appropriately flexible workforce”

(Jessop 2001, 47). This flexibility of labour would correspond to economies of scope and/or networks, in which diversity of products is more important than the gains derived from economies of scale (Jessop 2003, 98). Increased profits are derived from technological rents and skilled use of flexible capacity, and reinvestment in the types of flexible production methods and equipment in order to improve economies of scope (Jessop 2001, 48). A key feature to be highlighted here is the “flexible and permanently innovative” nature of this form of macroeconomic growth (Jessop 2003, 99). In terms of the spatial dimension, post-Fordist capital accumulation is no longer experienced mainly at the national scale. Industrial restructuring resulting from the Fordist crisis has signified a “reordering of capitalist social relations to reanimate the bases of profitability and economic growth” (Hunt 2001, 130). Post-Fordism is characterized by a proliferation and relativization of spatial scales, and as a result there is “intense competition among different economic and political spaces to become the primary anchorpoint of capital accumulation” (ibid. 112-3). I return to this idea below; first, however, I consider the concept of the knowledge-based economy.

This partial theorization of post-Fordism is enhanced by drawing upon systems of innovation theory for the way in which it conceptualizes the modern knowledge-based economy (KBE). The KBE is that economy in which “the production, use, and distribution of knowledge and information are becoming more critical for economic growth and development,” and in which science and technology, advanced equipment, and the need to manage an increasingly complicated knowledge base become paramount (Wolfe 2002, 141). A direct corollary of this new economy is the changing terms of

competitiveness that firms now face. At the heart of this economy is knowledge itself; learning, knowledge, technology, and information take on increasing importance as factors of production, and as globalization decreases transaction costs, firms in advanced economies have been experiencing a shift in what Paquet refers to as the “wealth-creation process” (1998, 59). Formerly built on natural resources and material production, modern economies are now heavily centred upon knowledge and information activities.⁴ Firm competitiveness is based now on permanent innovation (Nyholm et al. 2001, 255). Morck and Yeung summarize this trend by claiming that, today, “the primary competition is competition to innovate first, not competition to cut prices as standard economics posits” (2001, i). Thus, the post-Fordist KBE can be seen to entail considerably different features than prevailed in a Fordist one of the post-war period.

With these conceptual tools, the RA contributes a compelling way to visualize the ebb and flow of capitalism itself, and through the application of its theoretical framework to actual cases in which historical, political, cultural, social, and other characteristics play a part, a more complete understanding of the capitalist experiences of political economies emerges (I discuss Jenson’s application of regulationist methodology to Canada in the next chapter). I turn now to an inquiry into the role of the state. We can ask: how are

⁴ This argument holds for Canada despite its continued reliance on commodities and natural resource endowments. Natural resources, though no longer the only plank of Canada’s economy, still accounted for 45% of total exports in the early 1990s (Liberal Party of Canada 1993, 55). However, the forces of technological change and innovation affect even these sectors. As one observer puts it, “it’s inappropriate ... to think about the world as divided up into that new knowledge-based economy, and by inference the old economy. There’s innovation taking place in every industry” (John Baldwin, Statistics Canada; cited in Standing Committee on Industry, Science, and Technology 2001, 9-10).

states involved in the regulation of capital accumulation? In other words, what form might a state take that best corresponds to the needs of a given regime of accumulation?

The State and Capitalist Regulation

For Jessop, states assume different characteristics (determined through political contestation)⁵ that correspond in a dialectical way to a given regime of accumulation and thereby enable them to contribute to the regulation of a given model of economic development. It might be expected that a crisis in the model of development leads also to a crisis in the state form and vice-versa; capitalist states experience restructuring alongside economic restructuring. Indeed, the state is currently undergoing a “fundamental restructuring and strategic reorientation” in terms of a “tendential shift” from the “Keynesian Welfare National State” (KWNS), a state-form appropriate to Fordist production imperatives, to a “Schumpeterian Workfare post-National Regime” (SWPR) suited to an emergent post-Fordist KBE (Jessop 1994, 251; also Jessop 1993; 2002; 2003). Each term comprises economic, social, and spatial moments, or components, that together indicate a state-form engaged in regulation of an accumulation regime. I focus on the economic and the spatial.

⁵ Drawing on Poulantzas, Jessop advances the strategic-relational state in which a hegemonic accumulation strategy favouring the interests of one fraction of capital, though not ignoring completely those of other fractions and classes, is developed and implemented. While this thesis cannot address the more political elements of the state’s involvement in the regulation of capitalist accumulation, it should be noted that the means by which states intervene are highly contested; states should not be seen to respond only to the interests of dominant fractions of capital—or even capital alone.

Corresponding to the qualities of Fordist growth described above, the KWNS pursued policies in support of full employment in relatively closed national economies, primarily through demand-side management and the regulation of labour relations (Jessop 2002, 202). In addition, the KWNS promoted norms of mass consumption to contribute to effective domestic demand so as to support mass production industries (*ibid.*). As for the spatial moment of state form, the KWNS was organized mainly “in and through the national state,” where macroeconomic policy was determined and implemented at the national level and, by contrast, infrastructural and social policies slowly became the domain of local states—though, it should be added, the parameters for these policy areas were still largely determined at the national scale (*ibid.*). Finally, the use of public state apparatuses in securing the extra-economic conditions for Fordist growth, a process in which the state used policy instruments to shape overall national economic development, allows us to use the term “state” to describe the Fordist state-form (*ibid.* 203).

As a result of the break-down of Fordist accumulation in the 1970s and 1980s, we have begun “to discern the tendential crystallization of a distinctive form of state” suitable to the contours of a post-Fordist KBE (Jessop 2003, 95). This emergent state-form, the SWPR, involves different state activities and a shift in the sites and scales in which these activities take place (Jessop 2002, 203). This type of state

“aims to secure economic growth within its borders and/or to secure competitive advantages for capitals based in its borders, even where they operate abroad, by promoting the economic and extra-economic conditions that are currently deemed vital for success in competition with economic actors and spaces located in other states.” (Jessop 2003, 96)

The SWPR serves as my central theoretical template for the Canadian state in a post-Fordist KBE; as a conceptual tool, it is important for the way in which it draws attention to the state's role in fostering innovation and competitiveness (the "Schumpeterian" moment, or portion, of the term) and also for its focus on spatiality (the "post-national regime" component). Both aspects relate, in turn, to the themes of the features of industrial production and the scale at which that production occurs.

Given that continuous innovation and new competitive pressures have been identified as central factors for capital accumulation in a post-Fordist KBE, the "Schumpeterian" component of the SWPR construction is appropriate. An effective state-form in a post-Fordist KBE would be expected to promote innovation-driven growth; accordingly, "the importance of innovation and entrepreneurship in post-Fordism is reflected in new state strategies" (Jessop 2003, 123). The SWPR is concerned with promoting "flexibility and permanent innovation in open economies by intervening on the supply-side" (Jessop 2002, 203). It has a clear role to play in encouraging technological innovation as well as the gathering, creation, and dissemination of technology throughout networks of firms (Jessop 2003, 127). The SWPR develops institutions and structures not only to support current entrepreneurs, but also to help create an entrepreneurial climate by investing in research and development (R&D), providing venture capital (or helping secure its provision), and providing assistance to business through various means (*ibid.*).

Further justifying the "Schumpeterian" portion of its name, and demonstrative of Jessop's incorporation of "systems of innovation" theory (see below) into his RA framework, this

new type of state-form becomes actively engaged in promoting effective innovation systems. It does this by often “refocusing economic strategies around the features of specific economic spaces and their role in the struggle to maintain international competitiveness and/or defend jobs, growth and welfare in the face of competitive pressures at home and abroad” (Jessop 2003, 128). Fostering collective learning thus becomes a central task, and since this task now depends less on capital and more on factors such as organizational intelligence, the supply of appropriate knowledge, and the institutional framework in which firms operate, new policies and programs emerge targeting these factors (*ibid.*).⁶ Lastly, the SWPR is less inclined to support those industrial sectors in decline, choosing instead to support new “infant” or “sunrise” sectors, or in some cases to restructure mature sectors (*ibid.*). The application of new technology is crucial for stimulating these sectors, and accordingly the state must “guide the development of new core technologies as motive and carrier forces of economic expansion and to widen their application to promote competitiveness” (*ibid.*). If in these ways, then, can the SWPR be called “Schumpeterian,” what of the “post-National Regime” component?

⁶ Jessop recognizes the centrality of knowledge in the post-Fordist KBE. His consideration of knowledge as a “fictitious commodity” is noteworthy. Jessop argues that states must not only “promote the commodification of knowledge through its formal transformation from a collective resource... into intellectual property... as a basis for revenue generation; but it must also protect the intellectual commons as a basis for competitive advantage for the economy as a whole” (2003, 129). Knowledge treated in this way has had dramatic ramifications for universities and other research institutes as the pressures of privatization, commercialization, and the closer ties being forged between universities and business (see Tudiver 1999; Carroll and Beaton 2000; and Turk, ed. 2000).

The second moment of the SWPR that concerns us is its post-national designation, or that component suggestive of changing sites of regulationist activity that corresponds with the sub- and supra-national characteristics of post-Fordist production. The new spatiality⁷ implied in the post-national regime moment of the emerging state-form reflects the industrial restructuring and relativization of scales as being a fundamental feature of post-Fordism. Alongside this phenomenon, the national state has lost the “taken-for-granted primacy” it assumed in the economic and political organization of Fordism, although, as Jessop cautions, this does not mean that other scales such as the local or global have assumed similar primacy (2003, 112). In light of these changes, the state has found it increasingly difficult to regulate capital accumulation and to “project power even within its own national borders” (Jessop 1993, 10). One response has been the “displacement of crisis through the reallocation of functions to different levels of economic and political organization... and/or to other modalities of intervention” (Jessop 2002, 205). The “state-failures” that surfaced with the Fordist crisis (such as those relating to the effectiveness and legitimacy of state action) are dealt with by shifting responsibility for elements of capital accumulation to those scales better suited to respond to them (Jessop 1994, 265). We can thus observe a “denationalization” of the state as it comes to terms with the regulationist demands of the post-Fordist KBE. Related to this denationalization is the concept of the “hollowing out” of the national state.

⁷ A useful term coined to describe the rescaling of both the economy and state upwards and downwards is “glocalization” (see Swyngedouw 1997, 170). Glocalization draws attention to the contested restructuring of the institutional-regulatory level as well as to the strategies of “global localization” of certain key industrial, service, and financial capitals (ibid.).

The structural trend of “hollowing out” refers to the territorial and functional reorganization of old and new state capacities on sub-national, national, supra-national, and translocal levels (Jessop 2002, 206). State power is shuffled “upward, downward, and sideways” as state managers at all of the state’s territorial scales attempt to improve (or at least redefine) their capacities in a post-Fordist political economy (*ibid.*).⁸ One aspect of this scenario is seen in the shifting of sovereign (and binding) rule-making powers upwards to supra-national bodies (i.e. EU and NAFTA), while a second is the devolution of authority from nation-states to subordinate levels of government (Jessop 2002, 206). Yet another characteristic of the “hollowing out” of the state’s apparatuses involves the transfer of decision-making outwards to “emerging horizontal networks of power,” both regional and local, in effect by-passing central states altogether (Jessop 1993, 10). The post-Fordist economic order is consolidated by this process of bringing supply-side intervention “closer than was possible for a national state to the inherently localized sites of structural competitiveness in local or regional innovation systems” (Jessop 1994, 265). In sum, we are witnessing the very reconstitution and rearticulation of the many scales of power within the global order, the result of which has led to the struggle for states to reconstitute their capacities as key regulators of capital accumulation. This is the post-national regime moment of the SWPR.

⁸ The description of state reorganization here suggests a functional reading of the state’s relationship with capital’s needs. However, transformations of what Hunt refers to as “the political moment of capitalism” are not simply the result of economic changes; the state is not a passive bystander in this process. In fact, state projects and strategies aimed at restoring stable accumulation in post-Fordism are largely responsible, as well (Hunt 2001, 130). This understanding is related to the political struggles that inhere in regulation.

The RA and Jessop in particular thus have much to contribute to the theoretical framework being developed here, mainly in the ways in which both periodize capitalism into its Fordist and post-Fordist moments, and for the conceptualization of the role played by the state in the regulation of capital accumulation. What is more, the two themes identified at the outset of this chapter, that of innovation and the KBE on the one hand and the scale at which these two concepts operate (that is, the theme of spatiality) on the other, are readily visible in Jessop's SWPR state-form hypothesis. The "Schumpeterian" moment adequately draws out the role played by innovation-driven growth in an intensely competitive post-Fordist KBE, while the designation of the state-form as post-national regime refers to the manner in which the state's capacities have been "hollowed out" to correspond with the "deterritorialization and reterritorialization" (Hunt 2001, 130) of the emerging regime of accumulation. Therefore, the SWPR serves as a capable focusing tool with which to consider the changes in the Canadian state-form.

At the same time, our framework is missing a consideration of how ideas and concepts such as those contained within the discourses of the post-Fordist KBE take hold of the policy-making apparatus. After all, while we can argue that the SWPR is distinctive for its "explicit, strategically self-conscious concern with promoting innovation and for its broad interpretation of the factors bearing on successful innovation" (Jessop 1993, 18), it is unclear how such an economic development strategy was formulated in the first place. Indeed, how do innovation-centric strategies gain priority and acceptance over other potential strategies? The answer involves political struggles among competing interests; therefore, the concept of policy paradigms is of use.

Ideas and State Management: Policy Paradigms

Hall offers a useful way of conceptualizing the role played by ideas in policy-making. Building on the concept of social learning and its role in policy-making as developed by theorists of the state, Hall develops the “policy paradigm.” A policy paradigm is the discursive arena in which policymakers operate, and is that framework of “ideas and standards that specifies not only the goals of policy and the kind of instruments that can be used to attain them, but also the very nature of the problems they are meant to be addressing” (Hall 1993, 279). The framework is “embedded in the very terminology through which policymakers communicate about their work;” it operates as a discourse which limits the boundaries of the possible in the sense that “so much of it is taken for granted and unamenable to scrutiny as a whole” (ibid.). Policy paradigms thus condition the policy options available to decision-makers. Adapting this concept to our case thus far, we can posit with Hall the existence of a Keynesian policy paradigm governing policy-making in the postwar period.⁹ This paradigm corresponded with Fordism in the way it legitimized policies concerning full employment, mass production, and mass consumption, and supported the KWNS. However, with the crisis in Fordist production, we might expect there to have been a corresponding crisis in the dominant policy paradigm. The question, then, is how do policy paradigms change?

⁹ Although Hall examines the British case from 1970 to 1989, his concept of a Keynesian policy paradigm is certainly applicable to the Canadian experience as well. Of course, one might expect that elements of the paradigms would differ between Britain and Canada, and this is true given Canada’s different experiences of both Fordism and the KWNS, as discussed in the next chapter. Nevertheless, Keynesian ideas shaping the contours of the Canadian policy-making arena were much in evidence.

Kuhn's elaboration of the three orders of change involved in paradigm shifts informs Hall's framework. Paradigms are unstable discursive frameworks, depending on widespread acceptance of their core assumptions and claims. Thus, policy-makers choose among the competing and controversial claims of experts by having to make judgements—judgements, moreover, based not only on the arguments advanced by experts, but also on any number of more political (that is, less scientific but often more immediately compelling) factors (Hall 1993, 280). The determination of which set of advocates is more authoritative is also a key factor, as is experience gained from policy experimentation (*ibid.*). Thus, the contest to position one alternative paradigm over an entrenched one ends only when the supporters of the new paradigm “secure positions of authority over policymaking and are able to rearrange the organization and standard operating procedures of the policy process so as to institutionalize the new paradigm” (*ibid.* 281). Applying this conceptualization of a policy-paradigm shift to our case, we can argue that the Keynesian paradigm (and its champions) eventually proved incapable of explaining the maladies of the Fordist crisis. It follows that Keynesian policies were incapable of solving stagflation and other problems (*ibid.* 284-5). As such, experts promoting new ideas soon realize new positions of authority among policy-makers.

Returning to the role played by ideas in paradigm shifts, Hall argues that a number of forces contribute to the emergence of a new authoritative, persuasive paradigm. In the first place, the “complex of political parties and interest intermediaries that stand in the intersection between the state and society” plays a significant role in the maintenance or

emergence of policy paradigms (Hall 1993, 288). This suggests that when it comes to policy-making, the state is not a completely autonomous entity. There are a number of other very important influences on the policy process, including the media, financial markets, and policy and issue networks in civil society (ibid. 288-9). This argument should not be read as a liberal, pluralist one: the state does not simply sift through and respond to interests. As Hall makes clear, the state also *acts*, or, in Heckscher's terms, it "puzzles" and "powers" as well (in Hall 1993, 289). One final point to be made about the role of ideas concerns the political nature of the debate. In short, the terms of political discourse "privilege some lines of policy over others," and actors struggle not only to exert power over the policy process, but also to acquire it by attempting to influence the current political discourse (ibid. 289-90). Thus, policy paradigms suggest that ideas advanced by actors seeking to influence the policy process have a real role to play in states.

How can Hall's theorization of the policy paradigm be applied to the framework being developed here, that is, the transition from Fordism to post-Fordism and in particular the state's search for a new development strategy? Thus far, I have suggested that post-Fordism was simply what emerged after the crisis of Fordism; however, there was nothing automatic about the transition. In fact, the initial reactions to the Keynesian-Fordist crisis "did not lead at once to anything like a post-Fordist state" (Jessop 1994, 262). Brenner and Theodore examine this process by framing their analysis in Lipietz' Gramscian description of capitalist restructuring as articulated in the form of struggles between "conservative blocs" (defenders of the old forms of capital

accumulation/regulation) and “modernist blocs” (supporting new models of development). Seen in these terms, the old paradigm (Fordist, Keynesian) and its conservative bloc of supporters still maintained authority (especially at the national scale) even as Fordism crumbled; Brenner and Theodore write that from the first oil-shock in 1973 to about the end of the decade, “traditional recipes of national demand-management” prevailed (2002, 359-60). However, as the crisis in Fordism worsened and the corresponding ideas about proper macroeconomic and social goals, policies, and policy instruments were increasingly seen as outdated and ineffectual, a new policy paradigm advanced by the reformist forces slowly gained authority in the advanced capitalist economies of the North Atlantic.

Although there were other restructuring strategies (identified by Jessop as neocorporatism and neostatism; see 1994, 266-8), it was neoliberalism that became the dominant policy paradigm in the capitalist economies of the North Atlantic in the 1980s. At the core of neoliberal ideology is the belief that “open, competitive, and unregulated markets, liberated from all forms of state interference, represent the optimal mechanism for economic development” (Brenner and Theodore 2002, 350). It came to be accepted by state managers that in order to restore growth and capital accumulation, basic institutional settlements of the post-war era had to be dismantled, and in their place new policies implemented that would instil “market discipline, competition, and commodification throughout all sectors of society” (ibid.). The ideas of the neoliberal paradigm included deregulation, trade liberalization, increased capital mobility, and expanded commodification, as well as neoliberal priorities such as the restructuring of the welfare

state, fiscal austerity, enhanced labour market flexibility, and territorial competitiveness (ibid. 361). By the elections of Thatcher in the UK and Reagan in the US, the neoliberal paradigm had come to shape state economic development strategy. In large measure, the vision of the state's role in a neoliberal paradigm corresponds to Jessop's SWPR.

Neoliberalism, and the process by which a neoliberal paradigm was translated into actual policy and the restructuring of the KWNS, must be seen as a process ("neoliberalization"). By understanding neoliberalism in this way, we highlight the fact that strategies to restabilize the "regulatory infrastructure of capitalism" are correctly seen as "open-ended, trial-and-error process of institutional searching" (Brenner and Theodore 2002, 360) in which new paradigms and their development strategies are floated and contested, rejected or implemented. In fact, as Peck and Tickell argue, neoliberalism has evolved over the last three decades, from abstract economic theories in the 1970s, through a harsher period of welfare state retrenchment in the 1980s, into a version that is intended not only to restore economic growth, but to manage some of the "deep socio-political contradictions" created by the earlier forms of neoliberal policy (in ibid. 362). It is in the context of this "open-ended, trial-and-error" search process and an ongoing transformation/refinement of neoliberalism that we can theorize the emergence of the "innovation policy paradigm" in the early 1990s. The innovation paradigm represented a new direction for state regulation, although it has maintained certain core neoliberal features. This is most evident in how the paradigm holds that private sector competitiveness is still the goal; however, *innovation* is the key factor required to achieve it, and the state has a key role to play in fostering innovation throughout the economy.

The Innovation Policy Paradigm

In the early 1990s, and most certainly by the middle of the decade, an innovation policy paradigm began to acquire authority throughout advanced capitalist societies. It emerged as a result of a number of developments, not least of which was the ever-increasing importance on the global level of information and communication technologies and knowledge-based industries and services. The origins of the paradigm, however, can be traced to new ideas in the world of economics, most notably endogenous growth theory as championed by economists like Romer beginning in the mid-1980s, and the systems of innovation theory of the late 1980s and early 1990s. The central insights of systems of innovation theory, particularly national systems of innovation theory (NSI), quickly found their way into a variety of authoritative spaces, including the media.¹⁰ Lundvall traces national and international acceptance of NSI theory to the Technology/Economy Programme, an OECD initiative launched in 1988 and concluded in 1991 (1992, 5). The OECD would become an influential proponent of NSI theory throughout the 1990s and beyond (see especially 1998; 1999; 2000; 2001).

Systems of innovation theory focuses on the relationship between technology, knowledge, and learning on the one hand, and innovation and economic growth on the

¹⁰ *The Economist* featured articles on this trend, such as “Economic Growth: Explaining the Mystery” (January 4th, 1992: 15-8) in which Romer’s theory of knowledge as a key factor of production is outlined. In Canada, a representative piece by David Crane with the headline “Ideas, Inventions, Innovation are Real Engines of Economy” appeared in the *Toronto Star* (Saturday, November 7th, 1992).

other. Innovations are seen to be “new creations of economic significance of either a material or an intangible kind” and can therefore be products or processes, either brand-new or novel combinations of existing elements and knowledge (Edquist 2001, 219).

Economic benefit is a defining feature; innovation is not the same thing as invention, the latter which may have zero marketable qualities. Innovation occurs across the economy, not simply in sectors in which leading-edge technology is of central importance (though innovation and high-tech usually go hand in hand). It also occurs across a range of functions, including marketing, sales, and service relationships, in addition to the more obvious functions of design and production (Nyholm et al. 2001, 256). The literature constitutes an extension of an economic tradition in which, contrary to orthodox economics, technology and learning are not exogenous, but instead are seen as “ubiquitous” in the modern economy (Lundvall 1992, 8). At its simplest, a system of innovation encompasses “all the important factors that influence the development, diffusion, and use of innovations as well as the relations between these factors” (Edquist 2001, 225). The idea of the system matters a great deal, as it is intended to stand in opposition with more linear, orthodox understandings of economic processes.¹¹

¹¹ In common with evolutionary economics, systems of innovation theory gives “particular emphasis to history, routines, influences of environment and institutions,” and posits a world in which “innovative, imitative, unpredictable and chance effects occur” (Cooke 1998; 7, 8). This distinguishes it from a neoclassical world of “isolated utility maximizers for whom technology and learning gains are exogenously given” (ibid., 8).

Much of the theorization of innovation is based upon Schumpeter's "discovery" of innovation in the late 1930s.¹² If Keynes is the "patron saint" of demand-side economics, and Hayek a leading figure in neoclassical economic theory, it is Schumpeter who can be placed at the forefront of "innovation economics" (Sundbo 1998, 4). Concerned with the ebb and flow of business cycles and Kondratieff long waves, Schumpeter envisioned a type of "creative destruction," a process in which, during economic recessions, entrepreneurs emerged with new (marketable) ideas enabling firms to out-compete their slower, less imaginative competitors. The "heroic" entrepreneur out of necessity creates new, innovative ways of producing goods or offering services. Soon replicated by imitators, creative destruction thus contributes to the reversal of an economy's slide, although firms trapped in inflexible practices will exit the market. This understanding of innovation influences current systems of innovation thinking in numerous ways, most notably in the way innovation resides at the very heart of expanding economies.

A foundation of systems of innovation theory is the role played by knowledge in terms of its generation, diffusion, and application in modern economies. These three processes take place among networks of agents such as firms and research institutes. Firms in particular engage in constant learning of new knowledge, whether from within their own organizations, from other firms (including competing ones, see Gelsing 1992, 117), or from research and development (R&D) institutions such as universities. Importantly, knowledge, especially of the tacit variety (see Lundvall 2001, 275) is not viewed solely in

¹² Morck and Yeung, drawing upon the Oxford English Dictionary (OED), write that innovation traditionally had negative connotations (2001, 1). It is the OED which claims that Schumpeter was the first to use innovation in its modern sense.

economic terms. Rather, knowledge is an intensely social activity, with learning processes dependent on degrees of cooperation within networks, the economic structure (inasmuch as it represents abilities to learn), and the institutional set-up that dictates the norms and rules that govern the interactions leading to learning.¹³ It is, in short, relationships that matter most (Edquist 2001, 227; De la Mothe 2000, 34; Nyholm et al. 2001, 266).

Innovative outcomes result from these interactive processes. However, at what scale does innovation occur? The earliest work on systems of innovation was done at the national scale by pioneering national systems of innovation (NSI) theorists such as Freeman (1987), Nelson (1987, 1988), and Lundvall (1992). By taking a national-level perspective, NSI theorists focused on the relationships rooted inside the borders of a single nation state. On the one hand, national scales were regarded as being uniquely capable of providing more opportunities, networks, resources, and other factors, as well as mitigating against the uncertainty that inheres in processes of innovation (Lundvall 1992, 3). National states were also highly regarded for their “unique power to define and supervise the institutions of property rights,” as well as their ability to tax, spend, and stimulate demand (Johnson 1992, 3; 40). The national scale is therefore an important one for innovation and public policies aimed at its generation.

However, the literature has become much more aware of supra- and sub-national scales. While NSI theory was indeed conscientious of the fact that innovation did not take place

¹³ See Johnson (1992) for an excellent look at the role of institutions.

exclusively within national borders (Lundvall 1992, 15), it is in the extensions of the NSI approach, primarily in the regional systems of innovation (RSI) literature, where we find important insights regarding the significance of sub-national scales such as regions, municipalities, and clusters (cf. Cooke 1998; Braczyk and Heidenreich 1998; and for a Canadian perspective, Paquet 1998). It is held that the qualities seen to contribute to successful innovation, namely cultural, historical, linguistic, ideological, and above all geographical factors, are best realized at smaller scales. Innovation seen this way raises the importance of social capital. Social capital enables market interactions “by increasing the flow of non-price information and trust, while reducing transaction costs and rogue behaviour” (Rutherford 2001, 1873). Because tacit knowledge and social capital are both best realized at regional scales, innovation systems have become increasingly sectoral and regional. The region is thus regarded as the key scale at which innovation (and thus economic growth) plays out and the Canadian structures of production, systemic though they may be, are related intimately to (sub-national) regional scales (Paquet and Roy 1995; Paquet 1998; Gertler 1996).

Within regions are clusters, or centres of organizational and institutional actors that have developed dense interactive networks based on supplier-user, firm-research institute, firm-firm, and any number of other relationships. Benneworth and Charles identify clusters as being “agglomerations of firms with patterns of interaction which boost their competitive advantage” (2001, 389), and have become popular since the 1980s for their ability to boost innovative outcomes (*ibid.* 390). The focus has become developing clusters of complimentary actors (Porter 1991; OECD 2001). Porter recognized in

clusters processes of continual innovation and market leadership, while other authors like Piore and Sabel (1984) saw clusters as sites in which important technological transfer was most likely to take place (in Benneworth and Charles, 389). Finally, successful business-led interactive learning resulting in innovation was soon regarded as a model that could be, through policy and incentive programs, exported and applied to less productive regions (Lundvall and Johnson 1994; in *ibid.*). Clusters and encouraging their growth play a substantial role in innovation policy-making. Thus, no longer is the national space considered to be the central site of economic development; rather, sub-national and sub-continental (read trans-national) sites have acquired new significance.

Recalling the key features of a policy paradigm as being discursive power to identify the problem and prescribe the policy solutions, we can consider the innovation policy paradigm in more substance. Innovation, or the lack thereof, has become the key factor; innovation is, in a word, essential if economies are to grow and expand in the post-Fordist KBE. Importantly, the paradigm looks to states to encourage the conditions required for innovation-led growth. States have a clear role to in fostering innovation; while not even remotely as interventionist as Keynesian proposals, NSI theory in particular argues for state action in the creation of clusters, networks, and linkages (particularly between research institutions and industry), fostering an entrepreneurial culture, developing the supply of highly-skilled human resources, and dispersing the costs of change (Lundvall 1992, 2001; Dalum et al. 1992; Edquist 2001). States have a clear role in S&T policy and in both R&D performance and funding. Porter's *Canada at the Crossroads* calls for governments in Canada to play a part in making Canadian firms

and sectors more competitive, largely by advancing innovation as a key goal (1991, 72-3).

There should be no illusions, however: systems of innovation theory rests firmly on a market-centric, pro-competition foundation. Edquist is clear: "Innovation policy—or other kinds of public intervention—should be a complement to the market, not replace or duplicate it" (2001, 220). Firms remain at the centre of the system, and state intervention should occur only to correct certain problems that hamper successful firm-led innovative growth (Lundvall and Archibugi 2001, 11). To this end, then, a number of theorists propose judicious policies for national states to not only provide education and training opportunities, but also to stimulate creativity and novelty, preserve knowledge, keep technological options open, and disperse the personal and social costs of change (Dalum et al. 1992, 302; see also Edquist 2001, Lundvall and Archibugi 2001, and Lundvall 2001, the latter for a detailed account of appropriate policies).

Thus, the core concepts as advanced within systems of innovation theory constitute the main thrust of the innovation paradigm. The discursive shift associated with the rise of the innovation paradigm is related to the same discursive shifts at work in the emergence of the SWPR; Jessop identifies several "major discursive-strategic shifts" at work in the rise of the SWPR, all of which he relates to the changing discourses about competitiveness: one, there has been a demotion of "productivity" and "planning" in favour of "flexibility" and "entrepreneurialism;" two, values concerning labour have shifted to downgrade lifetime employment also in favour of flexibility; three, the

discourse of globalization has meant a change in the way competition and accumulation are conceived; four, the KBE and its emphasis on knowledge and learning have become widely accepted concepts; and five, macroeconomic strategy has shifted from monetarism (which Hall identifies as having succeeded Keynesianism in Britain) towards the virtues of state intervention aimed at creating the conditions now seen as important for economic growth (2003, 133).

Conclusion

A central assumption of this thesis is that as a result of a strengthening innovation policy paradigm in Canada alongside the crisis of Fordism, Canadian state managers have continued to refine the SWPR that emerged with the crisis of Fordism and the KWNS. The federal government's version of the innovation policy paradigm represents a more sophisticated theorization of the types of public policy required for innovation. Thus, the Canadian state's turn towards "Schumpeterian" concerns reflects an ascendant innovation paradigm but raises a central question: are the ideas legitimated by this paradigm and the Innovation Strategy of 2001 well-suited to the Canadian political economy? In other words, can ideas about the KBE and innovation, and the policies that these ideas lead to, be easily applied to the Canadian experience of economic restructuring—restructuring, moreover, that has been shaped largely by the Canadian experience with both Fordism and the KWNS? Obviously, such questions demand an understanding of the Canadian experience in the postwar period. While I offer an account of the innovation paradigm's

evolution in Chapter Four, “Canadianizing” the theoretical framework I have just established is the subject of the next chapter.

Chapter Three: “Canadianizing” the Framework (Part I)

Canadian Economic Development

In the previous chapter I posited the emergence of an innovation policy paradigm in the early 1990s that has further contributed to the Canadian state’s transition from its Fordist Keynesian formation, the Keynesian Welfare National State (KWNS) towards a nascent Schumpeterian Workfare post-National Regime (SWPR) suited to the post-Fordist KBE. This new paradigm has been critical in shaping an economic development strategy promoting competitiveness, flexibility, and above all, innovation-driven growth. I return now to the central question of this thesis: is an innovation policy paradigm appropriate for Canada? At this time, this question can be expanded. First, even if a new innovation paradigm has taken hold in Canadian policy-making circles, a development that signals the state’s shift towards Jessop’s SWPR, will it be able to address (and overcome) the problems stemming from Canada’s particular experience of Fordism in the post-war period, as well as certain long-standing structural characteristics of Canadian capital accumulation? Second, can the innovation paradigm, a main component of which is the recognition of the relativization of scale in post-Fordist production, be made suitable to a Canadian political economy characterized by uneven regional development and ingrained federal-provincial tensions? If we are to ask whether a Canadian version of the SWPR is capable of realizing innovation-driven growth in a post-Fordist KBE by way of an innovation policy paradigm’s strategies, a fuller understanding of the history of economic development in Canada is required.

This chapter begins to respond to the two related questions above by “Canadianizing” the theoretical framework developed above. In this sense, then, I attempt to consider Canada’s “historical conditions and local attachments.”¹ I begin by examining the ways in which Canadian Fordism has been “different but not exceptional” (Jenson 1989). Jenson analyzes the Canadian “permeable Fordism” of the post-war period and in so doing calls attention to a number of the economy’s structural characteristics that may present a few challenges to Canadian policy-makers seeking to apply Schumpeterian policy prescriptions fit for a post-Fordist KBE. In addition to Jenson, I engage with authors working from the “new Canadian political economy” (NCPE) perspective of the 1970s, specifically those authors concerned with Canada’s status as a staples-led, natural-resource exporting economy, with a manufacturing sector long dominated by transnational capital primarily in the form of US branch plants. From this understanding of the structural characteristics of the Canadian Fordist economy, I turn to a consideration of the specific qualities of the Canadian post-war compromise, and therefore to the Canadian experience of the KWNS. Drawing again on Jenson, I consider the Canadian experience with the KWNS, and the hegemonic paradigm informing it. The feature I wish to highlight in this discussion is that the KWNS was constructed largely as a compromise between the federal and provincial governments, or put another way, as a negotiated settlement between Ottawa and the provinces. The important point here is the potential for the Canadian state-form to realize the post-national moment of the SWPR given the dynamics of Canadian federalism.

¹ I borrow this turn of phrase from Thomas de Zengotita, whose essay “Common Ground: Finding our way Back to the Enlightenment” appeared in Harper’s Magazine, January 2003. This phrase is found on page 39.

Canadian Economic Development

Jenson has referred to the Canadian experience of Fordism in the post-war era as “permeable Fordism,” because the Canadian economy has been, since 1945, “permeated” by international, primarily continental, effects (1989, 78). This permeable quality of Canadian Fordism was partly the result of the specific development strategy pursued by the state in the years immediately following the war, in which the Canadian experience diverged from those of other Fordist economies. First, writes Jenson, there was an expanded commitment to continental markets for both exports of Canadian resources and imports of capital, and second, unlike corporatist labour relations known in Western Europe, in Canada’s case the state served only as a facilitator between capital and labour (*ibid.*). This second factor speaks to a key point to be drawn from Jenson’s analysis, that of the particular political foundation on which Fordism rested in Canada; I return to this discussion below. First, however, I elaborate on the regime of accumulation established in Canada in the post-war era and consider the foundations upon which it rested. Since the Canadian Fordist experience was the result of the long-standing structural characteristics of Canadian economy and of the state’s development strategies over time, and since both permeable Fordism and Canada’s experience with post-Fordism depend to a large extent (though not completely) on historical circumstances, a brief overview of Canada’s economic development is of use. For this I turn to the NCPE literature.²

² The development of Canadian political economy from its “classical” roots through the energetic contributions of the “new” Canadian political economists in the 1960s and 1970s, as well as the branching off into further areas of interest, is well documented in a

The NCPE of the late 1960s and early 1970s sought to add consideration of issues such as dependency, class, and the state to earlier Canadian political economy developed in the immediate post-war years by staples-theorists like Innis and Creighton (Mahon 1993, 3).³

The staples theory posits that Canada's economic development was based nearly exclusively on the export of natural resources, and that growth in Canada's various sectors resulted from the linkages related to resource sector activities (Clement 1989, 37; Watkins 1989, 18-9). This thesis came to be modified over time; Mahon (1984) added a critical understanding of domestic class structures of power to the staples thesis, as have Clement, Watkins, Jenson and other political economists from the mid-1970s onwards. Indeed, although the staples thesis, certainly as formulated in the years immediately following 1945 but also as elaborated later on, has been the subject of much criticism and revision, its basic analysis remains fundamental to understanding the long-standing structural characteristics of both Canadian economic development and the state strategies implemented to that end. Clement makes the point that raw material exports have had a "disproportionate place" in Canada's economy, social structure, and state policy (1989, 41).⁴ Simply, staples "have been relied upon as the 'engine of growth' by the state and as

few key essays (Clement and Williams 1989; Mahon 1993; and from a statist perspective, Albo and Jenson 1989).

³ Staples are natural resource products having undergone minimal processing, and that are intended for export for manufactures elsewhere (Clement 1989, 37).

⁴ Clement agrees with the diverse perspectives of other Canadian political economists on the issue of Canadian economic development, acknowledging that the primary weakness of the staples approach is its overwhelming analytical focus on international dynamics at the expense of domestic forces such as political actors (both class and state) (1989, 41).

a prime secure source of resources by US industrialists and have organized the lives of countless Canadians” (ibid.).

How can we characterize early Canadian economic development, then? In the first place, staples exports were the central feature of Canadian economic development, the result of both international forces and a development strategy reflecting domestic structures of power. The National Policy of the late nineteenth century served to encourage the production and export of Canadian staples to the dominant industrial economies of the day, particularly Britain (Mahon 1984, 14). A central component of the National Policy, a substantial tariff of 1879, enabled the state both to generate revenues to provide the infrastructure required to exploit natural resources, and to provide protectionist conditions for an emerging domestic manufacturing sector (ibid.). Two observations follow: first, the state played a fairly active role in Canadian economic development, a fact that will be recalled in Chapter Five in my argument that the state must become more interventionist today. Second, the evidence has led many writing in the NCPE to note the dependent nature of Canadian industrialization (Mahon 1984, 13). In the language of dependency theory, much of the NCPE literature saw Canada as a resource-rich peripheral country connected to the imperial metropolises in a relationship of dependent industrialization. Watkins has suggested as much by stating that Canada “has never known any experience except that of a dependency, first of France, then of Britain, now of the United States,” though he concedes that Canada enjoys considerable more freedom than do many other dependencies (1989, 29). Without taking a dependency approach’s conclusions and implications too far, we can depict early Canadian development as

staples-led and focused on foreign industrial markets, as well as relatively weak in terms of secondary industries such as manufacturing.

Jenson applies a regulationist approach to reading Canadian staples-led economic development in the early years of the twentieth century, and serves also to introduce the Fordist period. As the 1920s began, Canada's regime of accumulation continued to be based upon primary production and some industry; Western agriculture in particular led to the export earnings that in turn provided the markets for the manufactures of the eastern factories (Jenson 1990, 667). Industry, though a distant second to staples in terms of importance to Canada's young economy, grew in the early decades of the century, leading eventually to modernization via imported technology meant to offset rising labour costs (*ibid.*). The National Policy of the late nineteenth century constituted the accumulation strategy, and within this strategy the social forces involved in staples constituted the hegemonic fraction within Canadian power structures and therefore the state (*ibid.*; see also Mahon 1984). However, the accumulation strategy as organized around basic commodities came under increasing stress in the 1930s with the collapse of international commodity markets (*ibid.* 668). Manufacturing had become more important to Canadian economic development and the mode of regulation, which had hitherto been based on a kind of "competitive regulation" in which individual workers competed for jobs and job security on their own, was changing to react to the new economic conditions of the war years (*ibid.* 669-75). By the 1940s, restructuring of the regime of accumulation was underway: Canadian industry modernized quickly and the re-

constituted economy featured resource industries and manufacturing as leading sectors, with those fractions of capital in ascendance (ibid. 675-6).

Canada's Permeable Fordism

This description of the crisis in Canada's pre-Fordist era and the emergence of the Fordist one reinforces the centrality of staples export to Canadian economic development, and the emergence of manufacturing and industry as leading sectors of the economy. This form of economic development would have profound implications for the Fordist period of accumulation after 1945, and indeed for the structural qualities of the Canadian economy to this day. How can we characterize Canada's permeable Fordism?

We can link, as Mahon does, the pre-Fordist and Fordist accumulation strategies by noting that the state's post-war policies "can be understood as an elaboration on the basic theme of staples-led growth" (1984, 15). In fact, in his consideration of the post-war period Mackintosh related the staples thesis to Keynesian theory, describing a Canadian development strategy centred upon large-scale exports of natural resources primarily to the US alongside the import of US capital in order to expand staples sectors, as well as markets dominated by foreign ownership (Watkins 1989, 19). It was exports rather than domestic investment that drove the expanding economy (ibid.). But the connection to Keynesianism can be taken only so far, as Campbell (1987) and Wolfe (1978) make clear, and we require a more substantial understanding of Canadian Fordism. In addition

to international and domestic forces, state policies and strategies had key roles to play (Jenson 1989, 79).

Following the war, the Canadian economy grew swiftly. The regime of accumulation established after 1945 was heavily influenced by a state development strategy that emphasized export of resource staples, primarily by multinational corporations; a commitment to the US-led efforts to liberalize international trade through the General Agreement on Tariffs and Trade (GATT); “somewhat feeble” efforts at maintaining full employment by way of certain macro-economic fiscal instruments; and satisfaction of domestic consumer demand through the limited import of manufactured goods and those consumer goods produced by a steadily increasing number of American branch plants (Jenson 1989, 79-80). Capital was imported to support resource extraction and processing, as well as manufactures, and exports were stepped up to offset trade imbalances (*ibid.* 80). Also, the state remained active in providing the infrastructure for staples sectors (*ibid.*).

Certain components of Canada’s permeable Fordism demand further elaboration. First, the development strategy explicitly sought to encourage investment, mainly foreign, in the economy and promote industrialization by means of import substitution industrialization (ISI).⁵ Wolfe identifies three policies in particular, the sell-off at reduced rates of wartime production facilities, the allowance of accelerated depreciation

⁵ Watkins even points out that ISI is often referred to as the “Canadian model” for the fact that this strategy resulted in fairly successful, if limited, economic growth (1989, 22).

tax breaks, and above all, the import controls established in 1947, as reflective of the government's attempt to "induce foreign manufacturers to locate in Canada" (1978, 7). The results of these policies were akin to tariff increases (in particular the import controls) since they guaranteed higher returns to those industries producing for the domestic market. In turn, there was a dramatic increase in the number of branch plants on the Canadian industrial landscape, intent on circumventing the effects of the tariff (ibid.). Industrial expansion and increased foreign investment supported ISI, and as Mahon notes, fiscal and commercial policies through the 1950s and 1960s continued to support the ISI strategy, most notably to benefit newer industries in which foreign-owned subsidiaries dominated (such as those based on chemicals) (1984, 15). Thus, while the dominance of (mainly US) branch plants in Canadian manufacturing had been a central feature of the Canadian economy for much of the twentieth century, key policies of the post-war era only magnified their role as US branch plants became "regional production centres", in the process reinforcing that ISI model (Bradford and Williams 1989, 67).⁶

Canadian scholars have identified a number of important consequences of the dominance of branch plant manufacturing and the overall high level of foreign ownership in the Canadian economy. Drawing upon Science Council reports of the 1970s, Mahon notes that branch plants are largely inefficient, since they typically focus on serving their parent companies by simply maintaining the market share of the latter (1984, 17). Perhaps the

⁶ Canada's reliance on branch-plants in the twentieth century leads Wallace to conclude that "foreign ownership, mainly by parent companies in the United States, but also in Britain, became pervasive within the Canadian economy, more so than in any other nation at a comparable level of development" (Wallace 2002, 11).

most significant drawback of branch plant manufacturing is the reliance of subsidiaries on their parent companies for new products and processes, leaving them unable to “compete effectively in a world market where innovative capacity, rather than price, is at a premium” (ibid.). Most importantly, though, many saw the Canadian ISI scheme to be characterized by “extreme technological dependence and orientation to the domestic market” (Bradford and Williams 1989, 67). In fact, both viewpoints are supported by Niosi’s examination of Canada’s evolving “national system of innovation.”

In his research of Canadian innovative capacity as it has evolved throughout the twentieth century, Niosi identifies the sustained underinvestment in research and development (R&D) by the private sector as one of the key features of Canadian industrialization. Niosi finds that the private sector in Canada prior to WWI was engaged in very little R&D. A report presented to the House of Commons in 1919 found that only 37 private firms were conducting R&D, and most of these laboratories were single-person (Niosi 2000, 32). Studies from the inter-war period reveal much of the same: by 1930, a study conducted by the Canadian Manufacturers’ Association found that only 51 companies had in-house research, and fewer than 50 others contracted research out to universities, government laboratories and/or private consultants, or received their technology from parent companies abroad (ibid. 32).⁷ The overall picture just before WWII was just as grim. By 1939, the Dominion Bureau of Statistics (DBS) presented the first precise, though brief, report of research facilities in Canada, and found many industrial companies

⁷ The true state of Canadian R&D efforts in the early years of the twentieth Century is contested; some authors dispute Niosi’s figures, suggesting that they underestimate Canadian industrial R&D (see Niosi 2000, 32).

were conducting little or no R&D (ibid. 32-3). Whether for lack of desire or capacity (or both), it seems that Canada's manufacturing sector in particular invested little in R&D, resulting in limited innovation.

From these roots, then, we might expect the Fordist period to reflect the same degree of private sector underinvestment in R&D, and due to the staples-heavy and branch plant nature of the Canadian economy, this was indeed the case. The number of firms conducting R&D activities stood at fewer than 400 in 1955 (Niosi 2000, 195). The overall performance of R&D in Canada had not improved much by the 1960s: in 1961-2, the ratio of General Expenditures on Research and Development (GERD) to GDP was 0.9%, while the OECD average was 1.64% (the US was at 2.8%). At the time, Canada's figure was 55% of the OECD average (Niosi 2000, 73). The state was forced into compensating for the private sector's poor showing in R&D performance in the post-war era—reflecting, perhaps, its historical role as an active state. First, between 1940 and 1965, the state constructed a large in-house research establishment, and then, beginning in the mid-1960s, hundreds of programs were launched in order to stimulate S&T and R&D in universities and industry (ibid. 74). In fact, it was only in 1979 that, for the first time in Canada's history, private sector funding of R&D surpassed government funding (Gualtieri 1994, 306). These findings (though limited) illustrate both the underdeveloped nature of Canadian industry, and in particular the technological dependence of branch plants.

Another important characteristic of the post-war development strategy, and one that stemmed primarily from the continued reliance on staples exports, was the support for a more liberal international trading regime (Mahon 1984, 16). However, so as not to ignore the significance of staples exports to the economy, Canadian policy-makers sought a two-pronged strategy during the 1950s that simultaneously sought to establish the conditions that would liberalize the export of Canadian staples and further the goals of ISI in regards to new industries (*ibid.* 16-7; see also Wolfe 1978, 8). Of course, policies aimed at opening up the global market for Canadian staples are rightly seen as an extension of Canada's long-standing focus on continental markets, and indeed, export of Canada's staples southward lay at the heart of the permeable Fordist accumulation strategy (see Jenson above). Thus, Canadian trade and tariff policy were supportive of both the ISI strategy and the corresponding attraction of foreign capital primarily in the form of branch plants, and of staples exports.

Finally, the development strategy of this period had a strong regional dimension as well, despite the fact that the strategy itself was constituted primarily as a national one (Wolfe 1978, 3). In a word, regional development was extremely uneven. Jenson notes that state spending to reduce unemployment "could never completely overcome the profound structuring effects of a resource-based economy in which natural wealth was distributed by geographic lottery" (1989, 80). As a result of this Canadian reality, uneven regional development followed from a staples-led development strategy, and regional development policies soon became constant features of state development strategies (*ibid.*). For his part, Haddow traces the origins of Ottawa's regional development

policies to the early 1960s, when they could be regarded “as a natural extension of the much larger social and economic policy role that it accepted after 1945” (2001, 247). Watkins also links regional underdevelopment to the type of “uneven development associated with specialization in staples” (1989, 24), while Clement considers the consequences of a federal system in which trade falls under federal jurisdiction while resources are a provincial responsibility (1989, 44-5). Thus, an element of regionalism and tensions among regions and between the federal and provincial states were much in evidence throughout the post-war period. Indeed, as I explain below, the particular federal-provincial relationship and the very structure of federalism were key features of Canada’s permeable Fordism, and the tensions constantly below the surface would explode as permeable Fordism entered its crisis phase.

Thus, the NCPE literature reveals certain structural characteristics of the Canadian economy, both pre-Fordist and Fordist, that make a transition to a post-Fordist KBE far from certain. By way of a summary of the most salient issues, we can assert that Canada’s economic growth has been reliant upon US markets for both resource exports and capital imports (the latter related to the dominance of branch plants), plagued by uneven regional development as a result of being staples-led, and, in terms of trade, disproportionately continentalist in outlook. The industrial sector, in which investment in R&D has been historically nearly non-existent and only recently has been improving, has been described as “immature,” owing to the fact that the country largely remains a staples economy (Watkins 1989, 23). Overall, the pattern has been one of “advanced resource capitalism” (ibid, citing Drache). While true that the Canadian state did in fact attempt to

stimulate industrial and university R&D, these efforts must be seen in the context of the hegemonic staples paradigm. While international markets for Canada's vast resources and historical settlement patterns explain much of the pattern of development, state policy as reflective of the power relations among fractions of capital and subordinate classes has ensured that Canada remained on a course of staples-led development throughout the permeable Fordist period.

This understanding of the development of Canada's economy can be seen in light of the two central themes as introduced in the previous chapters. In the first place, in terms of the dominant features of industrial production, the emerging concepts of innovation and the post-Fordist KBE imply a number of important factors that seem at odds with the Canadian experience of economic development. Thus, we might ask: What implications might this history of economic development have for Canada's transition to a post-Fordist KBE? Can we expect knowledge-intensive industries to replace staples-related enterprises at the forefront of the Canadian economy? Will the private sector respond to the needs of the new KBE by reversing its historic lack of concern for R&D and setting a more independent course? Can Fordist manufacturing industries restructure themselves in a way conducive to the transition from rigid systems based on mass production and economies of scale to the types of production imperatives described above in chapter two, namely flexibility and economies of scope? These questions also relate to the "Schumpeterian" moment of the state-form theorized by Jessop to be emerging as a replacement for the previous Keynesian one. Since I am suggesting in this thesis that the Canadian state-form is adopting the appearance and functions of a nascent SWPR, we

must question whether the economy is able to undergo the type of structural changes demanded of the more Schumpeterian policies being developed within the innovation policy paradigm in Canada.

The second central problem taken up by this thesis, the spatial locations of production and regulation, is also recalled at this time. The SWPR again proves its worth as an analytical tool for its conceptualization of scale as post-national, in contradistinction from the national scale of its predecessor, the KWNS. In this sense, then, the depiction of Canada's economic development as having taken place along markedly regional lines is of interest. Thus, we must ask whether an economy based primarily upon staples extraction and export, and therefore geographically fragmented, is capable of transforming itself into the type of economy in which sub-national zones of post-Fordist production and services are paramount. Furthermore, what Fordist industry developed in Canada did so largely in Ontario and Quebec, and it is also in these two "regions" that post-Fordist regional systems of innovation, such as clusters, are developing. Will capital in these two regions simply dominate as they have in the past, or can the state somehow distribute the benefits of the post-Fordist KBE more evenly across Canada's regions than it was able to distribute the benefits from previous development? I return to these questions in chapter five, after analyzing the emergence of the innovation policy paradigm and the Canadian state's Schumpeterian turn in the next one. However, at this time I return to a discussion of Canada's permeable Fordism.

While Canada displayed qualified Fordist characteristics in the post-war era, in what way were the conditions for Fordist accumulation secured by the state? In many respects, it appears that the Canadian state adopted a Keynesian form and by implementing Keynesian policies was able to regulate Fordist capital accumulation. Thus, we can note with Mahon that collective bargaining and a “form of Keynesian-welfare policies did help to secure a certain balance in a system geared to mass production (as well as staples exports) and mass consumption” (1993, 11). However, in terms of the Keynesian moment of Jessop’s KWNS, a few key studies suggest that some leeway must be granted if we can retroactively call the post-war Canadian state “Keynesian” with any confidence. The federal government displayed some degree of interest in demand-side policies in the years following the war; however, it is not the case that Canada applied Keynesian prescriptions religiously from the 1950s to early 1970s, nor is it clear that Canadian prosperity was the result of Keynesian policies.

As Campbell has argued, Canadian prosperity depended less on Keynesian policies than on the relatively stable international conditions that resulted from the US leadership in the Bretton Woods system, and the growth in investment which was the result of a post-war “long term boom” related primarily to technological advances, cheap energy, and a “large and quiescent labour force” (1987, 215). Campbell goes so far as to term Canada’s Keynesian experience an “illusion,” arguing that in broad terms, Keynesian policy “was never fully applied and played a less important role than other types of policy” (ibid. 190). Canadian federal policy in the 1960s was concerned more with inflation than with unemployment, and rather than responding to the stagflation crisis of

the early 1970s with Keynesian instruments, the state used supply-side policies and austerity measures (Campbell 1987, 191). In fact, overall, the Canadian state was very involved in the economy throughout the post-war period, largely because “politics” repeatedly led policy-makers to abandon the “apolitical promise of the Keynesian, generalized, aggregate, policy approach” (ibid. 213). In a similar vein, Wolfe (1978) finds that Keynesianism was used more as a rationale and justification for policy in pursuit of an array of imperatives, and not as consistent strategy in its own right.

However, there are good reasons to think of the Canadian post-war compromise as at least partially Keynesian. First of all, Keynesianism can and should be applied to the Canadian case if only for the reason that it served as a key component of the policy paradigm of the post-war period, as Campbell has demonstrated. Seen in this way, Keynesian principles legitimized state development policies and provided organizing rationale and authority, both so essential, to state policy-making. Nevertheless, it remains true that the Canadian state post-1945 took on notable Keynesian qualities, called “bastard Keynesianism” by Jenson (1990, 680), in order to sustain the social conditions required for Canada’s permeable Fordist production. At least in the 1940s, the state took on familiar Keynesian welfare state characteristics such as assuming responsibility for macroeconomic policy and for some social spending, including, notably, unemployment insurance, family allowances and housing (Jenson 1990, 680). As pointed out above, the federal government was keenly interested in attracting investment, and it did so with an array of both fiscal and monetary policies; however, as Jenson notes, it left almost everything else to be negotiated in the realm of industrial relations (ibid.). Thus, in the

immediate post-war years it was initially up to unionized labour to bargain for things like pensions and health care. This brief overview indicates a Keynesian project unlike that seen elsewhere: in Canada, the state left labour-management relations to the private sector (Jenson 1989, 79).

The Crisis of Permeable Fordism and the Breakdown of the Canadian Political Compromise

Our discussion of the Fordist era of growth is incomplete, however. We have thus far focused upon the regime of accumulation and selected aspects of the state's development strategy in support of Fordist accumulation imperatives. Another important feature of the permeable Fordist period for the argument being developed here is that of the political foundation upon which the Fordist project was constructed. This point reflects the political nature of any mode of regulation and the hegemonic paradigm underlying it. It will be recalled from the previous chapter that a policy paradigm is the authoritative set of ideas and meanings that serve to legitimate a given policy or set of similar policies. Jenson proposes a related concept, the hegemonic paradigm, to denote that set of "interconnected premises which make sense of or give meaning to many social relations," and which, in their hegemonic moment, have emerged from political struggle as a "*compromise* [that] will incorporate almost all contenders for political and ideological power and will serve as a support for the relations stabilized within a mode of regulation" (1989, 74, 75; italics in original). Since the hegemonic paradigm is arrived at through discursive, political struggle, and since those voices competing for prominence are not

equally powerful, the hegemonic paradigm is an *unequal* compromise reflecting the unequal power relations within wider society (ibid. 75). I return to Jenson's analysis and in particular her discussion of the Canadian experience with the Keynesian Welfare National State (KWNS).⁸

For Jenson, the social compromise, the hegemonic paradigm, or what I will broadly refer to as the KWNS of the post-war period, exhibited different characteristics than those that regulated Fordist accumulation in other advanced economies. In short, while the Canadian KWNS sought to sustain Fordist capital accumulation through some welfare state initiatives, it was not primarily a class-based compromise. Instead, Jenson argues that in place of class identities were those based heavily upon place, or region, (1990, 680), an observation that should not be surprising, given the fragmented nature of economic development throughout Canadian history. This feature of the Canadian collective identity (one of many place-sensitive *identities*) meant that the struggle to construct a hegemonic paradigm conducive to Fordist production imperatives was the struggle to define the collective identity that would legitimate and make intelligible the mode of regulation. Eventually it was the federal state that was able to mobilize a hegemonic paradigm based on a Canadian (not provincial) national identity, "one which stressed the commonality of all residents of a large and dispersed country" (Jenson 1989, 81). Thus, the postwar compromise was based more on a discourse of Canadian nation-building instead of a discourse of class (ibid.). The broadly Keynesian policies and

⁸ I use Jessop's terminology here in the interest of consistency; Jenson uses the more common Keynesian Welfare State, or KWS, term. The two, I believe, are entirely consistent.

programs that emerged in the post-war period were applied to the country as a whole by a national state convinced that a strong federal presence in the economy was required not just for stable capital accumulation, but even for securing a stronger federalism (Jenson 1989, 82). Indeed, “a federalism in which Ottawa took the leading role, often acting in a unilateral fashion, was a central pillar of the post-1945 welfare state” (Boismenu and Jenson 1998, 57-8).

Thus, the KWNS experience in Canadian permeable Fordism was a social compromise built upon the institution of federalism as negotiated by the major national parties (Jenson 1989, 82-3).⁹ It was to be expected that as the stable accumulation regime broke down in the 1970s, so too did the federal-provincial balance of power. The crisis of Canadian permeable Fordism, then, while exhibiting many of the same productivity and unemployment problems much in evidence in other capitalist countries, became a crisis of Canadian federalism itself. Since resources constituted such a central part of a faltering economy, provincial demands for more control over them soon led to the “province-building” strategies of the late 1960s (Québec) and 1970s that shook the Canadian identity, and thus the Fordist hegemonic paradigm, to its core (cf Jenson 1989, 85). Provinces came to distrust the way the federal government had been managing the economy (in particular resource exports) and began to demand greater control over their economic affairs; at issue, writes Jenson, was the national development strategy itself, as provinces increasingly saw it as “placing an unnecessary burden on their region in order

⁹ Jenson makes a distinction here, however, by noting that the social compromises by which the wage relation was institutionalized were union-led (1989, 84).

to benefit central Canada” (1989, 86). Contradictions of the Fordist regime of accumulation had led to contradictions in the Canadian compromise and in its KWNS.

A final aspect of the Canadian case can now be linked to the second of our two themes, that of the spatial. In addition to the regional characteristics of Canadian economic development in pre-Fordist and Fordist periods, we must also bear in mind the spatial qualities of the political nature of economic development in this country. Based on Jenson’s identification of a nationalist hegemonic paradigm and a social compromise based on federal-provincial grounds supporting permeable Fordism in Canada, the national state moment of the KWNS designation can now be applied to the Canadian post-war experience. What is more, the nature of the crisis in Canada is significant since it suggests that a SWPR state-form must rest upon a hegemonic paradigm that can somehow address the longstanding tensions relating to uneven development and Canada’s federal system (I return to this point in Chapter Five).

After Permeable Fordism: Towards a post-Fordist KBE

Canada has been strongly affected by the pressures associated with the crisis in North Atlantic Fordism and the emergence of a post-Fordist KBE. This fact is visible in at least two ways: first, the degree to which Canadian firms have had to restructure their operations in response to new terms of capital accumulation, and second, the extent to which the Canadian economy as a whole has experienced the growth of newly-important industries and sectors. However, what changes have occurred in the Canadian political

economy over the last ten-fifteen years obscure certain consistencies; it is these consistencies that will be seen to have undermined innovation-driven growth in Chapter Five.

In the first place, Canadian firms underwent significant restructuring (understood as operational changes involving the size and/or location of operations, a narrowing of business focus, and significant investments to alter the methods of production) in the 1980s and 1990s (Kwan 2002, 7). A recent survey of Canadian firms done for the Bank of Canada reveals that 87% of those firms surveyed restructured their operations in the 1990s, up from 36% in the 1980s (Kwan 2002, 5). In the primary industry and construction sector, 100% of firms restructured in the 1990s, while in four other sectors (manufacturing; transportation, communication, and utilities; trade; and business and personal services) over 80% of respondents had restructured in the same decade (ibid. 6). As for services, whereas 27% of these firms restructured in the 1980s, the volatile 1990s saw that number increase to 82% (ibid.). The most important reasons for restructuring were the availability of new technologies and new competitive pressures leading firms to believe “that they needed to become more flexible” (ibid. 19; 9). Competitive pressures caused firms to pursue new technologies to improve efficiency (ibid. 10) and to alter employment practices (ibid. 14). On this last point, firms in the 1990s turned to lay-offs and part-time staff as a means of becoming more competitive (ibid. 15). Finally, the firms responding to the survey indicated that they were preparing to improve their competitive positions in the future by continuing to invest in new technologies, to rely on part-time and contract labour in order to give themselves “the flexibility to respond to

downturns in the economy,” and to pursue “efficiencies” through strategic alliances and consolidation (ibid. 18). In sum, restructuring can be regarded as a significant part of firms’ strategies in the wake of the Fordist crisis.

The Canadian economy as a whole has undergone significant transformation in the last two decades as well. As with all industrialized economies, the services sector has long since replaced the others as the leading sector in Canada’s economy. By 1996, nearly three-quarters of all jobs and two-thirds of GDP were generated by services (Wallace 2002, 97). Of particular importance are “producer services” like business services, and which have been the fastest-growing components of the services sector since the 1970s (ibid. 103). Goods-producing sectors have shrunk in relative importance, accounting for 35% of GDP and 26% of employment in 1996, down from 45% and 43% of each in 1966 (ibid. 112). Staples-based industries such as agri-food and mineral-processing have declined in relative importance in recent years, with their share of both GDP and employment decreasing by almost one-half in the thirty years between 1966 and 1996 (ibid.). However, knowledge-based, “post-staples manufacturing” industries such as aerospace, auto parts, telecommunications, biotechnology and pharmaceuticals, business machines, aircraft and parts, and computer equipment have all become leaders in the Canadian KBE—if not in absolute terms (see below; Wallace 2002, chapter seven; Britton 1996, 257). In fact, aircraft parts and equipment, and passenger autos and automotive products more broadly contribute to Canada’s trade surplus, indicating that Canadian industry in these sectors is particularly well established in global markets (Wallace 2002, 14).

The extent to which the Canadian economy has undergone significant restructuring reflecting the emergence of a post-Fordist KBE has led some observers to see the transition in fairly unproblematic terms. For his part, Wallace writes that “(t)he growing diversity and sophistication of [Canada’s] manufactured products and of its commercial services exports suggest that many of the handicaps associated with the previous dependence on staples and branch-plant production are being overcome” (Wallace 2002, 15). This conclusion, however, serves to mask a number of notable consistencies that obtain in Canada’s current economic structure, many of which are identified by Wallace himself. First, natural resource products remain of paramount importance to Canada’s economy in relation to non-staples based industries. The contribution to the Canadian economy made by non-resource based industries is limited: excluding the construction industry, these post-staples manufacturing industries accounted for only 7% of GDP and 6% of employment in 1996 (Wallace 2002, 114). Although certain industries like aerospace have become prominent, Canada lacks a machinery and equipment sector of any global importance, a fact that presents a major challenge to producing innovative capital goods needed for new products and technologies (ibid.). In fact, post-staples manufacturing in Canada “is a smaller element of the national economy than in most industrialized competitor states” (ibid. 122). Making up the difference in Canada are the services sector and, notably, a few leading resource-based industries.

Canada’s dependence on key staples sectors such as forestry- and minerals-based industries is clear: together these two sectors contributed almost 9% of Canada’s GDP

and employed over 6% of all Canadians (ibid. 149). Both forestry and minerals are leading contributors to Canada's positive trade balance, and Canada is the largest producer and exporter of newsprint, and the largest exporter of minerals and softwood lumber (ibid. 140). In terms of balance of trade, agricultural and fish products and energy products such as crude petroleum also are net contributors to Canada's trade surplus (ibid. 14). The importance of these (and other) staples-based sectors are important not only for their contributions to national GDP; the forestry and minerals sectors are key employers in Canada's "hinterland regions," not to mention significant domestic consumers of various other Canadian products such as energy and transportation (Wallace 2002, 140). Entire communities depend on such sectors.

A second consistency over time is the highly regional nature of Canadian development. Provinces based largely on resource staples continue to be subject to international commodity market fluctuations. The overall volatility of staples-based sectors has meant disproportionate unemployment in regions dependent upon declining industries. For example, while the national unemployment rate had fallen to 6.8% in December of 1999, the rate in Newfoundland was 14.1%, reflecting a trend in Atlantic Canada and other "peripheral" regions (Wallace 2002, 68). As for manufacturing, Ontario and Quebec dominate, and within those two provinces, Toronto and Montreal stand out (Britton 1996, 266). What is more, with the reorientation of Canada's economy towards the US in the last two decades, many regions such as Atlantic Canada and the North remain marginalized (I discuss this further in Chapter Five). The uneven pattern of regional development that remains a feature of Canada's political economy continues to present

numerous challenges, though is masked by the general perception that Canada is becoming established in the post-Fordist KBE reflected in the success of certain regions like the National Capital region, Toronto, Montreal, and the cluster around the University of Waterloo.

Third, Canadian industry remains dominated by foreign capital, especially in technology-intensive sectors. Britton writes of the “very large, even dominating, presence of foreign subsidiaries within technology-intensive industries” (1996, 269). Branch-plants spend less on R&D as a proportion of their sales than do Canadian firms, a fact that will be discussed in Chapter Five. Finally, US markets continue to shape the Canadian economy in a variety of ways, a trend that began with the shift away from Europe towards the US in the second half of the nineteenth century (Wallace 2002, 9). By 1999, the US accounted for 67% of Canadian imports, while it served as the market for 87% of Canadian exports (ibid. 13), and 72% of all foreign direct investment in Canada in 1999 came from the US (ibid. 16). The aspects outlined above show that in many ways the Canadian economy at the end the 1990s has maintained a number of characteristics from earlier periods of growth. In Chapter Five, these consistencies will be analyzed in relation to the pressure to become more innovative as a post-Fordist KBE takes shape in Canada.

Conclusion

Historical foundations and continuing pressures found in the Canadian experience of economic development and nation-building can be seen to relate to our two aspects of the SWPR construction. First, the development of the Canadian economy throughout the twentieth century reveals structural characteristics that may seriously compromise the emergence of the “Schumpeterian” portion of the new post-Fordist state-form. As the post-Fordist KBE consolidates, can the Canadian state effect a turn towards innovation and high-tech enterprises in light of the country’s history of branch-plant manufacturing, reliance on staples, and the import of trans-national, primarily American, capital? In essence, do the ideas of the innovation policy paradigm suit the Canadian case?

Second, in light of historic uneven regional development resulting from a staples-dominated economy, as well as the over-arching federal-provincial “tug-of-war” that has dominated the Canadian political economy throughout the crisis of Canada’s permeable Fordism (and indeed long before as well), can the state make the transition from a KWNS to a SWPR, with an emphasis on a “post-national” mode of regulation? For both elements are indeed present in the innovation policy paradigm, the emergence of which is charted in the next chapter.

Chapter Four: “Canadianizing” the Framework (Part II)

Post-Fordist Development Strategy and the Emergence of the Innovation Policy Paradigm

“The fact is, much of our economic challenge can be summarized in two words—knowledge and innovation. These are the new raw materials of the twenty-first century economy. They are the key to a country that can race forward when the global seas are calm, and ride out the rough weather safely when they are not. Innovation and knowledge are two sides of the same coin—the true hard currency of the future, the sources of sustained growth.”

Former Finance Minister Paul Martin; Budget Speech 1999 (p 19)

“A spirit of innovation is generally the result of a selfish temper and confined views.”

Edmund Burke

The discussion thus far has consisted mainly of two streams: first, a crisis of Fordism in advanced capitalist societies in the 1970s and 1980s has led to a long struggle to find a mode of regulation and economic development strategy that will re-regulate, stabilize, and otherwise sustain the conditions required for resumed capital accumulation in an emergent post-Fordist knowledge-based economy (KBE). Associated with this ongoing process has been a transition in the very form and function of the capitalist state, a process that has both reflected and been legitimated by a paradigmatic shift from one set of hegemonic ideas, assumptions, and theories about economic growth and the role of the state, to another. This has been reflected in the paradigmatic shift from Keynesianism-Fordism to neoliberalism, and later the innovation policy paradigm in the 1990s. Second, I have explored the way in which Canada experienced Fordism and, more generally, economic development throughout its history. In this way I have suggested that Canada’s Fordist experience featured a number of qualities that made it “different but not

exceptional,” qualities, moreover, which may inhibit Canada’s successful adoption of the a development strategy based on an innovation paradigm. This chapter extends this discussion by blending the two streams. I consider Canada’s experience from the crisis of permeable Fordism to the Canadian Innovation Strategy of 2001. I trace the emergence of an innovation policy paradigm as a key organizing principle of Canadian economic development strategy as it arose in the early 1990s, and establish the ways in which key aspects of this paradigm have influenced state policy-making in this period. Ultimately, I consider the way in which the state has assumed the “Schumpeterian” and “post-national” moments of Jessop’s “Schumpeterian Workfare post-National Regime” (SWPR). Whether the SWPR and innovation policy paradigm are appropriate to Canada’s structural qualities as outlined above in Chapter Three is altogether a separate issue, one that I take up in the next chapter.

In the Liberal party’s pre-election “Red Book” of 1993, we are told that innovation “doesn’t ‘just happen’; rather, it thrives best in countries that consciously understand the process and take appropriate measures to create a national system of innovation” (Liberal Party of Canada 1993, 44). These measures include new government initiatives that will “facilitate the adoption and diffusion of ideas in the innovation process” (Wolfe 2002, 139). With this, it seems that an innovation policy paradigm had arrived on the national scene in Canada. It will be recalled that the innovation policy paradigm is a more or less coherent body of ideas, assumptions, and new theories about economic processes and growth in the new KBE and globalized systems of production and consumption. Growth is seen to derive from constant innovation in all sectors of an economy, especially

cutting-edge industries (biotechnology, information technologies) and services, though also in more traditional sectors like manufacturing and even resources. At the core of the paradigm resides the conviction that new terms of competitiveness in a globalized KBE (or post-Fordism) demand increased generation, application, and diffusion of economically useful knowledge. The innovation policy paradigm, though, was not the immediate strategic choice adopted by the Canadian state in the 1980s.

Canada's Crisis of Permeable Fordism and the Neoliberal Solution

As Canada's permeable Fordism entered its crisis phase, the state turned to a neoliberal policy paradigm. The election of the federal Conservatives in 1984 marked the surest sign that the Canadian state had moved in a neoliberal direction charted only a few years earlier by Thatcher in the UK and Reagan in the US— although some Canadian observers suggest that the Trudeau Liberals in the early 1980s had actually begun this transition away from the Fordist KWNS towards neoliberalism (Clarkson and Lewis 1999, 298). The strategy during this period was in many ways a reactive one, since the main thrust seemed to be to undo the “Keynesian damage” done since 1945. At the core of neoliberal restructuring was the reconstitution of the Keynesian welfare state itself. The state was “hollowed-out,” and authority and functions were shifted downwards to the provinces and upwards to other levels of governance (i.e. the Canada-US Free Trade Agreement, or CUFTA). The need to control deficits and the spiralling debt became the main justification for restructuring the state; however, other goals such as making labour more flexible in response to the demands of business were also at the forefront (Clarkson and

Lewis 1999, 313). Thus, the social wage was reduced as were unemployment insurance benefits, and welfare assistance (*ibid.*). By the 1984 election, “the process of defanging the interventionist federal state had come a long way” (Clarkson 1991, 115).

To put the point bluntly, the Conservatives saw “Canada’s economic salvation in the release of unfettered market forces” (Drache and Gertler 1991, xiv). The strategy revolved around restructuring tax, labour, industrial, and trade policies, with the overall goal reforming the basic macroeconomic framework (Doern 1990, 57). To this end, the Conservatives identified deficit reduction/elimination as the core principle that would “restore competitiveness to the Canadian economy” (Clarkson and Lewis 1999, 308). These moves were accompanied by training programs such as the Canadian Jobs Strategy in 1985, and later the Labour Force Development Strategy (*cf* Mahon 1990, 73), and an industrial policy that dismantled protectionist measures to the point where industrial policies were abdicated altogether (Clarkson and Lewis 1999, 313). In fact, microeconomic policy-making was largely replaced by trade policy, with at least one observer of the opinion that the CUFTA of 1988 represented nearly the totality of the Conservative government’s industrial policy (Doern 1990, 56). However, despite a robust neoliberal agenda throughout the 1980s and into the 1990s, the results were far from satisfying. In Canada, the fiscal situation after a decade of neoliberal reforms was worse than when the Conservatives took power in 1984; remarkably, despite high unemployment, the second deepest post-war recession, and social services stretched nearly beyond capacity, the Mulroney government “stayed its neoconservative economic course” (Campbell 1992, 24). That the Conservatives would continue to endorse the

neoliberal paradigm in spite of mounting evidence speaks to the struggle for authority that characterizes paradigmatic shifts (see Chapter Two above).

Perhaps the uninspiring results after a decade of neoliberal reforms were due to what many saw as a lack of coherence and true direction needed for restoring growth in the new economy. Abele, for one, notes the Mulroney government's concern with making Canada more internationally competitive, but argues that other than "exhorting" Canadian business and labour to simply be more competitive, the government failed to offer much in the way of coherence, reasoning, or sustained analysis of the forces demanding more competitiveness in the first place (1992, 2; see also Phillips 1994, 12). Similarly, Campbell claims that Canada's problems were in actuality a poorly trained workforce and low innovation performance in the private sector, but those policies with a chance of addressing them were in the end undercut by the macroeconomic framework policies maintained by the government (Campbell 1992, 24-5).¹

In 1993, the Conservatives were replaced by the Chrétien Liberals. While the government may have changed, some key features of the neoliberal paradigm were maintained. Some argue that very little of substance changed at all, claiming that the

¹ There were indications that the Conservative governments were beginning to accept some of the thinking that characterizes an innovation-centred growth paradigm. For example, there was the revival of the Ministry of State for Science and Technology (MOSST) in the 1980s, and the founding of Industry, Science and Technology Canada (ISTC) in 1987, the latter which was meant to assist industry in acquiring the technologies needed for the new economy (see Doern 1990). Then there was the Prosperity Initiative in the early 1990s, which was to review Canada's performance in areas such as science and technology and research and development, but which is widely held to have failed in even this task (see Campbell 1992).

differences in policy and approach between the two governments are less striking than the consistencies. The first Liberal budget in 1994 looked remarkably the same as the Conservative budgets of the early 1990s (Phillips 1994, 2). Regarding the continuities between the Conservative and Liberal governments, Pal writes: “(t)he great surprise of the last two Liberal mandates has been the extent to which the government has been committed to social and economic policies that could easily have come from their former adversaries” (1999, 8). Indeed, fiscal neoliberalism was maintained, as were free trade, liberalization, and deregulation. Associated with this strategy was the continued dismantling of the KWNS, and the Liberals accelerated the assault on the deficit with the spending cuts their predecessors proved unwilling to implement. Part of the process of restructuring the state involved continuing to purge all government rhetoric of Keynesian notions, and soon the public was willing to accept the need for balanced budgets and the reduced state that it necessitated (Clarkson and Lewis 1999, 309).

Not only were the Conservatives regarded as having had little coherence in terms of economic development strategy, but many observers have extended this appraisal to the Liberals as well, especially in the post-deficit era from 1997 onwards. Pal accuses the second-term Liberals of having had no clear direction (1998, 9), and extends this criticism two years later by stating that the Liberals at the dawn of the new millennium had “no clear philosophy or ideology to provide guidance,” and that if there was one, it was “‘neo-liberal’ or effectively conservative in cast” (2000, 3). Linking the Conservative and Liberal governments of 1984-1998 together in his analysis, Campbell asserts that the neoliberal policy framework suffered from “ultimate aimlessness and lack

of purpose, particularly in the globalized world it helped to create” (1999, 126). While it is true that the Liberals maintained and even expanded certain neoliberal policies, is this the only way of characterizing Canadian economic development strategies? Closer inspection reveals the emergence of an innovation policy paradigm in Canadian policy-making, at least from the 1990s onwards, that suggests a measure of discursive coherence—if not quite policy coherence—after all.

The Innovation Policy Paradigm and Canada’s Economic Development Strategy

An innovation policy paradigm has become a dominant organizational principle guiding state economic development strategy since the early 1990s. Indeed, despite having had to temporarily scale back its expenditures and commitments for S&T and R&D in recent years (due largely to the political need to spend on security-related areas), the federal government’s “innovation agenda has been building for the entire last decade and remains crucial for national policy and for economic and social prosperity” (Doern 2002, 2-3). This viewpoint is supported by Hale, who writes:

“The process of continuous economic change driven by technological innovation has been a major factor in the evolution of Canadian fiscal, economic, and social policies since the early 1990s. A key part of this process has been the sustained effort on the part of governments to coordinate their policies in such a way as to help businesses and citizens adjust to the emerging knowledge-based or ‘new’ economy by applying new technologies, business processes, and related human expertise to the development of new industries and the reinvention of many existing ones.” (Hale 2002, 21)

That it had arrived seems clear enough; however, what contributed to its emergence in national policy-making circles? No doubt the new economic theories described above in

Chapter Two were influential in Canada's turn towards the innovation policy paradigm for ideas and direction, and while it is impossible to trace policy-making in Canada to one influential source, Romer's work while a fellow at the Canadian Institute for Advanced Research in the early 1990s can be highlighted, as can Porter's widely-cited *Canada at the Crossroads—The Reality of a New Competitive Environment* (1991).² Porter found that the Canadian state had consistently hampered competitiveness over time, and that new policies recognizing that Canada's future competitiveness "must be driven by a new paradigm, based on productivity and innovation" (Porter 1991, 65). However, there were other reasons for this paradigm shift. First, the new terms of competitiveness identified by systems of innovation theorists described well the pressures Canadian staples exporters faced as they found themselves competing with other resource-exporting economies with lower costs—a fact also identified by Porter (1991, 68). As for manufacturing, Canadian firms were faced with the same competitive pressures, in this case from low-cost industrializers like the east-Asian "tigers," and later, China and India. Second, the Keynesian policy paradigm had long ago been discredited, and with it demand-side policies. Related to the last point, trade agreements such as the GATT and the CUFTA had led to diminished room for state intervention in the new global economy. Still, states had to do *something* to restore flagging economic fortunes, and Canadian policy-makers saw in the new paradigm an attractive role for the state that was not unlike

² Porter's study was jointly commissioned by the federal government and the Business Council on National Issues (BCNI), and argued that a country's competitiveness was no longer based on natural resources but increasingly on innovation, productivity, and skills and knowledge. It issued a number of recommendations to government to this end. today the Porter study's conclusions are widely accepted; in fact, Porter routinely crops up as an influence in the NSI literature introduced in Chapter Two.

the one called for by neoliberal dogma. Fourth, as was touched upon above, neoliberal policies pursued throughout the 1980s had not restored productivity, growth, and employment to any great extent; at any rate, the deficit and unemployment still bedevilled policy-makers. This fact alone suggested a need to look to a new source of ideas.

Finally, real changes were underway in the Canadian economy. Of course, state economic strategy was not derived solely from the new economic textbooks and in response to the changes evident in the Canadian economy. The structures of power in Canadian society had also changed by the early 1990s, and the balance of power among fractions of capital tilted towards those capitals for whom technology was especially important. The Business Council on National Issues jointly commissioned the Porter study in 1991, and continued to promote innovation-driven growth (and the policies meant to reduce the barriers to this growth) throughout the decade.³ The remainder of this chapter traces the consolidation of the innovation policy paradigm as a discursive foundation for the Canadian state's economic development strategy from the early 1990s onwards by considering both the ideas of state policy-making, and the actual policies and programs that came to reflect and be justified by those ideas.

Two of the key features of policy paradigms as identified by Hall above are, first, the power to define the nature of the problems at hand, and second, the authority to prescribe those policy solutions (perceived as) capable of solving them. As for the former, the very

³ The BCNI launched its Canada Global Leadership Initiative in 1991, meant to examine a number of areas related to the ideas of an IPP, including innovation performance (<http://www.bcni.com/English/Media/communiques/apr15b-99.htm>).

problems plaguing Canada during the break-down of its permeable Fordist regime of accumulation were now defined in new terms. By the 1990s, Canada's problem came to be seen as below-average innovation performance that, in turn, resulted in declining productivity and poor competitiveness. Of course, the argument that Canadian capital suffered from low levels of research and development and innovation were hardly new; indeed, Canadian political economy during the 1970s and 1980s made this observation, linking it up with the dominance of US branch plants in the Canadian economy (see Chapter Three above). The difference was that Canada was now seen to be suffering from an "innovation gap" compared to other advanced economies in the G7/G8 and throughout the upper echelons of the OECD, and the reasons were less the branch-plant, staples-dominance factors and more the underdeveloped national system of innovation.

The Canadian national system of innovation (NSI) had, as Niosi argues, become considerably advanced by the early 1990s, especially when compared with earlier periods of Canadian development. Data from 1992 show technology transfer increasing, and a majority of all Canadian R&D laboratories were collaborating with other organizations (Niosi 2000, 100-01). Private firms were very involved in the new relationships and strategies for generating new technologies. Overall, the number of firms conducting R&D activities grew from less than 400 in 1955 to over 6600 in 1995; in fact, the industrial sector, so long under-investing in R&D as a proportion of total Canadian R&D expenditures, increased its share from 39% in 1970 to 44% in 1980, 54% in 1990, and 65% in 1997 (*ibid.* 195). At the same time, university research had expanded greatly by the early 1990s, and just as important (from an innovation policy paradigm perspective)

the linkages between universities and industry were increasing (ibid. 195-7).

Considerably greater levels of industry-government cooperation in R&D and technology transfer were also evident (ibid. 197).

At the same time, the picture was not as rosy as the above would suggest. In the first place, Canadian businesses were still under-investing, compared to US levels (Niosi 2000, 54). What is more, most R&D expenditures in Canadian industry continue to be accounted for by a small group of companies. The 25 largest performers of R&D in Canada in 1995 represented 45% of all R&D spending (ibid. 57). This spending is also highly concentrated: telecommunications equipment, aircraft and parts, engineering and scientific services, finance, insurance and real estate, other electronic equipment, pharmaceuticals and medicines, and business accounted for more than half of all business expenditure in R&D in Canada in 1995 (Niosi 2000, 57). The extent of the NSI was, then, rather limited, and especially so when compared with other countries. This led policy-makers to accept the “innovation gap thesis.”

The Liberal Red Book demonstrates the acceptance of the existence of Canada’s “innovation gap.” It concluded that Canada was trailing well behind other countries, in this way subscribing to the argument that Canada lagged other countries in terms of competitiveness and productivity (Liberal Party of Canada 1993, 50). In 1994, the new government’s economic position was bolstered in *Building a More Innovative Economy* with the conviction that “Canada’s national science and technology performance lags behind that of our major trading partners,” an argument that was true especially for small

business adoption of technologies and big business investment in research and development (Industry Canada 1994, 61; emphasis added). It seems that Industry Canada had accepted the “gap thesis.” A few years later, the House of Commons Standing Committee on Industry in its *Review of Science and Technology and the Innovation Gap in Canada* in 1997 began with Canada’s “‘innovation gap’ vis-à-vis other developed countries” (Standing Committee on Industry 1997, Preface). Thus, the concept of Canada’s innovation gap was well accepted in the 1990s, thereby establishing the discursive and authoritative foundation on which to construct a strategy based on the ideas of the innovation policy paradigm.

Once the innovation gap between Canada and the more innovative economies had been accepted, the emerging innovation policy paradigm defined the terms of the policy debate, including the legitimate policy solutions. Discourse at the federal level begins to reveal the emerging strength of the paradigm by 1993. The most representative sources of this discourse can be found in four documents in particular: the Liberals’ Red Book of 1993, *A New Framework for Economic Policy* and *Building a More Innovative Economy* (both 1994), and *Science and Technology for the New Century: A Federal Strategy* (1996). The Red Book claims that the state will foster innovation by funding R&D through the granting councils, and encourage its dissemination as well. Both activities are of vital importance for the new KBE. Furthermore, this document indicates a recognition of the changed nature of scale and production: the new economy features growth focused on small and medium-sized enterprises (SMEs), on regional economies, and on communities themselves. In no uncertain terms, “strong regional economies [are]

the building blocks of Canada” (Liberal Party of Canada 1993, 58-9). Related to this line of thinking is the pledge “to build clusters of economic activity in different regions of the country” (Wolfe 2002, 139). Paquet and Roy go so far as to identify the Red Book’s emphasis as being squarely on action at the subnational level, as they argue that the “strategy’s main intention was to build clusters of economic activity within a region and create value-added jobs” (1995, 137).

Two other foundational documents appeared in 1994, after the Liberals assumed power. The government’s first major statement on the economy, *A New Framework for Economic Policy*, hailed innovation policy as one of the four pillars of the government’s economic agenda. Its authors argued that productivity growth depended on working smarter, and thus, “Canada must position itself to be at the forefront of innovation in the products and services we create; in the ways we organize economic and social activity; and in the ways we govern ourselves” (Department of Finance 1994, 30). The second document, *Building a More Innovative Economy* (the so-called “Orange Book”) expanded on this sentiment, and presented the new government’s strategy. The Orange Book suggested that the government’s early efforts would involve four main areas of focus: improving the climate of the marketplace, expanding trade, building the infrastructure to meet future needs, and to foster innovation (Industry Canada 1994, 15). Specifically, government action would be in the form of “leadership in partnership with the private sector to build a more innovative and outward-looking economy” (ibid. 2). The document also outlines key initiatives as part of the federal government’s S&T Review, such as improving methods of commercializing R&D (including technological

R&D produced within government laboratories), creating a stronger “scientific culture” in Canada, establishing which S&T areas Canada should pursue, and promoting rapid technology transfer to industry.

By 1996, the state’s development strategy was taking shape, and at least discursively, it was reflective of the kinds of ideas advanced by an innovation paradigm. Yates’ observations of early Liberal proposals reveals a “post-Keynesian view of the state and the economy,” reflecting a supply-side understanding of state intervention that was becoming common throughout the OECD (1995, 83-4). The goal seemed now to create technologically sophisticated industries and services, characterized by both high-skilled labour and high-wages (ibid.). This analysis is supported by the fourth document considered here, the landmark *Science and Technology for a New Century: A Federal Strategy*, which represented the results of the long S&T Review process and constituted an innovation strategy of sorts. It also represented the government’s acceptance of the discourses and ideas relating to innovation and the KBE that were only increasing in popularity throughout the OECD. In this case, the World Economic Forum’s 1995 review of 48 national economies is invoked to confirm Canada’s poor innovation performance. At the time, Canada ranked only 18th in science and technology performance, leading the authors of *A Federal Strategy* to write that “this ‘innovation gap’... has been a significant contributing factor to our poor productivity performance over the past two decades,” citing Canada’s average increase of only 0.3 percent per year from 1974 to 1993 as evidence; further, this poor productivity “has in turn depressed real income growth and promoted high government deficits” (Industry Canada, 1996, 4).

A Federal Strategy accepts that the state has a key role to play in building a Canadian innovation system, especially “in expanding industry’s capacity to assume and carry out a greater share of Canada’s research effort” (Industry Canada, 1996, 23). Consistent with arguments advanced within systems of innovation theory, the plan calls for “new priorities, information networks, more public-private partnerships, and intergovernmental cooperation,” as well as greater focus on increasing technology transfer from government laboratories to the private sector and fostering alliances (both domestic and international) and collaborative research initiatives (Niosi 2000, 54). Apparent also is the by-now familiar recognition that “innovation is as much regional and local as it is national” (ibid. 5). Thus, *A Federal Strategy*, as well as the other three documents considered above, indicate that an innovation policy paradigm had arrived in policy-making circles by the middle of the decade. The foundation established between 1993 and 1996, and reinforced and even broadened over the next five years, served to legitimate numerous policies and programs aimed at transforming Canada into a world-leader in the post-Fordist KBE. The state’s involvement in nurturing Canada’s NSI supports this claim.

Most notable early on was the attention paid to fostering the R&D capabilities of SMEs and universities, but the Canadian innovation strategy would increasingly expand well beyond “narrow” R&D concerns. More and more areas such as training and education would be highlighted, as well as macroeconomic issue such as tax reform. However, before much else could be accomplished, and before the S&T Review findings could be implemented, the bomb-shell budget in 1995 “shattered” the high expectations created by

the Red Book and the “Agenda: Jobs and Growth” documents (Wolfe 2002, 140). The main theme was now (again) deficit reduction, and areas focusing on S&T were hit as hard as any other. The innovation policy paradigm’s rise to prominence was checked by the ever-present neoliberal demands of deficit control. Ironically, the paradigm’s directives were only furthered with this drop-off in funding. As *A Federal Strategy* argues, despite the reductions to granting councils, the government would develop “innovative partnerships with the private sector as a means of sustaining support for researchers” (Industry Canada 1996, 11). And as for concrete action on how to commercialize S&T advances in government-funded laboratories, government policy would now encourage “the transfer of intellectual property from federally supported research to the private sector” (ibid. 31). This led to the creation of Technology Partnerships Canada.

As difficult as the cutbacks to departmental budgets were, though, the federal government was only getting started on its agenda of formulating ways to plant Canada firmly in a post-Fordist KBE—and thereby signal a shift in state-form towards the SWPR. A number of programs were launched at this time. Within the federal government itself, the Federal Partners in Technology Transfer was created, thereby enrolling thirteen departments and agencies to promote the commercialization of government-produced technology (Niosi 2000, 54). The Business Development Bank of Canada was allocated an additional \$50 million of equity capital in the 1996 Budget to assist in fostering S&T capacity in the private sector. In 1997, a central plank in the government’s R&D strategy was created with the founding of an independent corporation, the Canada Foundation for

Innovation (CFI). Initially funded with \$800 million over five years, the CFI serves as a prime example of the government's interest in the generation of R&D and, in partnership with the private sector, its transfer and commercialization.⁴ Funds are available for universities, colleges, research hospitals, and other (non-profit) research institutions, and are provided on a matching basis in which the CFI funds up to 40% of the total infrastructure costs, with the remaining 60% to have been first secured from other levels of government, the public, private and voluntary sources. The CFI also provides infrastructure support to the Canada Research Chairs Program (see below), and supports international collaboration for Canadian researchers. While probably the most significant development in 1997, the CFI was not the only one. The government also made the Networks of Centres of Excellence program permanent and stabilized the long-running Industrial Research Assistance Program as well.

The years 1997-2001 are notable for two reasons: first, the innovation policy paradigm had become entrenched in state policy circles, leading to the extension of programs already in place and several new ones as well. Second, as the era of balanced budgets and even surpluses arrived, the state's acceptance of the paradigm and implementation of its ideas and prescriptions gained added momentum—though to be sure, for years expenditures aimed at improving Canada's national system of innovation merely replaced funding levels to pre-1995 levels. The government's interest in the KBE began to expand

⁴ Partnership with other sectors of Canadian society received much attention in 1997; the Budget Speech goes as far as to claim that a "new ethic of partnership has clearly developed" in areas of public importance (Martin 1997, 12). Partnership as a goal for the federal government was reiterated in the 1998 Budget Speech as well (Martin 1998, 5; 11).

beyond a narrow R&D focus to include more comprehensive areas such as education and training. Training and education was addressed with 1998's Canadian Opportunities Strategy, based on the assertion in the Budget Speech that the creation of jobs of the new millennium "will be anchored in two essential components: the infrastructure of innovation, and the infrastructure of skills and knowledge" (Martin 1998, 10). In response to the second of the two imperatives, the Canadian Opportunities Strategy announced measures to improve access to post-secondary education and to enable life-long learning and on-the-job training.

The crucial areas of S&T, R&D, and innovation remained central to state development strategy, and knowledge creation, application in the private sector, and dissemination throughout the system were addressed. These goals were articulated clearly in the Budget Speech in 2000, when former Finance Minister Paul Martin set the tone for new spending (as well as justifying earlier expenditures). Referring to "the new economy," Martin claimed that

"the strength of a nation is measured not by the weapons it wields, but by the patents it produces; not by the territory it controls, but by the ideas it advances; not only by the wealth of its resources, but by the resourcefulness of its people. In such a world, successful nations will only be those that foster a culture of innovation. They will be those that create new knowledge and bring the product of that knowledge quickly to market. Our goal as a nation must be to lead the way. Our goal must be to inspire a spirit of entrepreneurship, one that asks our people to reach higher and look further, one that encourages us to see the world as our market, but Canada as the place to live." (Martin 2000, 9)

The 1998 budget restored funding to the MRC, NSERC, and SSHRC (bringing their funding back to their 1994-95 levels), and a promise that, in future years, their budgets would grow to include an additional \$400 million by 2000/01. The final two years of the

decade contained more spending on S&T, but mainly for existing programs and agencies, and largely of an incremental nature spread out over three years. In 1999 a total of \$1.8 billion was allocated in this budget for the CFI, granting councils, NRC, the Canadian Space Agency, the Technology Partnerships Canada program, expansion of the Networks of Centres of Excellence, the BDC, and various internet initiatives such as the "Smart Community Programs." And in 2000, the Canada Research Chair program was launched, with \$900 million allocated over five years to create 2,000 new research positions mainly at universities. The CFI received \$900 million more, for a total of \$1.9 billion since its creation in 1997, and the many agencies and programs already established all saw their budgets increase.

As for the theme of competitiveness, the federal government would "equip Canadians to succeed" by focusing not only on skill development, education, and R&D, but also, in a familiar tone, on making Canadian business more competitive (Martin 2000, 10). To this end, Martin claimed that "(i)f we are to unleash the creative energies of our economy, if we are to encourage innovation and expand job creation, then (corporate) tax rates must be brought down to allow our companies to compete vigorously" (ibid. 20-1).

Favourable changes were made to the treatment of stock options and capital gains, as well as a general reduction of tax on capital gains. Students at post-secondary institutions also benefited from the overall tax reduction plan, as the tax exemption portion of scholarships and bursaries was raised from \$500 to \$3000.

Ultimately, the spending unleashed in the 2000 budget and its immediate predecessors could not be maintained, and the 2001 “security budget” provided not nearly as much for innovation as had those previous budgets. In this sense, the innovation policy paradigm came under attack, so to speak, by an extremely authoritative “security paradigm,” and as a result the room for state action was severely limited by the new demands. The 2001 budget did contain a few initiatives, including a one-time expenditure of \$200 million to help off-set indirect research costs at universities and research hospitals, extra funding for the granting councils and NRC. In the case of the latter, the money was specifically meant for regional research centres, primarily in Atlantic Canada. There was one new initiative: the Strategic Infrastructure Foundation was founded in order to address infrastructure needs of a new economy. It works with other levels of government, plus through partnerships with the private sector, and will see a minimum of \$2 billion from the federal government over time.

Consolidating the IPP: Canada’s Innovation Strategy of 2001

This brings us to 2001 and the two-part Canadian “Innovation Strategy,” *Achieving Excellence: Investing in People, Knowledge, and Opportunity* (Industry Canada 2001) and *Knowledge Matters: Skills and Learning for Canadians* (Human Resources Development Canada 2001). The strategy has only confirmed the arrival of the innovation policy paradigm in policy circles, although I argue in the next chapter that it does, in some ways, point to a deeper understanding of the conditions and factors

required for innovation. Serving as an underlying justification for the Strategy in the first place, *Achieving Excellence* states that

“Innovation is... now seen as something that can be promoted systematically across the economy, and not only in research and development (R&D) laboratories. We used to think of innovation as something that just happened based on individual entrepreneurial spirit. Now we view innovation as something that can be encouraged as part of a deliberate strategy to improve national productivity growth and Canadians’ standard of living. The conscious promotion of innovation has become an important focus of economic and social policy.” (Industry Canada 2001, 4-6)

The innovation policy paradigm establishes for the state a role in encouraging the creation of those conditions seen as instrumental in achieving economic growth through innovation, though it should not be overly active in performing R&D itself. The Innovation Strategy depicts a state whose goal is exactly that: it recognizes the limits of government action in the new economy and is supportive of private-sector driven growth. The Schumpeterian nature of the state’s strategy is reflected in the claim that “innovation is market-driven and global,” and that “innovative societies are entrepreneurial” although perhaps most clearly evident in the assertion that “competition, not protection, generates innovation” (Industry Canada 2001, 9; 25). Of course, the state has a real role to play, as the government must ensure that policy acts not only to promote industrial and economic success, but also the common good (a double-pronged strategy that Hale defines as an innovation strategy and an inclusion strategy (2002, 24)). The state’s policies will therefore not only make innovative activities possible in Canada, but will also ensure that the benefits are shared by all Canadians. The state will further goals validated by the paradigm by focusing on three thematic areas: the “knowledge performance,” the “innovation environment,” and “skills.”

The state will improve Canada's "knowledge performance" by improving the NSI. Not many statements in the Strategy are as bold as the assertion that Canada, in order to become one of the most innovative countries in the world, must manage knowledge "as a strategic national asset" (Industry Canada 2001, 34). To this end then, the private sector must develop more aggressively its ability to commercialize and adopt technologies in order to remain competitive (ibid. 35). This will require, among other things, increased investment in R&D, more strategic alliances, and improved access to risk capital (ibid. 35). Canadian firms can only succeed in today's "global marketplace" by applying and commercializing knowledge, that is, by innovating and being first to market (ibid. 36). The state can assist firms realize this goal by facilitating increased public and private investments to generate more and better R&D, and ensuring that more firms benefit from the commercial applications of knowledge (ibid.). Therefore, Canada should, by 2010, rank among the top five countries in the world in terms of R&D performance, at least double federal investments in R&D, rank among world leaders in the share of private sector sales attributable to new innovations, and raise venture capital investments per capita to US levels (ibid.). While these are collective targets, the federal government does give itself a few specific priorities, including addressing key challenges for the university research environment (i.e. increased money to granting councils and support for the indirect costs of university research), and encouraging both innovation and the commercialization of knowledge in the private sector (ibid. 52). By addressing these and other areas, then, Canada's knowledge performance should be improved.

The “innovation environment” means stabilizing the macro-economic framework.

Happily, we are told Canada already benefits from a healthy innovation environment, as demonstrated by the fact that its regulatory barriers to entrepreneurship are the lowest in the OECD (except for the UK), by the steady reductions in personal and corporate income tax rates and employment insurance premiums, by the favourable treatment of employee stock options, and by the “generous” R&D tax credits that together support innovation” (Industry Canada 2001, 63). In order to continue to improve Canada’s innovation environment, *Achieving Excellence* identifies four goals: one, address and improve issues of public and business confidence; two, ensure that Canada’s stewardship and marketplace regimes are world-class; three, improve incentives for innovation; and four, ensure that Canada is recognized as a leading innovative country (ibid. 70). These goals will be achieved by implementing the Council of Science and Technology Advisors’ guidelines, by 2004, intended to ensure the effective use of science and technology in government decision making; by completing the systematic expert reviews of most of Canada’s stewardship regimes by 2010; by ensuring that Canada’s business taxation regime remains competitive among G-7 countries; by “branding Canada as a location of choice;” and by improving Canada’s ranking in international investment intention surveys by 2005 (ibid). All told, then, Canada will continue to improve its attractiveness as a place to invest in and perform S&T and R&D.

Finally, the state depicted in the Innovation Strategy will focus on improving Canada’s stock of skilled labour. *Achieving Excellence* recognizes that “to succeed in the global, knowledge-based economy, a country must be capable of producing, attracting and

retaining a critical mass of well-educated and appropriately trained people,” and therefore presents a number of targets and goals intended to achieve such a skilled labour force (Industry Canada 2001, 54). To these ends, then, four components comprise the skills and learning agenda as outlined in *Knowledge Matters*: first, to build “a foundation for lifelong learning for children and youth;” second, to strengthen “accessibility and excellence in post-secondary education;” third, to build “a world-class workforce;” and fourth, to help “immigrants achieve their full potential” (Human Resources Development Canada 2001, 12). Noteworthy are programs such as the Canada Research Chair program (to attract top researchers), Canadian Millennium Scholarships, Canada Study Grants, and Canada Education Savings Grants, Canada will meet targets that call for an increase in graduate enrolment at universities by 5% per year through to 2010 and an increase in the number of adults pursuing learning opportunities by 1 million over the next five years (Industry Canada 2001, 60). Continuous learning will be encouraged by establishing a “broad-based, accessible and comprehensive adult learning system” in Canada (Human Resources Development Canada 2001, 38). Improving accessibility to, and the performance of, the post-secondary education sector in Canada (including universities, community colleges, private training institutes, and CEGEPs) also constitutes a major part of the skills and learning agenda.

Although not given its own section, there nevertheless is one last theme worth highlighting: the importance of regions and communities to Canadian economic performance in the post-Fordist KBE. Canada’s successful transition to a KBE “ultimately depends on the progress of our regions,” claims *Achieving Excellence*

(Industry Canada 2001, 24). “A paradox,” states *Achieving Excellence*, “of the global, knowledge-based economy is that sources of competitive advantage tend to be localized” (ibid. 72). *Achieving Excellence* acknowledges the importance of smaller centres in the rapidly-changing post-Fordist KBE. Because innovation occurs not only in large, urban centres and smaller communities with underdeveloped infrastructure and fewer opportunities cannot be overlooked. To this end, programs such as the Community Futures Development Corporations, various regional development agency programs, the Canada Community Investment Plan, and Smart Communities have been founded, and will be enhanced (ibid. 74). In the past, Canadian communities relied on natural resource endowments for their economic fortunes; today, though, communities and regions “use their knowledge resources to create economic value, and it is in communities that the elements of the national innovation system come together” (ibid.).

The Strategy hints at moves in this direction in its discussion of the importance of clusters. A key strategy is the building and support of clusters in Canadian communities. *Achieving Excellence* identifies nine specific ingredients such as leading-edge R&D development capacity; technology transfer capacity; industrial research parks, incubators, and other partnership-based research facilities; and complementary government, academic and industrial contributions, to name only four (Industry Canada 2001, 73). Achieving the right mix of these ingredients demands a considerable measure of partnership and cooperation. It is only by coordinating efforts that Canada’s three levels of government “can work with the private, academic and voluntary sectors to build local capacity and unleash the full potential of communities across the country” (ibid.).

Therefore, partnering federal efforts with those of local and provincial authorities and leaders is of importance; *Achieving Excellence* claims that governments must work together “to stimulate the creation of more clusters of innovation at the community level” (ibid. 76).

By the year 2001, then, an innovation policy paradigm had emerged with some conviction within the Canadian state, as its dominant ideas regarding the connection between innovation, knowledge and carefully defined state activity on the one hand and economic expansion on the other consistently supported the Canada’s economic development strategy throughout the 1990s. It is clear, too, that the innovation paradigm has maintained certain neoliberal features, as the state has continued its trial-and-error search for the regulatory mechanisms that will stabilize Canadian capital accumulation in post-Fordist KBE. While the strategy retained so much of its neoliberal focus, the core concepts of private-sector competitiveness were influenced by the innovation paradigm’s understanding of innovation and knowledge. This argument is most clearly evident in the way the SWPR emerged over the course of the decade.

Towards A Canadian Schumpeterian Workfare Post-national Regime?

Since the mid-1990s, the shift to an innovation policy paradigm has been closely related to the “discursive-strategic shifts” which signalled the emergence of the SWPR. These discursive shifts entailed changing discourses about competitiveness, and included the replacement of “productivity” and “planning” with “flexibility” and

“entrepreneurialism,” the acceptance of the new forms of competitiveness related to knowledge and learning (the KBE), and a shift in macroeconomic strategy from monetarism towards the kind of state intervention able to create the conditions now seen as important for economic growth (Jessop 2003, 133). Thus, as ideas about innovation, new forms of competitiveness, and state intervention in the KBE gained discursive authority in capitalist societies of the north Atlantic, and as fractions of capital favouring new technologies and value-added production gained prominence in policy circles, state managers began to shift the dominant economic development strategy to one consistent with the tenets of a SWPR.

Regarding the “Schumpeterian” moment of the SWPR state-form, it will be recalled that the Schumpeterian state is both willing and able to promote innovation-driven growth with new state strategies that include fostering a culture of innovation and entrepreneurialism in which S&T and R&D become key features of economic processes, and by promoting flexibility and permanent innovation through supply-side interventions. Specifically, the SWPR actively improves the national system(s) of innovation by promoting the generation, application, and dissemination of knowledge throughout networks and clusters of economic agents and R&D institutions. As for the second moment of the SWPR that concerns us here, the “post-national regime” designation, it is meant to draw attention to the national state’s loss of primacy as the only (or main) site of regulation of the condition required for capital accumulation. In other words, as industrial restructuring in the wake of the Fordist crisis has yielded a regime of accumulation that operates at scales other than (but including) the national one, so too

have the modes of regulation been forced to operate at levels other than the national. The concept of “hollowing-out” signifies the act of transferring regulatory power from the national state to levels of governance both above and below the national level. At work is nothing less than a re-organization of the many scales of power in the global economy—and, in this case, the Canadian political economy.

Can we say that the Canadian state has adopted and acted upon the ideas of the innovation paradigm to such an extent that a SWPR has been emerging as a successor to the Keynesian state-form of permeable Fordism? Based on the review of the innovation policy paradigm as it has evolved in the rhetoric of state managers, it would appear that the Schumpeterian moment of the SWPR had been further refined with the arrival of the Liberals in Ottawa. This is not to suggest that Schumpeterian elements had not appeared earlier; indeed, the welfare state was “hollowed-out” and retrenched by the Conservatives in the 1980s, while economic strategy came to be focused upon the key values of competition and entrepreneurialism, both key indicators of a SWPR. While the Conservatives’ record, though, indicates that an innovation policy paradigm was slow to take hold within the state, and that while the KWNS was definitely being transformed into a “Schumpeterian competition state” (Jessop 1993; 1994), deeper understandings of the new terms of competitiveness in a post-Fordist KBE were absent at that time.

The Schumpeterian nature of the Canadian state is visible in the state’s increased involvement in the Canadian national system of innovation. Research and development has remained of fundamental importance, as suggested by the state’s provision of funds

to R&D performers (through the granting councils, the CFI, and favourable tax treatment for businesses), and by its focus on technology transfer to the private sector (the TPC program, internal intellectual property rules). Furthermore, the state has been active in coordinating and shaping the type of R&D performed in Canada, as evidenced not only through its S&T policies, but also its generous funding of NSERC and, through the CFI, CIHR, and NRC, areas in engineering, the environment, health sciences, and biotechnology. These developments can be linked to the changing nature of the Canadian state itself. The government's restructuring of the state's S&T governance framework as outlined in *A Federal Strategy* is a sound indication of the state's transition to a SWPR, particularly when understood as part of the neoliberal restructuring of the KWNS more broadly. A new type of state-form geared towards fostering innovation throughout the economy was being established. The "Schumpeterian" moment of the SWPR was consolidating in Canada, and associated with its development was the steady rise to prominence of the innovation policy paradigm.

The state has also shown indications that it recognizes that Canadian production has become more closely related to non-national scales—a key insight within an innovation paradigm. Early on, as noted above, both the Red Book (1993) and *A Federal Strategy* (1996) noted the economic significance of Canada's regions and sub-national scales. Thus, reflecting the need for governance and regulation to operate at other scales, part of the Innovation Strategy of 2001 seems to encourage partnerships at various levels of governance. Elsewhere, former Finance Minister Paul Martin indicated that "the role of the federal government can no longer be, if it ever could, to try and direct the economy

by remote control from Ottawa;” indeed, “innovation is by nature entrepreneurial, decentralized and highly dependent on a broad band of networks in communities right across the country” (cited in Hale 2002, 30). *Knowledge Matters* asserts that “(m)aking sure that Canadians have the skills and knowledge required for today’s economy and society is a national challenge, one that no single government, or governments alone, can meet” (Human Resources Development Canada 2001, 9). At nearly every turn, the Strategy establishes a significant role for the “other leaders” of the innovation economy, from provincial and territorial leaders to business and academic ones. In 2000, the state allocated more funding to the Community Futures Program, which supports 252 Community Futures Development Corporations (CFDCs) intended to assist rural communities overcome and deal with changes to the local economy as a result of the overall structural changes to the Canadian economy. Driving home the point, *Achieving Excellence* claims that “to succeed, all levels of government, the private sector, academia and other stakeholders must contribute to making Canada more innovative” (Industry Canada 2001, 11).

Despite the above indications, we are left with the question whether the Canadian state has actually shown a willingness to commit to the type of multi-scaled governance and regulatory schemes necessary in the transition to a “post-national regime.” Indeed, throughout the 1990s there have been conflicting messages. The call in the Red Book was for a bottom-up strategy, yet the document, confusedly, calls for both a strong, central role for the federal government and a bottom-up process in which local and regional networks and scales of economic activity are to lead (Paquet and Roy 1995, 139-

40). In the first 18 months of the Liberal government's first mandate, this strategy had "failed"—though the authors insist that it could have worked (ibid. 138). The Orange Book for all its talk of partnerships and community-centred growth nevertheless exhibited a "top-down" approach (ibid. 146). The Innovation Strategy insists on a central role for the federal government. So while all governmental, academic and business actors have a role to play, it is Ottawa that shall coordinate and administer the development of the NSI as a whole. This is seen in the manner in which the two central documents repeatedly identify targets and goals that are to be met by specifically federal actions, and also by other levels of government, the business sector, and post-secondary education institutes.

Conclusion

What kinds of conclusions can we draw from the evolution in Canada of the state's interest in an economic development strategy based on the ideas of the innovation paradigm? In the first place, an overriding concern of the federal government was, early on, the deficit and national debt; as such, the core concerns of neoliberalism were maintained. This ideological basis was also evident in the state's refusal to intervene too dramatically in the economy: the recovery was very clearly to be a private-sector driven one, and the state would create the conditions for this. The point, though, has been the shift in the state's understanding of competitiveness. It was no longer enough to allow the market to right itself by giving it the time and space to do so. Now, the state had a more active role to play in providing the conditions necessary for "Schumpeterian"

growth, namely, the conditions required for dynamic interaction, sharing of technology and knowledge, the supply of an educated and highly-trained workforce, and the macroeconomic conditions needed for businesses, particularly SMEs, to generate innovative outcomes.

While the state has exhibited the types of discursive acceptance of the innovation policy paradigm and the policy direction suggestive of the “Schumpeterian” moment of the SWPR, the state’s gradual but incomplete acceptance of the need to shift the mode of regulation and development strategy to non-national scales has also been evident. It is clear that by the mid-1990s Canadian political economy had undergone a transition involving a re-scaling, that is, an evolution in which the national scale lost its primacy to the rising importance of sub-national and local scales of production and governance. However, while we can point to the process of “hollowing-out,” which has led to a considerable restructuring of the Canadian state (one example being that economic regulation in Canada increasingly takes place at scales other than the national one, as even the NAFTA makes clear), and the many initiatives announced by the federal government targeting communities and regions, it remains true that the state has undergone a very reluctant restructuring. No doubt the traditional pressures between the federal and provincial levels of government, not to mention Canada’s constitutional allocation of jurisdiction, have both been responsible for this fact. I take this line of inquiry up in the next chapter.

At the risk of going too far, the federal government's actions from 1993 to the Canadian Innovation Strategy of 2001 can be seen as a response of sorts to the Conservatives' lack of focus. By linking the need to be more globally competitive with an articulation of the knowledge-based economy (KBE), and the corresponding requirements for Canadian businesses to be innovative in products, production processes, and services, the federal government appears to have found the coherent arguments Abele found to be absent only twelve years ago. But the question remains: how appropriate are the innovation paradigm's ideas, and the economic development strategy it has led to since the early 1990s, for Canada?

Chapter Five: Mind the Gap!

“Canada will secure its competitive advantage in the global, knowledge-based economy by maximizing its capacity to innovate.”

Achieving Excellence (Industry Canada 2001, 8)

“The 21st century will bring unprecedented levels of opportunity—and competition, chaos, and change. Only those companies—and those regions—that learn to live and breathe continuous innovation will thrive in this exciting new world.”

G. Sakus (President, Technology, Nortel) 1997¹

In the previous chapter, the emergence of the innovation policy paradigm in the late 1980s and early 1990s was seen to have reconstituted the discursive terms of development debate in Canada. The concept of an “innovation gap” or “productivity gap” gained acceptance and authority, leading state managers to formulate economic strategies intended to improve the innovation performance of Canadian firms. An array of programs aimed at fostering an innovative economy was established, as were myriad policies, agencies, and programs meant to make Canadian firms more competitive, students smarter and more numerous, knowledge more accessible, and Canada more entrepreneurial. Innovation had become the goal of the Canadian state’s economic development strategy, since it was now clear that “(a)n innovative and productive Canada will be a competitive and prosperous Canada” (Standing Committee on Industry, Science and Technology 2001, 111).

¹ These comments were made by G. Sakus, President, Technology, Nortel, to a conference in 1997 (cited in Hunt 2001, 46-7).

Optimistic readings will argue that in fact, Canada has partially caught up with other OECD countries during the last 30 years. In 1961-2, Canada's Gross Expenditures on Research and Development (GERD) to GDP ratio was 0.9%, while the OECD average was 1.64% (the US was at 2.8%). At the time, Canada's figure was 55% of the OECD average. By 1995, the GERD/GDP ratio was 1.6%, or 75% of the OECD average (Niosi 2000, 73). While this convergence has been a result of both a catching up by Canada and a slowing-down by leaders like the US, UK, and (West) Germany (*ibid.*), Canada's performance in this respect is certainly an improvement no matter how considered. Other expenditure-related indicators suggest increased attention to innovation. The federal government's expenditures on S&T for 2001-02 were a considerable \$7.4 billion, while the granting councils' total combined budget for 2001-02 was more than \$1.1 billion per year, with additional funds promised in the 2001 budget (Industry Canada 2001, 26).

It must stand as a disappointment, then, that despite a decade of policies, programs, and spending on research and development initiatives, the innovation/productivity gap is still with Canada at the dawn of the new century. Despite an increasingly apparent acceptance on the part of the state of an innovation policy paradigm, the evidence today suggests that Canada has not achieved the progress promised by that paradigm. In fact, Canada as a whole seems unable to make a more complete transition to a post-Fordist KBE. In response to the central research question of this thesis, whether the federal government's version of the innovation policy paradigm constitutes a sound framework on which to base development strategy, this chapter argues that it has likely been undermined from doing so for two reasons. First, I draw upon the central insights

developed in Chapter Three, specifically those of the new Canadian political economy of the 1970s and 1980s, to suggest that several structural and regional characteristics of Canadian development have posed major challenges to the paradigm's ability to lead Canada's development in a post-Fordist KBE. Indeed, several characteristics such as the branch-plant nature of Canada's industry and the uneven pattern of regional development appear to constitute significant barriers. Second, the innovation policy paradigm as reflected in the state's development strategy from the mid-1990s to 2001 is rife with contradictions, not the least of which concerns the scale at which innovation occurs on the one hand, and the Canadian state's difficulty in shifting key regulatory functions (as per the SWPR) accordingly. Of importance here is Canada's experience with federalism.

That the innovation policy paradigm in Canada has been undermined thus far does not mean it should necessarily be abandoned outright. This chapter goes on to argue that certain barriers to innovation-driven growth can be addressed with a deeper commitment on the part of the Canadian state. Indeed, the Innovation Strategy of 2001 contains indications of the government's attempts to overcome deficiencies in Canada's national system of innovation (NSI). Before proceeding, I outline Canada's current "innovation gap."

Mind the Gap! Canada's "Innovation Gap"

Canada is still seen as suffering from an innovation gap with other advanced capitalist economies. Some observers trace the innovation gap to the fact that "Canada's

innovation system at the turn of the twenty-first century is much as it was in the 1980s” (Standing Committee on Industry, Science, and Technology 2001, 20). How can the “gap” be understood? In large part, Canada’s gap is evident by examining innovation output, although this raises the problem of measurement. Although there is plenty of anecdotal evidence to suggest the increased presence of innovation in the modern-day economy, measuring the speed of innovation is a more difficult undertaking. This is so because, while counting R&D inputs is fairly straightforward, measuring the outputs as actual innovation is very difficult. Often, an output of R&D is used as a substitute for the real output of innovation (ibid. 16). With this rather large caveat in mind, how is Canada’s innovation performance seen?

In terms of R&D inputs, GERD, particularly when expressed as a percentage of GDP, remains the most widely-used indicator. For 2001, Canada’s total GERD from all sources (i.e. levels of government, universities, businesses) reached \$21 billion, up 9% from 2000, which was, in turn, up 11% from 1999; however, despite these increases, Canada still ranked only 14th in the OECD (Industry Canada 2001, 19). As a percentage of GDP, Canada’s GERD amounted to 1.9%. As for measuring innovation in terms of R&D outputs, there are several indicators used. One such indicator is the ratio of scientific publications to population, and at 70.1 such publications per 100,000 people in Canada for the period 1995-97, Canada compared favourably to the US (65.3) and the OECD average (40.4), though unfavourably to leaders Switzerland (94.9) and Sweden (93.1) (Standing Committee on Industry, Science, and Technology 2001, 23). A second R&D output indicator is the OECD’s “inventiveness coefficient,” defined as a country’s

resident patent applications per 10,000 people. In 1997, Canada was found to have only 1.1 resident patent applications per 10,000 people; by comparison, the OECD average was 5.3, led by Japan with 27.7, Germany (5.5), Sweden (4.7), and the US (4.5) (ibid. 23). Canada is a poor performer in this area.

Canada's performance in other innovation indicators tends to be seen as poor as well. Regarding seven science and technology indicators compiled by the OECD,² Canada ranks fifth, sixth, or seventh in every category in 1999 (or latest available year), in relation to other G-7 countries (Industry Canada 2001, 16). The influential Conference Board of Canada has had its say as well: in its report *Performance and Potential 2001-02*, it ranked Canada average or poor in nearly every one of the six categories it considered, including deeming Canada's performance to be poor in "innovation" (as cited in Industry Canada 2001, 16-7).³ Similarly, the World Economic Forum ranks Canada's "current competitiveness" as weak, finding Canada to be 11th in the world in this category (cited in Industry Canada 2001, 17).

It is hardly surprising then, that accompanying the presentation of innovation performance statistics is usually the argument that Canada's performance is left wanting. The interpretation quickly turns to Canada's worsening terms of competitiveness, or the

² These indicators are: external patent applications, human capital devoted to R&D, business-funded expenditure on R&D, R&D intensity, technology balance of payments, national patent applications, and government expenditure on R&D.

³ The other five categories considered in the report are Economy (with a grade of average), Labour Markets (top), Environment (poor), Education and Skills (average), and Health and Society (average). It is unclear what the criteria were.

so-called “productivity gap.” In *Achieving Excellence*, the authors note that where Canada really trails the US is in productivity; in terms of GDP per hour worked, Industry Canada finds Canada’s productivity to be 19% lower than that of its southern neighbour (Industry Canada 2001, 14). And although productivity has grown significantly in Canada over the last several years, the gap with the US has increased because Canada has not grown as quickly as that country (ibid. 15).

However, while it is widely held that Canada suffers from a productivity gap when compared with the US, the exact magnitude and reasons for this gap are not agreed upon.⁴ In a recent report by Andrew Sharpe of the Ottawa-based Centre for the Study of Living Standards, Canada’s GDP for every hour worked as a percentage of the same US figure was 89.2% in 2002 (down from 91.2% two decades ago), compared with the more widely-held measure of 81% for last year (down from 88% twenty years ago).⁵ Sharpe’s findings suggest a still-present productivity gap, though not nearly as severe as usually believed, and while deteriorating against US terms, not nearly as badly. Regardless, it is not a far jump from here to questions of innovation.⁶ The authors of *Achieving Excellence* argue that other countries have innovated first and faster, and “consequently we lag behind many developed countries” in innovation performance (ibid. 12). For his

⁴ Regarding the productivity gap between Canada and the US, some estimates are even more dramatic. For example, in its *A Canadian Innovation Agenda for the Twenty-First Century*, the gap is found to be 30%, compared with 10% at the end of the 1970s (Standing Committee on Industry, Science, and Technology 2001, xv).

⁵ Sharpe’s findings appeared in the *Globe and Mail* (May 27th, 2003; B4).

part, Sharpe dismisses the “usual suspects” often used to explain the gap (such as higher taxes, social policies, unionization, and regulation that prevail in Canada) and instead points to poorer Canadian innovation performance, lower levels of investment in “human capital,” and weaker research universities (as well as factors like smaller firm-sizes and lower levels of capital intensity in Canada). “Innovation,” claims *Achieving Excellence* in no uncertain terms, “is the key to improving productivity” (ibid. 16). On both counts, then, Canada’s record is poor.

Misplaced Expectations? The Innovation Policy Paradigm and the (Fordist) Pattern of Economic Development

The innovation policy paradigm has been, and will likely continue to be, undermined as a result of its unsuitability to the Canadian case, and for its internal contradictions. As for the former, this section argues that despite the emergence of an innovation-centred economic development strategy, the structural characteristics of the Canadian political economy collectively have presented too great a barrier to the realization of innovation-driven growth for all but a few globally-competitive regions. Canada’s underinvestment in R&D and S&T and the overall weak performance of the national system of innovation (as reflected in the “gap”) is traceable to structural characteristics of Fordist growth, as well as the state development strategy that supported (regulated) this growth. As such, key features of permeable Fordism such as the predominance of branch-plants in

⁶ The connection between a statistically verified “productivity gap” and a presumed “innovation gap,” is made without hesitation by the House of Commons’ Standing Committee on Industry, Science and Technology (2001; page xvi).

Canadian industry, the reliance on staples, continental trade rationalization characterized in particular by resource exports to the US market, and the highly regionalized nature of capital accumulation represent substantial conditioning factors as a post-Fordist KBE emerges. In this way, the new Canadian political economy of the 1970s and 1980s identified many of the features that have constituted barriers to innovation-led development in a post-Fordist KBE.

We can focus on the structural factors introduced above by examining the Canadian national system of innovation (NSI). In the first place, despite the many initiatives that have enhanced the capacity of Canada's research infrastructure, in particular those that have supported basic research at universities, research hospitals, and government laboratories, Canada "still has a long way to go to reach a level comparable with that of the most research-intensive economies" (Wolfe 2002, 152). Another problem is the degree of collaborative R&D in the Canadian NSI today. While reflecting significant improvement in recent decades, only 59% of Canadian R&D laboratories cooperated with external units (Niosi 2000, 117-19). This relatively low amount of collaboration speaks to underdeveloped linkages among firms in Canada's NSI. Niosi finds that while the majority of laboratories conducting cooperative research enjoy some major benefits from it, they suffer considerable transaction costs resulting from problems such as limited funding, disputes on intellectual property, and the complexity of contracts (Niosi 2000, 126).⁷ As for technology transfer, a key indicator of the depth of an NSI, it is still a

⁷ In addition to these transaction costs, several companies find it difficult to interact with government and academic partners due to the difference in cultures, goals, and tempos, among other things (see Niosi 2000, 126).

rather difficult enterprise for most domestic actors. For one thing, it is usually the larger industrial laboratories that engage in this practice, meaning that the capacity for this type of transfer within Canadian clusters depends on the number of large-scale businesses. As we point out below, the majority of Canadian firms tend to be small.

At the very root of the innovation gap, however, is Canada's pattern of R&D expenditures. They are heavily oriented towards so-called "upstream" areas, that is, towards basic and fundamental research as opposed to applied and market-oriented R&D (Niosi 2000, 73). Reflecting this observation is the high proportion of R&D performed by the post-secondary sector; Canadian universities account for roughly 31% of all R&D in Canada, which is comparatively high by OECD standards (Industry Canada 2001, 40). Governments perform about 11%, or about the OECD average (ibid. 41; 45). While the well-developed R&D capabilities of Canadian universities is an achievement, this does not automatically result in more innovative outcomes. The private sector, on the other hand, still lags behind other OECD countries, performing only 57% of all Canadian R&D (ibid. 40). What R&D is performed is also very highly concentrated; roughly 30% of all private-sector R&D is conducted by only four firms, indicative of little diversity and high concentration (Industry Canada 2001, 40). Canada's private sector is still performing less R&D than its American counterpart, and what is more, is also under-performing when compared with several smaller countries, such as the Netherlands, Sweden, and Switzerland (Niosi 2000, 73). Furthermore, while Canadian firms have acquired technological capabilities in most new science-based industries, including biotechnology and telecommunication equipment, these two are still areas in which Canada lags behind

other industrial countries (*ibid.*). The structural characteristics of Canadian economic development as identified by the new Canadian political economy over twenty years ago, and which acquired their current forms during permeable Fordism, indicate that correcting for this underinvestment will be no easy task.

Canadian manufacturing continues to be dominated by branch-plants is perhaps the single greatest structural barrier to achieving the kind of innovation-led growth that characterizes a post-Fordist KBE. Branch-plant industrialism dates mainly from Canada's permeable Fordist development model, though as we saw above in Chapter Three, foreign-owned industry has been a feature of Canadian economy since at least the National Policy era. Canada's manufacturing base comprises mainly small firms, and those large firms that are present are largely foreign owned, mainly by US capital. Indeed, nearly 50% of all manufacturing firms in Canada are foreign owned, with the percentage even higher for technology-intensive industries (Britton et al. 1996, 439). Numerous implications follow.

In the first place, technology dependence remains the dominant feature of Canadian manufacturing. As Niosi notes, foreign control of much of Canadian manufacturing has resulted in Canadian subsidiaries spending less on R&D and importing more technology from foreign parent companies (2000, 68; also Wallace 2002, 12). This leads to Canadian industry largely assuming the role of "followers," since many firms "follow foreign innovation through some R&D, or buy it in either intangible or tangible form, from more innovative countries" (Niosi 1998, 91). Britton et al. argue that "this

approach... commits business to little expenditure on product development" (1996, 437). Regarding advanced technologies, the leading strategy of the majority of Canadian firms in many industries is that of "adopt/adapt" (ibid.; citing the Science Council of Canada 1992). Because these firms typically adopt and adapt technologies developed elsewhere, Canadian firms exhibit low levels of R&D compared with foreign ones; in fact, Canadian firms perform approximately one-third to one-half as much R&D (as a percentage of sales) as do international competitors (ibid.).⁸ In the pulp and paper industry, to name but one, Canadian firms are oriented towards commodities such as lumber and pulp, and perhaps as a result do not consider technological R&D of great importance. Thus, although these data are slightly dated, the trend has been for that sector to spend 0.3% of sales on R&D, whereas competing firms in Japan, Sweden, and Finland spend between 0.8 and 1.0% (ibid.).

Not only does the foreign-ownership feature of the Canadian economy mean there is less R&D being performed by firms, but many positive spill-over effects are lost as well. Parent companies tend to retain "higher-level corporate functions" (including R&D) in the home countries, and as a result their Canadian subsidiaries create fewer demands for producer services such as design, marketing, and consulting, (Wallace 2002, 12). This lack of demand for these types of knowledge-intensive services results in the under-development of these types of services. While Canada is still able to acquire the direct benefits of R&D by importing most of it, the Standing Committee on Industry, Science, and Technology finds that the indirect benefits are absent. These benefits include the

⁸ As Britton et al. note, the telecommunications sector is the one main exception to this

emergence of skilled, trained researchers and workers and the spin-off benefits that accrue from having major industrial research laboratories in-country (2001, 13). For this reason, the Committee argues that “attitudes must change,” and that Canada needs to develop an “innovation culture” (ibid.).

Related to the predominance of branch-plants is the overwhelming presence of small firms in Canadian industry. In their important work on industrial districts Piore and Sabel (1984) assert that the firms most likely to succeed after Fordism’s decline are smaller ones that have become integrated into regional agglomerations, since smaller firms are more flexible and benefit from non-specialized production technology and constant communication with other firms, and are able to respond quickly to changes in market conditions (as cited in DiGiovanna 1995, 374). However, in Canada’s case small firms typically cannot engage in the levels of R&D that larger ones can (Niosi 2000, 68; see also Britton et al. 1996, 434). Also, as noted above small firms do not engage in substantial levels of technology transfer, which is a significant feature of the flows of knowledge identified by systems of innovation and the innovation paradigm. It would appear that while smaller firms may be more flexible, they lack the capital and human resources that can more likely lead to the break-through technological innovations that result in market leaders. What is more, small firms appear to lack the supports for conducting greater amounts of R&D; I return to this point below.

A second structural quality explaining the underinvestment of the private sector in R&D, and previously taken up by the new Canadian political economy as well, is Canada's overwhelming reliance on staples for capital accumulation. Although the Canadian economy has indeed become more diversified in recent decades, it is nevertheless the case that natural resource staples still dominate. In fact, Canada is "distinctive" among members of the G7 for "its continued reliance on its natural resources" (Britton et al. 1996, 433). In the early 1990s, natural resources still accounted for 45% of total exports (Liberal Party of Canada 1993, 55). Regarding this dependence on resource-based industries, Niosi notes that these industries are not typically R&D intensive (2000, 68), with a direct affect on innovative capacities for firms in these sectors. In fact, the forestry sector's investment in R&D was actually declining in the 1990s, while the use of imported equipment increased (Britton 1996, 98). An interesting corollary of this phenomenon is Watkins' "staples trap," in which secondary manufacturing related to staples through forward and backward linkages is not sustained in light of the overwhelming attention paid to the staples themselves (see Britton 1996, 98). Making the point from a slightly different angle is the Standing Committee on Industry, Science, and Technology, which argues that Canada's poor industrial R&D performance is "not necessarily a cause of any innovation problem the country may have, but is a symptom our industrial structure being focused— and probably too focused— on exploiting its natural resource base" (2001, 22).

Canada maintains its reliance on the export of resources, particularly lumber, wood pulp and paper, crude petroleum, ore, and wheat (Britton 1996, 97). Canada was, and is, a

commodity exporter, and continental trade rationalization, a defining feature of permeable Fordism, remains at the heart of Canadian development strategy today. We might question, then, the ability of a national strategy to improve the country's innovation performance given Canada's overwhelming "susceptibility to international developments" which has been "central to its experience as a trading nation" (Campbell 1999, 129). Indeed, Canada "has lived by—and died with—the twists and turns of the global economy" (ibid.). Pal identifies the volatility that comes with being so dependent on trade, especially when so reliant on US forces (1999, 11). This dependency was very much a central concern of the new Canadian political economy thirty years go; it seems, then, that in this sense that literature was able to call attention to certain key features of the Canadian economy that could affect development even in a post-Fordist era. Therefore, even if the development strategy conceived of by the government were capable of improving Canada's innovation performance, the economy ultimately remains dependent on global markets, and in particular the conditions in the US.

The reliance on staples exports and technology imports raises an important point regarding Canada's currency valuation. By not developing domestic capacities in high-technology fields, Canadian firms must continue to rely on either the adoption of technological advances from parent companies (in the case of branch-plants), or the import of such technologies from abroad. Here we can consider the effects of Canada's currency valuation. A cheap dollar, a clear competitive advantage for a trading economy specializing in commodity exports, puts importers of innovative new technologies at a clear disadvantage. Building on the strengths of Canadian S&T and R&D, in addition to

an educated labour force, to develop leading technologies for domestic application and export makes good sense. Nevertheless, considerable barriers impede this development.

In addition to the difficulties associated with the branch-plant and staples-focus of Canada's economic development is a related phenomenon, namely Canada's experience of highly uneven regional development. Canada remains "one of the most highly regionalized countries in the developed world" as a result of "the interaction of physical geography and settlement history" (Wallace 2002, 21). In short, Canadian development has traditionally been dictated by the location of key resources (Jenson's "geographic lottery"—see Chapter Three). As a result, globally competitive Canadian industry has developed in relatively few regions, primarily southern Ontario and southern Québec, while regions dependent on the export of resource endowments have experienced the highs and lows of international commodity markets, changing demand, and competition from lower-cost exporters. As a result, today the Canadian innovation gap is also an internal one, since Canadian innovation is heavily skewed in favour of those regions (provinces, or at least parts of same) with greater levels of industrialization. A breakdown of the statistics on R&D performance depicts the extent to which innovation is bound to be skewed in Canada. Ontario and Québec stand out: in 1995, Ontario was home to 55.5% of Canada's industrial R&D, with \$4.2 billion, or 51% of total Canadian R&D expenditures (Niosi 2000, 64-5). Québec is the next largest region, accounting for 26% of Canadian industrial R&D (*ibid.* 65). The drop-off after these two provinces is dramatic. British Columbia, with 7.2% of total Canadian industrial R&D, and Alberta with 5.8%, are third and fourth respectively (*ibid.* 65). The Atlantic Provinces, Manitoba,

and Saskatchewan are almost non-players in terms of industrial R&D performance in Canada. However, while Ontario and Québec firms stand out as key performers of R&D in the Canadian national system of innovation, the reality is that even within these provinces there are few truly globally-competitive industrial regions.

With Canada's fragmented innovation system, there are many problems that impede innovation-led growth, such as geographic barriers to knowledge flows (especially tacit), technology transfer, and an absence of the critical masses of networked firms and R&D institutions that contribute to innovation. Indeed, regarding technology transfer and sustaining important linkages between suppliers and users of advanced technologies, it is not particularly easy for firms to simply implement new technologies and thereby realize productivity gains and greater innovation. Increases in productivity are "anything but automatic," writes Gertler, who refers to the difficulties manufacturers face as they seek to utilize new advanced process technologies (1996, 285). This problem is magnified in Canada, since the evidence suggests that a key factor in the overall success of firms implementing new technologies is the geographic proximity of the firms doing the implementation, and those firms producing those new technologies. Thus, Canadian firms are not only usually small, but also distant from sources of new innovative manufacturing technologies. The greater the distance between producers and users of innovative technologies, the more likely that implementation problems will arise, problems go unsolved, and the user's future needs be unmet (*ibid.*). What is more, Canadian regions, even the largest, "are probably too small to sustain many self-sufficient

research programs,” and as a result, R&D relationships occur in Canada on a national scale (Niosi 2000, 65).

Another feature of Canadian industrial location is that although there are a number of small industrial regions in Canada, only two sites, Toronto and Montreal, provide the range of services, actors, institutions, and linkages that are seen to be instrumental for innovation on any globally-competitive scale (Britton et al. 1996, 439). As we have seen, the role of clusters plays a central role in the innovation paradigm, and fostering cluster growth appears as a key component of Canadian economic development strategy (see previous chapter). Despite the desire on the part of the Canadian state to achieve just this, it is not clear that such clusters are entirely creatable on government demand. It is unclear that Canada will be able to compete with leading innovative economies with a fragmented and under-developed national innovation system based as it is on a few globally competitive clusters and many smaller ones, all separated from one another by vast distances. While information and communication technologies surely assist in overcoming these types of barriers, systems of innovation theory tells us that geographically-proximate networks of actors are key. Geographic regions are also more likely to provide the social capital seen as necessary for relationships between economic agents, such as cohesive factors like culture and language (a matter of particular importance in a bi-national Canadian state).

This raises a final point relating to the spatial problems of Canadian innovation, particularly as they are reflected in the long-standing pattern of uneven regional

development. Given Canada's fragmented system of innovation and the highly uneven distribution of markets, there seems to be an imbalance between supply of innovative inputs (in particular skilled labour and cutting-edge technologies) and demand for these factors. This disconnect is closely linked to the contradiction between a national strategy and regional disparities, though I return to this point below. While the balance between supply of advanced technologies and highly skilled labour and the demand for these inputs is more or less maintained in the few globally competitive regions in Canada (for example, in Toronto and its surrounding areas), the disconnect becomes apparent in other parts of the country, especially the most marginalized ones in which resource industries are failing.

An example of the state's development strategy geared towards fostering innovation-led growth in marginalized regions neatly illustrates the potential for an imbalance between the supply of innovative factors (technologies, skilled labour, R&D) and the ability to exploit these inputs. The Atlantic Investment Partnership (AIP) was launched in 2000, informed largely by the ideas of the innovation policy paradigm. Haddow argues, though, that the government's efforts at stimulating high technology growth in one of Canada's poorest regions face "a very severe test," one that much of the theory underlying the paradigm "would predict is likely to fail" (Haddow 2001, 271). This is so because proximity to existing markets and stocks of capital, both financial and human, is seen as a crucial determinant of innovation. As Haddow writes, "using government to foster these factors when they are not otherwise present is, at the very least, a risky enterprise" (ibid.). Or as Yates puts it in her consideration of the serious disadvantages in

the Atlantic region, there simply are no jobs to begin with. What is there for workers to train for? (Yates 1995, 98). The problem, it would seem, is a lack of coordination between supply and demand in a post-Fordist KBE.

Wolfe also argues for a better balance of supply and demand measures: improving the innovation system “involves the coordinated upgrading of both demand and supply in order to utilize the new resources provided by the technological infrastructure” (2002, 151). Therefore, there should be a focus on encouraging the development of “dynamic, locally based clusters of innovative firms embedded in regional innovation systems” (ibid. 153). While federal funding increase to the NRC’s clustering program is a positive in this sense, it continues to focus primarily on the supply side of innovation (through funding of R&D activities) rather than on also enhancing the demand for new technologies (ibid.). Key to fostering the demand-side of the equation is improving Canadian venture capital financing, and Wolfe argues for the BDC to expand its venture capital activities, among other initiatives (ibid.). In short, the federal government must spend more time and money on advancing the development of clusters in order to bridge the gap between supply and demand, and to stimulate the development of both. Of particular importance here is a strategy to better encourage the integration of research institutes and businesses across geographic scales.

Market size is a definite barrier to the development of leading, innovative technologies in Canada. In 1991, Porter identified Canada’s weak innovation performance as the result of the low level of stimulating and creative linkages among firms that are needed to

generate flows of knowledge and technologies and, ultimately, innovations (in Britton et al. 1996, 439), and after a decade of state development strategy aimed at fostering these kinds of linkages, it seems that outcomes have not changed. In Canada's case, those advanced technologies that are developed in this country usually are done so in response to demand from international sources (Britton et al. 1996, 438). Few Canadian firms have been able to create advanced technology-intensive domestic demand (*ibid.*), which in turn negatively affects the growth of domestic clusters and networks. This is so due to the beneficial effects that linkages between supply and demand in regional settings have on the generation of innovation. Given the importance of globally competitive industrial centres for supply and demand purposes, one would expect there to be a greater focus on fostering the innovative capacities of Canadian cities in the state's development strategy. However, an urban agenda is conspicuously absent in state policy-making throughout the 1990s.

Interestingly, there appears to be a "widespread tendency to overlook any structural and behavioural weaknesses in Canada's major industrial locations, especially Toronto, in favour of policies to develop less-favoured regions" (Britton et al. 1996, 440). Of course, the dominant focus on Canada's regions and smaller communities (particularly the marginalized ones) represents the long-standing tradition in federal politics and economic development. Thus, Canada's innovation paradigm features programs aimed at rural areas, small communities that traditionally have relied on resources. The Community Futures program aims to help smaller centres make the transition to the KBE. At the same time, though, it is the larger centres in Canada that will provide the basis for

innovation-driven growth in the years ahead. As Britton et al. argue, “now that the long postwar boom has been replaced by episodes of stagnation, slow growth, and structural change, the problems of flawed and incomplete innovation systems in Canada’s industrial regions are of greater significance and can no longer be ignored” (ibid.). The tension between an urban and rural focus has entered the Liberal leadership race of 2002-03, with Martin intimating that cities will play a more substantial role in federal policy-making in the future.

While there are a number of leading countries that focus around 3% of their GDP on R&D in a wide array of new technologies (mainly the US, UK, France, and Japan), and a smaller number of “niche innovators” like Sweden and Switzerland that focus considerable amounts of GDP on a few, leading technologies, Canada, in contrast, is usually characterized as an R&D “follower,” joining such countries as Belgium and Denmark (Niosi 1998, 91). This may stem from the unavoidable fact that Canada is by and large a small country and, as such, suffers from scale disadvantages that inhibit innovation processes (Britton et al. 1996, 439). Small market size and the strongly regional distribution of these markets, combined with low levels of R&D that result from the branch-plant and staples dependent nature of the Canadian economy, are key barriers to innovation-led growth in Canada. In the end, Canada’s experience as an “innovation laggard” has been, to a considerable extent, the result of key structural factors that have collectively undermined the innovation policy paradigm as a foundation for Canadian economic development.

Misplaced Expectations? The Contradictions of the Canadian Innovation Policy Paradigm

The preceding discussion focused on some of the leading reasons why the innovation policy paradigm may be unsuitable to the Canadian case, and identifies several structural characteristics of Canadian development that constitute barriers to innovation-led growth in the post-Fordist KBE. At the same time, there are numerous contradictions that inhere in the policy paradigm that can also be identified as barriers, either current or potential, to innovation-led economic development. The first point concerns leveraging private sector investment with public funds. Several components of innovation policy-making throughout the 1990s focus on partnering with the private sector. The Canada Foundation for Innovation (CFI) is an example of this strategy, providing up to 40% of a research project's costs as long as the remaining 60% has first been secured from another source, typically the private sector. Inducing greater private sector investment in R&D activities is a theme running throughout the Innovation Strategy of 2001 also. However, while the goal is obviously to generate that private sector investment in the first place, real questions emerge given that the overall record of private sector investment in R&D has traditionally been low, due largely to the factors outlined above. Considering the importance of the high technology sector to generating innovations in Canada, Hale notes that since the overall success of increased public investment in R&D largely depends on its ability to leverage large volumes of private sector investment, the Innovation Strategy of 2001 is dealt a considerable blow if much of that sector is still recovering from the massive losses it sustained in recent years (2002, 41).

A second contradiction concerns the commercialization of R&D, which is a central component to any innovation system. A considerable difficulty will continue to be the emphasis on efforts to stimulate basic research while simultaneously trying to encourage the commercialization of R&D so as to realize market gains sooner. The compatibility of the two policy goals is not immediately obvious, and in fact may be contradictory. Many scholars have observed the importance of basic or curiosity-driven research, both for its own sake, and as important steps in R&D processes whereby commercialization may in fact result in the end. An immediate emphasis on commercial results, however, can easily lead to skewed decision-making early on, whereby projects with no readily-apparent market up-side may be overlooked.

Third, foreign-owned firms “are closely controlled by the global strategies of their parent corporations,” making them in the end far less responsive to the innovation policies of the Canadian state (Britton et al. 1996, 439). This certainly raises questions regarding the efficacy of a Canadian national innovation agenda in the first place, especially from the perspective of inducing the private sector to invest more in innovative activities. Fourth, we might ask whether the state’s development strategy follows the basic tenets of the innovation paradigm, specifically systems of innovation theory. For it appears to some that the only thing missing in the government’s strategy thus far is clarity. Wolfe goes so far as to argue that “the actual initiatives introduced... have largely been of an incremental nature, supporting or expanding existing programs, or have concentrated on the funding of research,” adding that “while the government has paid lip service to the

concept of a national innovation system, its actual initiatives reveal little understanding of the implications of such a system for the policy framework” (2002, 142). Wolfe wonders whether the “deployment of new funds without a better understanding of the nature of the innovation system” in Canada is an effective strategy to achieve the government’s innovation goals and targets (2002, 138). Pursuing this idea a little further, Wolfe asks whether the federal government would be better to make fewer commitments to so-called “broad objectives of dubious value to our innovation performance,” and instead pay closer heed to “insights relevant to policy development that are derived from the innovation systems approach” (2002, 148).

The biggest contradiction of all is that the innovation-based economic development strategy is one for the post-Fordist KBE, but developed for an economy still dominated by the branch-plants and resources that characterized the permeable Fordism of the post-war era. It is a supply-side strategy aimed at fostering the many under-developed markets for high-tech skills and technologies. In response to the demands of the neoliberal paradigm, the state had begun to remove itself from microeconomic policy-making in the 1980s, and in the 1990s the Liberals continued this process (see Clarkson and Lewis 1999, 313-13).⁹ The neoliberal state sought to improve Canadian competitiveness by subjecting capital to the “disciplines” of global competition (ibid.).

⁹ Writing in 1994, Gualtieri states that neither recent Liberal and Conservative governments “felt comfortable funding near-commercial technology development; it appeared to be too close to ‘picking winners.’ A belief in the importance of the ‘economics’ surrounding the idea of competitiveness manifested itself in a willingness to fund pre-competitive research and development, which was high enough up the innovation chain to avoid any suggestion of an ‘industrial policy.’ The new R&D subsidy rules of the GATT re-enforced this approach” (Gualtieri 1994, 306).

The market-centred approach displayed in the Innovation Strategy of 2001 continues this trend: “competition, not protection, generates innovation” states *Achieving Excellence* (Industry Canada 2001, 25). To this end, the state endeavours to improve the so-called “innovation environment” by reforming corporate and personal income taxes, reducing unemployment insurance premiums, and maintaining very favourable R&D tax credits (ibid. 63). It is not at all clear how reduced tax revenues will coincide with the state’s commitment to supporting R&D. Nor is it clear how such tax policies will allow the state to maintain social services. This last point is salient given recent debates around funding for health care and education in Canada. In other words, tax reform policies meant to make Canadian capital more innovative may not work in conjunction with the state’s other commitments including, paradoxically, increasing R&D funding.

Elaborating on the last point, the state’s economic development strategy is a *national* “industrial strategy” in an era in which the national scale has lost its primacy as the site for both production and regulation. Clarkson and Lewis note of the 1999 federal budget the “coordinating, Ottawa-affirming character” of its R&D investment and commercialization initiatives (1999, 314). For its part, the Innovation Strategy of 2001 remains largely a top-down one; it is, in fact, very much a national-level strategy for an economy demanding sub-national modes of regulation—and this despite its repeated claims that it will focus on communities and bottom-up initiatives. Indeed, this criticism of conflicted state policy was made earlier of the Red Book (Paquet and Roy 1995, 139-40). Since the innovation policy paradigm stresses the shifting scales of production, and the post-Fordist KBE demands, accordingly, sub-national (as well as supra-national)

modes of regulation, we might agree with Doern who asks how a national strategy being developed by the Canadian state could relate to views about growth that recognize innovation as a bottom-up, local and regional phenomenon (1996, 94).

Canada's regional patterns depict clearly the "reterritorialization" (see Chapter Two) of capital accumulation. Hunt goes so far as to argue that "any notion of an east-west Canadian 'economy' is problematic," and points to the strong linkages between Canada's regions and other, non-Canadian ones (2001, 136; see also Wallace 2002, 29). For example, British Columbia's economy is linked with those of the Pacific Rim, Alberta's economy with the oil and gas sectors of the Texas Gulf, the prairies with the US mid-West, and Ontario and Québec with the Great Lakes economies (ibid.). As a result of these shifts, many observers have noted the incongruity of a national-level strategy in an economy in which production, especially of the innovative variety, is a highly regional and fragmented phenomenon. Attempts to formulate policy "at the national level exclusively may founder on the diversity that characterizes the Canadian innovation system," argues Wolfe, while a more regional focus would help ensure the recognition of the innovation process within these diverse realities (2002, 151). Regarding the skills agenda specifically, Hale argues that Ottawa's ability to meet expectations and achieve targets "is complicated by the diversity of labour markets, the range of stakeholders whose cooperation is necessary for effective federal action, the challenges of forecasting labour market requirements in an era of continuing changes in technology and the structures of many industries," not to mention the "overriding reality of federalism" (I return to this below) (2002, 32). Finally, taking a more practical angle, Niosi wonders

how Ottawa would continue to attempt more centralized or *dirigiste* policy-making. For one thing, provincial governments have become more powerfully politically, and “Ottawa appears incapable of imposing discipline on them or of obtaining their cooperation” (1998, 105).

Of course, the irony here is that the “hollowing-out” of the Canadian national state in the 1980s/1990s shifted considerable power to the provinces in the first place. At the same time, due to transformations in the nature of capital accumulation associated with the crisis of Fordism, provinces and municipalities have not simply had power granted them (although in the case of municipalities even this was largely incomplete, given their inability to raise revenues and constitutional lack of real standing vis-à-vis provinces), rather, these scales of governance have *asserted* their relevance in the post-Fordist KBE. This phenomenon is entirely reminiscent of province-building strategies during the crisis of permeable Fordism. As we saw above in Chapter Three the KWNS was first legitimated by a particular federal-provincial negotiation, and disintegrated alongside Fordist accumulation, as that compromise broke down. It follows that a SWPR would need to resolve the current tensions between the regions/provinces and the federal government. However, can the Canadian state move away from organizing its economic development efforts at the national level, and towards other (provincial, municipal) scales? The “upwards, downwards, and sideways” re-organization of economic regulation is a part of the SWPR and is theorized to constitute a necessary restructuring of activities in correspondence to a post-Fordist KBE. It is unclear whether the Canadian national state is ready and willing to make such a transition. After all, the record of

federal-provincial relations is clear on one thing: the tendency to centralize and retrench federal power in the face of rising provincial autonomy has been a long-standing feature of Canadian politics. As Graham writes, “any discussion of the role of the federal government relates to traditional analyses of the pendulum swing between centralization and decentralization in our federal system” (1989, 2).

The issue is far more than one about federal-provincial demands, though. For it is unclear whether the regulatory demands of a post-Fordist KBE can be resolved given Canada’s particular experience with federalism. In short, the federal structure makes the search to find the best scales at which to regulate capital accumulation in the post-Fordist KBE a highly problematic one. Canada’s federalism calls for a clear distribution of powers; the extent of the devolution and redistribution of responsibilities suggested by systems of innovation theory on the one hand and the SWPR on the other cannot occur easily in Canada, as long-standing constitutional conflicts will attest.

Canada’s experience of federalism presents a particularly daunting challenge to the successful realization of both the innovation policy paradigm and the SWPR. Federalism itself describes a non-hierarchical, “non-unitary,” system of power-sharing in a given territory.¹⁰ It is an “open and flexible approach to governance, sensitive to complexity of allegiances and values in a diverse society,” and is modelled on a set of institutions in which power is distributed among levels of government (Field and Rocher 2000, 39).

¹⁰ My definition and discussion of federalism in the Canadian context draws on *At a Juncture? For a New Understanding of Federalism and Citizenship in Canada*, by Field and Rocher (2000).

Ideally, a federal structure of shared governance can be “a way of reconciling, rather than destroying, the seemingly conflicting currents of globalization and integration on the one hand, and preserving national and regional identities on the other” (ibid.). Moreover, federalism in its truest sense “excludes any quest for hierarchization [sic] among entities that choose to federate, be it economic, political or cultural;” in other words, the point is not so much *national* unity in its homogenization sense, as it is about shared values and interests (ibid.). While even this brief theorization of federalism might trouble Canada’s claim to federal status, it also raises questions about the efficacy of economic strategies formulated upon a framework of rigid distribution of powers and characterized by federal-provincial pressures and conflicts, as Canada’s most surely is.

For Canada to experience sustained capital accumulation and growth in the future, the tensions and contradictions of Canada’s federalist experience will need to be resolved. In permeable Fordism the political compromise was largely one between the federal and provincial governments, with Canada-wide nation-building the hegemonic paradigm legitimating a Fordist-Keynesian development strategy. A SWPR demands new spatial distribution of regulation and governance, a redistribution of authority, powers, and responsibilities both upward and downward from the national level. The latter process will be particularly difficult given the rigid distribution of power in Canada’s federalist constitution. It would seem that another compromise is needed to support a SWPR and innovation-centred development, one that can come to terms with not only federal and provincial demands, but also increasingly those of municipalities.

In the first place, this compromise would have to resolve the contradictions between key areas of jurisdiction in a post-Fordist KBE. In Canada's case, many of the key features of regulation for post-Fordist capital accumulation are split among the various levels of government, making a national strategy highly suspect. For example, the fact that the federal government retains authority over international (and internal) trade is a key issue, given the importance of regional economies in Canada. This feature came to the fore during the crisis in permeable Fordism over the issue of resources, over which the provinces have control. Then there are matters such as labour force development, national-level initiatives for which are complicated by the fact that provinces have jurisdiction over education, though education and training play key roles in the Innovation Strategy and, indeed, in the innovation policy paradigm more generally. Hale's analysis of the federal-regional disconnects that are likely to occur in labour and training strategies is recalled here (see above). The federal government influences R&D, yet universities are the responsibility of the provinces. In short, this point takes us back to earlier ones about the appropriateness of a top-down, national strategy in a diverse, fragmented, and federal territory like Canada.

Second, a key point is surely the ascendant importance of the local level of government in the post-Fordist KBE. Capital regulation must follow the rescaling of capital accumulation, and due to the particular structure of Canadian federal politics, this key level of regulation is by and large neglected or, at best, made into extensions of a *national* strategy. It bears repeating that the Innovation Strategy is largely focused on regions and smaller communities as opposed to larger urban centres. However, it is these urban

agglomerations that reside at the heart of an expanding economy in the post-Fordist KBE. What are the current trends? On the one hand, the Social Union Framework negotiated between the federal and provincial governments continues a pan-Canadian identity and national standards, and subordinates the provinces to Ottawa (Field and Rocher 2000, 47). This would suggest a trend away from realizing the post-national regime moment of the SWPR. At the same time, provincial and territorial leaders have just moved to create, at Québec Premier Charest's request, a "Council of the Federation" as a means of reasserting provincial power and an attempt to wrest from the federal government the economic agenda. There is, though, little certainty on how local levels of governance will assume their regulatory responsibilities.

Overcoming the Obstacles to Innovation-driven Growth

That innovation-led development has thus far proven elusive for Canada as a whole suggests the federal government should either abandon the innovation policy paradigm altogether, or adapt it further to respond to the Canadian case. The former is unlikely given the ascendancy of the post-Fordist KBE. This section considers the latter option. I have hinted at some of the factors that will need to be resolved, such as those relating to Canada's federal structure. In this final section, I introduce a number of areas in which the government will need to make a deeper commitment to fostering the conditions needed for innovation. To some extent, the Innovation Strategy of 2001 represents an awareness of these issues.

The first area in which the government's version of the innovation policy paradigm will have to make a deeper commitment is improving R&D expenditures, most notably its own. In this sense, both the 2001 Speech from the Throne and the Innovation Strategy are promising, since both promise increases in funding. According to Statistics Canada (and cited by Wolfe), Canada's total spending on R&D did in fact rise significantly throughout the 1990s, from a total of \$12.992 billion in 1993, to \$18.288 billion in 2000, in constant 1997 dollars (Wolfe 2002, 144). GERD as a proportion of GDP increased from 1.67% in 1993, to 1.81% in 2000, largely due to, as Wolfe notes, the boom in the high-technology sector (2002, 144). However, moving Canada to fifth position in terms of R&D spending by 2010, as pledged by Prime Minister Chrétien in 2001, signifies a massive challenge for the government. In terms of international ranking in R&D intensity, Canada has been surpassed over the last ten years by many smaller industrialized countries, including most of the Nordic countries (Wolfe 2002, 145-6). Indeed, according to the Conference Board of Canada's Second Annual Innovation Report (2000), to merely improve Canada's R&D intensity ratio to the OECD average would demand investing about \$6 billion in current dollars, with about half the increase coming from business and half from government. Wolfe argues that "this represents a substantially greater increase than the government has promised and would still not move Canada to the fifth rank among the OECD countries" (2002, 145-6). It is unclear how the state can achieve such spending commitments and, even if successful, whether they will be enough to improve Canada's innovation performance.

To overcome low (but improving) private sector R&D investment the state will have to continue to increase its portion of the GERD/GDP ratio, largely by improving on the \$1.1 billion per year allocated in 2001/02 to the granting councils (Industry Canada 2001, 26). Future increases must be more equitably distributed among the three major councils so as not to ignore those disciplines whose contributions to Canada's stock of knowledge are not immediately obvious from an economic perspective. The Standing Committee on Industry, Science, and Technology recognizes that the Social Sciences and Humanities Research Council of Canada (SSHRC) must receive more funding (2001, 75-6). In this way, then, the state can build on the already impressive performance of R&D at universities. Related to greater funding for research is addressing the highly unequal distribution of this funding. A prime example of this phenomenon is the Canada Research Chairs program, which many observers have found to be skewed towards allocating chairs to already-established research universities. Indeed, as of 2001, only 6% of all allocations went to smaller universities (Standing Committee on Industry, Science, and Technology 2001, 95). Redressing this imbalance is essential if Canada's already highly-regionalized NSI is to be overcome. In short, smaller universities in centres other than Toronto, Montreal, and Vancouver must be recognized as important contributors to Canada's R&D capabilities, and given the resources to sustain their contributions. Of course, the private sector must be encouraged to invest more in R&D activities as well. The record shows a steady improvement in this respect, but more must be done to induce firms to invest in innovation. The Scientific Research and Experimental Development (SR&ED) tax credit mechanism is well-developed and recognized as generous by OECD standards (Standing Committee on Industry, Science,

and Technology 2001, 61; Fyfe and Viner in Corporate Management Tax Conference 1999, 2:2). Overall, Fyfe and Viner estimate that although over 11,000 claimants shared \$1.3 billion in benefits in 1998, less than 30% of all qualifying projects are claimed against the program (2:2; 2:17).

A critical challenge in the years ahead will be the degree to which the innovation policy paradigm adopted by the federal state emphasizes small and medium-sized enterprises (SMEs). Rather than focusing so much on the innovation gap that separates Canada from the US and other advanced economies, Canada's economic structure is such that concentrating on developing many "niche" innovators capable of adjusting quickly to the volatility of the post-Fordist KBE must be the key plank of any innovation agenda.

Wallace hints at the potential of Canadian SMEs by stating that "the greater contemporary advantage of smaller-scale, flexible producers of 'niche' products provides market opportunities in which Canadian manufacturers and producer service firms need not be disadvantaged vis-à-vis established transnationals with large domestic sales" (2002, 12-3). Thus, if Canadian firms cannot achieve the levels of R&D intensity needed to close the gap, making it a matter of principle to develop the innovative capacities of SMEs must become a defining feature of Canada's innovation policy paradigm. They have been, after all, the key motors of growth and employment in Canada since the late 1970s (cf Ray 1996). SMEs must be given greater assistance in accessing the SR&ED program.¹¹ Overall, the Innovation Strategy does indicate an acceptance of the role

¹¹ It has been argued that SMEs have difficulty accessing the SR&ED tax credit program. The Standing Committee on Industry, Science, and Technology note that administrative problems and lengthy application processes discourage many applicants from accessing

played by SMEs, by pledging to help them adopt new cutting-edge technologies and form international R&D alliances (Industry Canada 2001, 53).

A third area of importance is overcoming the highly regionalized nature of Canada's NSI by improving the flows of knowledge among firms across the country. This would include creating more avenues for technology transfer and collaboration, as well as connecting firms and R&D institutions. Again, the Innovation Strategy acknowledges the importance of these factors. Claiming that "innovation should not be viewed as exclusively based in large urban centres," the Strategy pledges to improve broadband internet networks in order to provide the "infrastructure needed to develop and deliver advanced applications and services that will bring greater economic and social benefits" to communities across Canada (Industry Canada 2001, 74-5). Further, the Strategy aims to create ten new technology clusters that should improve the types of relationships required for innovation (*ibid.* 76). If innovation-led growth is to drive Canada's economy in the future, greater commitment to overcoming many of the obstacles presented by the country's vast distances will need to be overcome.

Fourth, the government must make a far greater commitment to fostering innovation in the staples sectors. As we saw above, R&D expenditures are extremely low in natural resource industries. Given the overwhelming importance of these sectors to the Canadian economy, making them more globally competitive should be a priority. For example,

the program, with a disproportionate number of these firms being SMEs often without the human resources to devote to the process (2001, 62).

that forestry-based industries remain such significant components of the Canadian economy (as discussed in Chapter One) hides the possibility that they could be even stronger. Forward and backward linkages from this sector (and in mining) are nearly non-existent in Canada, leading Wallace to refer to Scandinavia and “what might have been possible” had firms in Canada committed to more intensive R&D (2002, 12).

However, the Innovation Strategy does not pay much attention to these sectors, as the tone of most government rhetoric continues to centre on the new high-technology industries such as biotechnology, telecommunications, and aerospace.

Fifth, a key area in which the Canadian government must make a much stronger commitment is in its efforts on education and training (the so-called “skills agenda”). In this sense, a key strategy must be to build on one of Canada’s greatest strengths, its highly educated and talented population. As our discussion on federalism has demonstrated, improving in this area would necessitate a closer working arrangement between the federal and provincial governments. In short, improving access to post-secondary education, at both universities and colleges, must become a priority of the highest order. If the goal is to develop a highly-educated and –trained workforce, then publicly-funded education must be put on the agenda. The Innovation Strategy and older initiatives suggest an acceptance of this argument in principle.¹² However, real commitment must be made to lowering tuition fees and improving scholarships and

¹² Older initiatives such as the Canadian Opportunities Strategy launched in 1998 addressed issues such as tax relief for students and their families, scholarships, assistance for students with children, and life-long learning programs to assist those already in the workforce.

needs-based grants. From a regional perspective, the government must address learning opportunities outside of the major urban centres.

Finally, and most crucially, the government must truly commit to sharing regulatory functions with lower levels of government. The Strategy recognizes local and regional levels, and grants that communities themselves must assess their goals and needs in the new economy (Industry Canada 2001, chapter eight). However, as has been discussed, the Strategy and many of its initiatives remain top-down in nature. Thus, the very success of Canada as a leading innovator, and perhaps even its economic fortunes more broadly, may depend on the federal government making a far greater commitment to recognizing the changing “geography of the Canadian economy” in which the east-west axis of economic activity has been largely replaced by a north-south one.¹³ As we have seen, Canadian regions have become more closely integrated with non-Canadian regions in recent decades, with certain regions such as southern Ontario shaped more by continental forces in the 1990s than by those originating in other parts of Canada (Wallace 2002, 59). The features of both the post-Fordist KBE and Canadian economic development demand that the emergent Canadian SWPR realize more fully its post-national regime moment so as to shift regulation functions to levels of governance more able to respond to the new imperatives of capital accumulation. This will not be an easy process, given the historical and federalist realities of Canadian governance. Nevertheless, a dramatic reordering of Canadian regulation has already begun with the

¹³ “The Geography of the Canadian Economy” is borrowed from the title of Wallace’s recent book (2002).

“hollowing-out” of federal and provincial states in the 1980s and 1990s and will need to continue in the future if the factors leading to innovation are to be improved.

Conclusion

At this time I return to the two questions raised in Chapter Three: first, even if the innovation policy paradigm has come to influence the Canadian state’s economic development strategy, reflecting in the process a shift towards a SWPR, will it be able to address the structural qualities characterizing capital accumulation throughout Canada’s history, particularly those that defined permeable Fordism? Second, can the innovation paradigm with its emphasis on the relativized scales of production be made suitable to a Canadian political economy characterized by uneven regional development and long-standing federal-provincial tensions, the latter a product of the very nature of Canada’s federalism? Based on the discussion above, it is likely that the innovation paradigm has been, and will continue to be, undermined its application as a development strategy in Canada. The structural barriers inherited from Fordist development are significant, and the contradictions of the paradigm are real. Nevertheless, the government’s focus on encouraging innovation-led development may be the most logical path forward given the emergence of the post-Fordist KBE, and Canada’s position as a relatively high-cost economy. As a result, overcoming the barriers preventing Canada from closing the “innovation gap” may demand a much greater commitment on the part of state.

Chapter Six: Conclusion

“Constant revolutionising of production, uninterrupted disturbance of all social conditions, everlasting uncertainty... all old-established national industries have been destroyed or are daily being destroyed. They are dislodged by new industries... whose products are consumed not only at home, but in every quarter of the globe. In place of old wants satisfied by the production of the country, we find new wants... the intellectual creativity of individual nations become common property.”

Marx and Engels, *The Manifesto of the Communist Party*. 1848.

“To them, antiquity is synonymous with wisdom, and every improvement is a dangerous innovation.”

Buckle, *Civiliz.* (1873) II. viii. 595.

This thesis has argued that a new policy framework, an innovation policy paradigm, has gained hegemonic authority at the level of the Canadian state since the early 1990s, and has since constituted the foundation for an economic development strategy that aims to sustain the conditions required for stable capital accumulation in a post-Fordist KBE. Key features of this strategy include encouraging an entrepreneurial culture across Canada and fostering continuous innovation throughout the economy. Maintaining key neoliberal reforms, restructuring the Keynesian Welfare National State (KWNS), and supporting the growth of Canada's national system of innovation by funding R&D, fostering the linkages and clusters that help lead to the application and transfer of knowledge, and encouraging the development of a skilled labour force have all found expression in the state's policies and programs from the early 1990s onwards. The emergence of the innovation policy paradigm might be held to reflect the tendential emergence of what Jessop has referred to as a Schumpeterian Workfare post-National Regime (SWPR).

At the same time, I have argued that the prevailing version of the innovation paradigm has largely proven inadequate for the Canadian case, due to the specific pattern of development in Canada over its history, and in particular since the “permeable Fordist” model of development in the post-war era. For Canada’s economy is structured in such a way as to suggest there are considerable barriers to the hoped-for transition to innovation-driven economic development. In the first place, the continuing predominance of (mainly US) branch-plants in the manufacturing sector has resulted in low levels of R&D investment. Canadian firms are also typically small and therefore usually without the capital, both financial and human, to devote to R&D activities. Then there is the fact that natural resource staples continue to define the Canadian economy. As argued in the previous chapter, firms in resource sectors have not normally emphasized R&D. Another factor is the highly regionalized nature of the Canadian economy. For the most part, there are few globally-competitive industrial regions in Canada, making it difficult for firms to engage in technology transfer, collaborative R&D, or other relationships that characterize well-functioning systems of innovation. As a result, demand for the advanced technologies and skilled labour that will be generated by supply-side initiatives is underdeveloped. Collectively, these points raise questions about the efficacy of a strategy based upon the tenets of an innovation policy paradigm.

The arguments pursued in the previous chapter assumed a second line of inquiry, namely an overview of some of the contradictions that inhere in the innovation policy paradigm, especially as applied to the Canadian political economy. Thus, in addition to the many

structural qualities of the Canadian economy which continue to constitute barriers to innovation-driven growth, I also considered the appropriateness of a nation-wide, top-down strategy given, on the one hand, the regional nature of Canadian development, and on the other, the challenges presented by Canada's experience with federalism. In short, I suggested that the federal-provincial tensions that have historically defined Canadian federalism pose significant challenges to the search for new sites of regulation in post-Fordist KBE. This discussion addressed the question of scale, since as we have seen, the scale of production has shifted from the national to supra- and sub-national ones since the early 1980s. In the end, I answered the central research question of this thesis by arguing that the innovation policy paradigm has been undermined by both the structural qualities of Canadian development and by the paradigm's own contradictions.

Ultimately, for the state to achieve innovation-led growth with its development strategy the government will have to make deeper commitments than it has thus far. Overcoming the barriers posed by the structural characteristics resulting from Canada's pattern of development will require the state to dramatically increase R&D expenditures beyond their current and projected levels, encourage the private sector and in particular small and medium-sized enterprises (SMEs) to greatly increase their own R&D activities, move to overcome the disadvantages faced by Canadian firms and communities that stem from Canada's vast geographic distances, commit to transferring regulation and governance to provinces and communities, and greatly improve support for post-secondary education and training.

This conclusion, indeed this thesis, is really but one small part of the work needed on the topic of innovation-driven, competitiveness-centred economic growth strategies that have come to prevail in advanced capitalist economies like Canada's. This thesis considered the innovation policy paradigm's appropriateness for the Canadian case, but there are notable absences in its analysis. For example, the perspectives of class and labour would greatly add to the analysis developed here, as would the consideration of state restructuring and efforts to re-regulate post-Fordist capital accumulation at state scales other than the national one. I have suggested that a Canadian SWPR has been emerging, and have traced the ascendancy of the innovation paradigm as a kind of focusing tool; however, more attention to the provincial and especially the local levels of governance is required. In Canada, such work has been underway for a while, including that of Hunt (2001) and Bradford.¹ This thesis also has not considered the appropriateness of the innovation policy paradigm in and of itself. In the next section I present a number of questions with which future research projects might begin.

Looking Ahead and Troubling the Authority of the Innovation Policy Paradigm

“The hydra-headed multitude that only gape for innovation.”
(Webster, *Appius V. v. iii*)

¹ I have drawn on Hunt's dissertation *Constructing the Entrepreneurial City: 'Silicon Valley North' and Ottawa's Local Mode of Governance 1988-2000* (2001) throughout this thesis. See also Bradford's *Why Cities Matter: Policy Research Perspectives for Canada*, a discussion paper prepared for the Canadian Policy Research Networks (CPRN Discussion Paper No. F-23, June 2002).

“Hydra-headed” or not, it is true that more and more of the public, from economists to policy-makers, the media to scholars, have indeed been “gaping” for innovation.² It has become a powerful discourse. The innovation policy paradigm, like the KBE or globalization, functions by appealing to our rationalization of technological progress. For this reason, then, it should not be surprising that Ostry and Nelson (1995) find evidence of a “high-tech fetishism” in government programs aimed at fostering innovation (in Morck and Yeung 2001, 52). Labour must be skilled in high-tech industries. Capital must develop or otherwise acquire more high-tech technologies. Certain key high-tech industries are highlighted in the Innovation Strategy of 2001, including pharmaceuticals, telecommunications, aerospace, and especially biotechnology (see below). The promise of advanced technologies resides at the core of innovation paradigm. The very concept of innovation even seems to have taken on the status of myth.

Writing about green consumerism and progressivism, Smith asserts that the discursive authority of the latter has come to be a kind of “coordinating agent” that is particularly adept at weaving together parts of other discourses into “a story that privileges only the utopian possibilities of science, technology, growth, development, and so on” (Smith 1998, 133). Utopian, mythological: this same argument bears a striking resemblance to the discourse of innovation. Now, innovation is seen as the key factor for increased capital accumulation and growth. As a result, state rhetoric promises improved standards of living and wealth for all, if only the promise of technology, science, and learning can

² Even Carleton University, where I have spent the last four years of my academic life, recently celebrated its birthday with the slogan: “Carleton University: 60 Years of Innovation.”

be tapped. Economic progress is rational, and by extension so must be innovation-driven economic growth. All the old capitalist arguments are advanced—cloaked, perhaps, in the new vocabulary of a KBE, but present all the same. Capitalist expansion at the level of the firm means jobs and economic growth, means higher living standards, means the Good Life. The state, therefore, must contribute to this natural order of things in whatever ways open to it, as defined by the confluence of the extra-territorial forces of globalization and the intra-territorial imperatives that constrain and shape domestic policy-making. Discredited are the old-style economic policies of protectionism and mercantilism, replaced by broad innovation system policies aimed at increasing innovation-competition.

Troubling this mythological appeal is not easy, yet hard questions must be asked of an economic development strategy constructed on such an edifice. In the first place, what should be made of a paradigm that propels countries forward as if on a constant treadmill? As we saw in Chapter One above, the imagery that accompanies the innovation policy paradigm is that of the constant race—a race, moreover, that cannot ever be won since every country is constantly making itself more competitive by upping S&T and R&D funding. The race to be most innovative becomes akin to the “race to the bottom,” except that instead of competing on price terms, firms in the post-Fordist KBE compete by doing more with less. Kirzner (1985) identified “a sort of Heisenberg uncertainty principle [that] haunts any detailed description of innovation, for the act of describing entrepreneurial activity clearly makes what is described a routine, and no longer an innovation” (in Morck and Yeung 2001, 9). The Innovation Strategy claims to

know how to make firms more innovative, except that the act of innovation becomes outdated as soon as it has been described. After all, “yesterday’s innovator is often today’s unimaginative corporate bureaucracy” (ibid. 8).

This observation raises questions about the very nature of innovation itself. For Schumpeter, innovation was the result of the “creative destruction” dynamic that characterizes economic expansion. The “creative” part of the concept of innovation understood in this way is rather clear: new products or processes are brought into the market. However, it seems equally clear that the second half of this equation has been forgotten or, more likely, ignored in favour of the promise of new technological opportunities. Simply, there is “destruction” involved in this innovative process, and as such there have to be “losers.” An innovative firm is one that has succeeded in finding profits in a manner which its competitors have not, and, if the consumer chooses this new innovative product over the old ones, other firms will be negatively affected.

Employment is lost as firms become uncompetitive and industries become obsolete.

Morck and Yeung note of the economic dualism inscribed in the act of innovation: “Just as farm hands were economic casualties of agricultural mechanization in the 1930s, assembly line workers may be the economic casualties of our age. The yin and yang of creative destruction abide” (2001, 1). Retraining laid-off employees is a difficult endeavour, not only for the workers involved, but also from a supply-side point of view, since it is difficult to project future trends in the demand for skills.

Though the discursive arena may be dominated by the champions of the innovation paradigm, it should not be considered too crowded for other voices. Perhaps we can envision openings for dissent and criticism occurring around one issue-area in particular, rather than at a system-wide level, for there is real reason to question the extent to which the innovation policy paradigm should dominate development strategy. At the beginning of a new century the “innovation gap” has not been diminished, and many economic indicators paint a bleak picture across capitalist economies. The innovation policy paradigm has not led to the growth envisioned—at least not for everyone, that is. Data gathered by the OECD show that “profit shares have grown at the cost of wage shares in all parts of the OECD since the middle of the 1970s” (Lundvall and Archibugi 2001, 9). In Canada, 13.1% of Canadians, or nearly four million people, live in poverty today.³ For all the talk of innovation, rarely has the question been asked: innovation for *whom*?

Contesting the innovation agenda is no easy task, and not only because of its taken for granted nature as the one true way forward. There is also the fact that innovation strategy involves so many aspects and is predicated on advanced technologies and knowledge not easily accessible by the public. This said, Sharaput describes the emergence of sustained public discussion, dissent, and concern around the biotechnology plank of the innovation paradigm, and as a result, the “official” biotechnology-policy debate was successfully

³ According to the new Market Basket Measure, more Canadians live in poverty today than previously thought, when poverty is calculated by measuring cost of living across regions and that takes into account varying prices, rent levels, and other factors. The findings differ from the decades-old formula of measuring poverty used by StatsCan, in which 10.9% of Canadians are found to be living in poverty today (*Globe and Mail*, May 27th, 2003; page A1).

broadened to include socio-ethical concerns (Sharaput 2002). Indeed, this injection of socio-ethical issues has led to a situation whereby many departments and agencies of the Canadian federal government wish to be involved in the biotechnology policy area, but no single department wishes to be responsible for it (ibid. 158).

Perhaps we can transfer from this example the possibility that similar alternative discourses and dissenting voices, oppositional and critical, engaging and thoughtful, might spring up around other issues as well? Opposing innovation *qua* innovation is not realistic, perhaps not even desirable. After all, there is nothing inherently wrong about seeking new solutions to old or new problems. However, questions can and should be asked of those using the authoritative discourses of innovation in its mythical sense.

These questions would demand to know the full range of costs associated with innovation and permanent change, such as those associated with the effects on labour made too flexible, or those assumed by communities forced to turn away from traditional industries and ways of life in order to find their new place in the fast-paced KBE. What are the consequences for the environment, for income distribution, for social stability? Indeed, what of the losers of the innovation race, for we cannot all be winners, can we? Is it realistic to think that the same dominant belief in economic growth and expansion will also provide the solutions to our damaged ecosystems? What new types of environmental, health and labour regulations are needed to keep up with fast-paced industrial change, particularly given the ideological bent calling for fewer and fewer regulatory burdens on capital? What about ethical and social questions that arise from the applications of new knowledge, as in Sharaput's example of biotechnology? Might

there be a limit to our technological and scientific capabilities?⁴ How strong are our regulatory institutions with the constant appearance of new technologies like cloning and nanotechnology? How might we convince Canada's skilled R&D community to work on devising real public goods, when profit motives and intellectual property regimes remain so strong? Just how long can we innovate our way out of capitalist crises, anyway? "All we need to avert Apocalypse is the right software," writes Smith in jest (1998, 137), but how many really believe it to be true? Are there limits? Have we passed them?

This line of questioning suggests a significant role for the social sciences and humanities in the years ahead, although little official debate considers these disciplines and the types of insight they might provide in these changing times. That the social sciences and humanities have important contributions to make in pursuit of such questions must be accepted and acknowledged by policy-makers in the years ahead. Improving the funding of granting councils like the Social Sciences and Humanities Research Council (SSHRC) to levels similar to those enjoyed by their natural sciences and engineering counterparts would be a welcome step in the right direction. Canadian social scientists can be key contributors to the discussion surrounding the innovation agenda in Canada, and there are many areas of research to take up. One such area that has been a focus of recent scholarship has been the dramatic effects the innovation policy paradigm has had on Canadian universities.

⁴ Margaret Atwood certainly thinks there is a limit, as seen in her most recent novel *Oryx and Crake*. Of course, dystopian accounts of science and technology are nearly as old as science and technology themselves.

Indeed, a hint of how the question “innovation for whom?” is playing out already can be found in the debate surrounding the close linkages being established between industry and universities and other not-for-profit, publicly-funded R&D institutions. In the interest of innovation, government initiatives such as the Canada Foundation for Innovation (CFI) have forced universities closer to industry’s needs by making public research funding contingent upon securing the majority of a project’s costs from other sources such as the private sector. These “forced partnerships” are related to dramatic funding cuts to the post-secondary education sector, and the desire to improve the commercialization of R&D.⁵ As such, many observers fear research agendas being co-opted by the need to derive returns on R&D investments.⁶ This possibility raises questions about public ownership of intellectual property, as the research conducted at universities comes to depend on private funds. These observers rightly fear that the commercialization of research means the public good will become secondary to market imperatives.

Of course, among the social sciences political economy in particular has much to contribute. Continuing in the tradition of the new Canadian political economy of the

⁵ The Prime Minister’s Advisory Council on Science and Technology focused on improving the commercialization of university research in its *Public Investments in University Research: Reaping the Benefits* (1999).

⁶ The Canadian Federation of Students (CFS) and the Canadian Association of University Teachers (CAUT) are two organizations leading the way on this issue. Scholars contributing to this debate include Polster (2000; 2002) and Newson (1997; 2000). For a particularly cogent and brief account of this discussion, see McMurtry’s *The Corporate Agenda on Campus: Our universities being turned into market sites for corporations*, at <http://www.policyalternatives.ca/publications/articles/article380.html>. There is also Turk’s collection *The Corporate Campus* (see bibliography).

1960s and 1970s, future research on the state's development strategy must return to themes of staples dependence and the branch-plant nature of Canadian development, since both elements have hardly become less important with the passing of time. The national state regained its importance for Canadian scholars thirty years ago, but has since been displaced as a primary object of study by newer subjects in Canadian political economy. A critical political economic approach to the issue of Canadian innovation-driven development would begin with some of the questions introduced above, consider the role of the national-level state in relation to the "newly important" provincial and local levels, but extend further with recent research agendas. In the end, though, no matter the manner in which it is studied, it is crucial that the arrival of the innovation policy paradigm in Canada be considered, for spending on S&T and R&D has reached into the billions of dollars annually, labour force initiatives have had profound effects on Canadians, and the country's communities and regions are being dramatically transformed. Charting, considering, and certainly even contesting the direction of state development strategy in the years ahead are imperative.

Bibliography

- Abele, Frances. "The Politics of Competitiveness." How Ottawa Spends 1992-93: The Politics of Competitiveness. Ed. Frances Abele. Ottawa: Carleton University Press, 1992. 1-22.
- Advisory Council on Science and Technology. Public Investments in University Research: Reaping the Benefits. Report of the Export Panel on the Commercialization of University Research. Ottawa: Industry Canada, 1999.
- Albo, Gregory and Jane Jenson. "A Contested Concept: The Relative Autonomy of the State." The New Canadian Political Economy. Eds. Wallace Clement and Glen Williams. Montreal and Kingston: McGill-Queen's University Press, 1989: 180-211.
- Amin, Ash. "Post-Fordism: Models, Fantasies and Phantoms of Transition." Post-Fordism: A Reader. Ed. Ash Amin. Oxford and Cambridge: Blackwell, 1994. 1-39.
- Benneworth, Paul and David Charles. "Bridging Cluster Theory and Practice: Learning from the Cluster Policy Cycle." Innovative Clusters: Drivers and National Innovation Systems. Organization for Economic Cooperation and Development. OECD Proceedings. Paris: OECD, 2001. 389-401.
- Boismenu, Gérard and Jane Jenson. "A Social Union or a Federal State?: Competing Visions of Intergovernmental Relations in the New Liberal Era." How Ottawa Spends 1998-99: Balancing Act: The Post-Deficit Mandate. Ed. Leslie A. Pal. Toronto: Oxford University Press, 1998. 57-79.
- Braczyk, Hans-Joachim and Martin Heidenreich. "Regional Governance Structures in a Globalized World." Regional Innovation Systems: The Role of Governances in a Globalized World. Eds. Hans-Joachim Braczyk, Philip Cooke, and Martin Heidenreich. London: UCL Press, 1998. 414-440.
- Bradford, Neil and Glen Williams. "What Went Wrong? Explaining Canadian Industrialization." The New Canadian Political Economy. Eds. Wallace Clement and Glen Williams. Kingston and Montreal: McGill-Queen's University Press, 1989: 54-76.
- Brenner, Neil and Nik Theodore. "Cities and the Geographies of 'Actually Existing Neoliberalism.'" Antipode 34. 3 (June 2002): 349-379.

- Britton, John N.H. "High-Tech Canada." Canada and the Global Economy: The Geography of Structural and Technological Change. Ed. John N.H. Britton. Montreal and Kingston: McGill-Queen's University Press, 1996. 255-272.
- Britton, John N.H., James M. Gilmour, William Smith, and Guy P.F. Steed. "Technological Change and Innovation: Policy Issues." Canada and the Global Economy: The Geography of Structural and Technological Change. Ed. John N.H. Britton. Montreal and Kingston: McGill-Queen's University Press, 1996. 433-444.
- Campbell, Robert M. Grand Illusions: The Politics of the Keynesian Experience in Canada, 1945-1975. Peterborough: Broadview Press, 1987.
- _____. "Jobs...Job...Jo...J... The Conservatives and the Unemployed." How Ottawa Spends 1992-93: The Politics of Competitiveness. Ed. Frances Abele. Ottawa: Carleton University Press, 1992. 23-55.
- _____. "The Fourth Fiscal Era: Can There Be a 'Post-Neo-conservative' Fiscal Policy?" How Ottawa Spends 1999-2000: Shape Shifting: Canadian Governance Toward the 21st Century. Ed. Leslie A. Pal. Toronto: Oxford University Press, 1999. 113-150.
- Carroll, William and James Beaton. "Globalization, Neo-liberalism and the Changing Face of Corporate Hegemony in Higher Education." Studies in Political Economy 62 (Summer 2000): 71-98.
- Clarkson, Stephen. "Disjunctions: Free Trade and the Paradox of Canadian Development." The New Era of Global Competition: State Policy and Market Power. Eds. Daniel Drache and Meric S. Gertler. Montreal and Kingston: McGill-Queen's University Press, 1991. 103-126.
- Clarkson, Stephen and Timothy Lewis. "The Contested State: Canada in the Post-Cold War, Post-Keynesian, Post-Fordist, Post-national Era." How Ottawa Spends 1999-2000: Shape Shifting: Canadian Governance Toward the 21st Century. Ed. Leslie A. Pal. Toronto: Oxford University Press, 1999. 293-340.
- Clement, Wallace. "Debates and Directions: A Political Economy of Resources." The New Canadian Political Economy. Eds. Wallace Clement and Glen Williams. Kingston and Montreal: McGill-Queen's University Press, 1989: 36-53.
- Clement, Wallace and Glen Williams. "Introduction." The New Canadian Political Economy. Eds. Wallace Clement and Glen Williams. Kingston and Montreal: McGill-Queen's University Press, 1989: 3-15.

- Clinton, William J. and Albert Gore Jr., "Technology for America's Growth, A New Direction to Build Economic Strength." Washington, D.C.: White House, February 22, 1993.
- Cooke, Philip. "Introduction." Regional Innovation Systems: The Role of Governances in a Globalized World. Eds. Hans-Joachim Braczyk, Philip Cooke, and Martin Heidenreich. London: UCL Press, 1998. 2-25.
- Corporate Management Tax Conference. R&D: Credits Today, Innovation Tomorrow. Toronto: Canadian Tax Foundation, 1999.
- Dalum, Bent, Björn Johnson, and Bengt-Åke Lundvall. "Public Policy in the Learning Society." National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning. Ed. Bengt-Åke Lundvall. London: Pinter, 1992. 296-317.
- De La Mothe, John. "Government Science and the Public Interest." Risky Business: Canada's Changing Science-Based Policy and Regulatory Regime. Eds. G. Bruce Doern and Ted Reed. Toronto: University of Toronto Press, 2000. 31-48.
- Department of Finance. A New Framework for Economic Policy. Ottawa: Canada Communication Group, 1994.
- DiGiovanna, Sean. "Industrial Districts and Regional Economic Development: A Regulation Approach." in Jessop, Bob. ed. Regulationist Perspectives on Fordism and Post-Fordism. Cheltenham, UK: Edgar Elgar Publishing, Ltd. 2001. 414-427.
- Doern, G. Bruce. "The Department of Industry, Science and Technology: Is There Industrial Policy After Free Trade?" How Ottawa Spends 1990-91: Tracking the Second Agenda. Ed. Katherine A. Graham. Ottawa: Carleton University Press, 1990. 49-71.
- _____. "Looking for the Core: Industry Canada and Program Review." How Ottawa Spends 1996-97: Life Under the Knife. Ed. Gene Swimmer. Ottawa: Carleton University Press, 1996.
- _____. "The Chrétien Liberals' Third Mandate: The Security Aftermath and National Priorities." How Ottawa Spends 2002-2003: The Security Aftermath and National Priorities. Ed. G. Bruce Doern. Toronto: Oxford University Press, 2002. 1-19.
- Drache, Daniel and Meric S. Gertler. "Preface." The New Era of Global Competition: State Policy and Market Power. Eds. Daniel Drache and Meric S. Gertler. Montreal and Kingston: McGill-Queen's University Press, 1991. xi-xx.

- Edquist, Charles. "Innovation Policy— A Systemic Approach." The Globalizing Learning Economy. Eds. Danielle Archibugi and Bengt-Åke Lundvall. New York: Oxford University Press, 2001. 219-238.
- Field, Ann-M. and François Rocher. "At a Juncture? For a New Understanding of Federalism and Citizenship in Canada." International Journal of Canadian Studies 22 (Fall/Automne 2000): 37-65.
- Gelsing, Lars. "Innovation and the Development of Industrial Networks." National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning. Ed. Bengt-Åke Lundvall. London: Pinter, 1992. 116-127.
- Gertler, Meric S. "Capital, Technological Change, and Regional Growth." Canada and the Global Economy: The Geography of Structural and Technological Change. Ed. John N.H. Britton. Montreal and Kingston: McGill-Queen's University Press, 1996. 273-293.
- Graham, Katherine A. "Discretion and the Governance of Canada: The Buck Stops Where?" How Ottawa Spends 1989-90: The Buck Stops Where? Ed. Katherine A. Graham. Ottawa: Carleton University Press, 1989. 1-24.
- Gualtieri, Roberto. "Science Policy and Basic Research in Canada." How Ottawa Spends 1994-95: Making Change. Ed. Susan D. Phillips. Ottawa: Carleton University Press, 1994. 301-337.
- Haddow, Rodney. "Regional Development Policy: A Nexus of Policy and Politics." How Ottawa Spends 2001-2002. Ed. Leslie A. Pal. Toronto: Oxford University Press, 2001. 247-275.
- Hale, Geoffrey E. "Innovation and Inclusion: Budgetary Policy, the Skills Agenda, and the Politics of the New Economy." How Ottawa Spends 2002-2003: The Security Aftermath and National Priorities. Ed. G. Bruce Doern. Toronto: Oxford University Press, 2002. 20-47.
- Hall, Peter A. "Policy Paradigms, Social Learning, and the State: The Case of Economic Policymaking in Britain." Comparative Politics 25.3 (April, 1993): 275-96.
- Hirst, Paul and J. Zeitlin. "Flexible Specialization Versus Post-Fordism: Theory, Evidence, and Policy Implications." Economy and Society 20.1 (February 1991).
- Human Resources Development Canada. Knowledge Matters: Skills and Learning for Canadians. Ottawa: Public Works and Government Services Canada, 2001.

- Hunt, Chris. Constructing the Entrepreneurial City: 'Silicon Valley North' and Ottawa's Local Mode of Governance. Doctoral Dissertation, Carleton University, 2001.
- Industry Canada. Building a More Innovative Economy. Ottawa: Industry Canada, 1994.
- _____. Science and Technology for the New Century: A Federal Strategy. Ottawa: Industry Canada, 1996.
- _____. Achieving Excellence: Investing in People, Knowledge and Opportunity. Ottawa: Public Works and Government Services Canada, 2001.
- Jenson, Jane. "'Different' but not 'Exceptional': Canada's Permeable Fordism." Canadian Review of Sociology and Anthropology 26.1 (1989): 69-94.
- _____. "Representations in Crisis: The Roots of Canada's Permeable Fordism." Canadian Journal of Political Science XXIII.4 (1990): 653-683.
- Jessop, Bob. "Towards a Schumpeterian Workfare State? Preliminary Remarks on Post-Fordist Political Economy." Studies in Political Economy 40 (Spring 1993): 7-39.
- _____. "Post-Fordism and the State." Post-Fordism: A Reader. Ed. Ash Amin. Oxford and Cambridge: Blackwell, 1994. 251-279.
- _____. "The Regulation Approach, Governance, and Post-Fordism: Alternative Perspectives on Economic and Political Change?" Economy and Society 24.3 (August 1995): 307-333.
- _____. "Twenty Years of the (Parisian) Regulation Approach: The Paradox of Success and Failure at Home and Abroad." New Political Economy 2.3 (1997): 503-526.
- _____. "The State and the Contradictions of the Knowledge-Driven Economy." Lancaster University: Department of Sociology, 2000.
<<http://www.comp.lancs.ac.uk/sociology/soc044rj.html>>.
- _____. "Fordism and Post-Fordism: A Critical Reformulation." Regulationist Perspectives on Fordism and Post-Fordism. Ed. Bob Jessop. Cheltenham, UK: Edgar Elgar Publishing, Ltd. 2001.
- _____. "Globalization and the National State." Paradigm Lost: State Theory Reconsidered. Eds. Stanley Aronowitz and Peter Bratsis. Minneapolis: University of Minnesota Press, 2002. 185-220.

- _____. The Future of the Capitalist State. Cambridge: Polity Press, 2003.
- Johnson, Björn. "Institutional Learning." National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning. Ed. Bengt-Åke Lundvall. London: Pinter, 1992. 23-44.
- Kwan, Carolyn C. Restructuring in the Canadian Economy: A Survey of Firms. Bank of Canada Working Paper 2002-8. Ottawa: Bank of Canada, 2002.
- Liberal Party of Canada. Creating Opportunity: The Liberal Plan for Canada. Ottawa: 1993.
- Lundvall, Bengt-Åke. "Introduction." National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning. Ed. Bengt-Åke Lundvall. London: Pinter, 1992. 1-19.
- _____. "Innovation Policy in the Globalizing Learning Economy." The Globalizing Learning Economy. Eds. Danielle Archibugi and Bengt-Åke Lundvall. New York: Oxford University Press, 2001. 273-291.
- Lundvall, Bengt-Åke and Daniele Archibugi. "Introduction: Europe and the Learning Economy." The Globalizing Learning Economy. Eds. Danielle Archibugi and Bengt-Åke Lundvall. New York: Oxford University Press, 2001. 2-17.
- MacDonald, Martha. "Post-Fordism and the Flexibility Debate." Studies in Political Economy 36 (Fall 1991): 177-201.
- Mahon, Rianne. The Politics of Industrial Restructuring: Canadian Textiles. Toronto: University of Toronto Press, 1984.
- _____. "Adjusting to Win? The New Tory Training Initiative." How Ottawa Spends 1990-91: Tracking the Second Agenda. Ed. Katherine A. Graham. Ottawa: Carleton University Press, 1990. 73-111.
- _____. "The 'New' Canadian Political Economy Revisited: Production, Space, Identity." Production, Space, Identity: Political Economy Faces the 21st Century. Eds. Jane Jenson, Rianne Mahon, and Manfred Bienefeld. Toronto: Canadian Scholars' Press, 1993: 1-21.
- Martin, Hon. Paul, Minister of Finance. Budget Speech 1997. Ottawa, February 18th, 1997.
- _____. Budget Speech 1998. Ottawa, February 24th, 1998.

- _____. Budget Speech 2000. Ottawa, February 28th, 2000.
- Morck, Randall and Bernard Yeung. The Economic Determinants of Innovation. Ottawa: Industry Canada, 2001.
- Newson, Janice. "Subordinating Democracy: the Effects of Fiscal Retrenchment and University-Business Partnerships on Knowledge Creation and Knowledge Dissemination in Universities." Higher Education 27 (1997).
- _____. "To Not Intend, or to Intend Not... That is the Question." The Corporate Campus: Commercialization and the Dangers to Canada's Colleges and Universities. Ed. James L. Turk. Toronto: James Lorimer and Company, Ltd., 2000. 183-194.
- Niosi, Jorge. "Canada's National R&D System." Innovation Systems in a Global Context. Eds. Robert Anderson, Theodore Cohn, Chad Day, Michael Howlett, and Catherine Murray. Montreal & Kingston: McGill-Queen's University Press, 1998. 91-107.
- Niosi, Jorge, with André Manseau and Benoît Godin. Canada's National System of Innovation. Montreal and Kingston: McGill-Queen's University Press, 2000.
- Nyholm, Jens, Lars Normann, Claus Frelle-Petersen, Mark Riis, and Peter Torstensen. "Innovation Policy in the Knowledge-Based Economy— Can Theory Guide Policy-making?" The Globalizing Learning Economy. Eds. Danielle Archibugi and Bengt-Åke Lundvall. New York: Oxford University Press, 2001. 253-272.
- Organization for Economic Cooperation and Development. The OECD Jobs Strategy: Technology, Productivity and Job Creation. Best Policy Practices. Paris: OECD, 1998.
- _____. Managing National Innovation Systems. Paris: OECD, 1999.
- _____. A New Economy? The Changing Role of Innovation and Information Technology in Growth. Paris: OECD, 2000.
- _____. Innovative Clusters: Drivers of National Innovation Systems. Paris: OECD, 2001.
- Pal, Leslie A. "Balancing Act: The Post-Deficit Mandate." How Ottawa Spends 1998-99: Balancing Act: The Post-Deficit Mandate. Ed. Leslie A. Pal. Toronto: Oxford University Press, 1998. 1-30.

- _____. "Shape Shifting: Canadian Governance Toward the 21st Century." How Ottawa Spends 1999-2000: Shape Shifting: Canadian Governance Toward the 21st Century. Ed. Leslie A. Pal. Toronto: Oxford University Press, 1999. 1-36.
- _____. "Past Imperfect, Future Tense." How Ottawa Spends 2000-2001. Ed. Leslie A. Pal. Toronto: Oxford University Press, 2000. 1-32.
- Paquet, Gilles and Jeffrey Roy. "Prosperity Through Networks: The Bottom-Up Strategy That Might Have Been." How Ottawa Spends 1995-96: Mid-Life Crises. Ed. Susan D. Phillips. Ottawa: Carleton University Press, 1995. 1-30.
- Paquet, Gilles. "Techno-nationalism and Meso Innovation Systems." Innovation Systems in a Global Context. Eds. Robert Anderson, Theodore Cohn, Chad Day, Michael Howlett, and Catherine Murray. Montreal & Kingston: McGill-Queen's University Press, 1998. 58-75.
- Phillips, Susan D. "Making Change: The Potential for Innovation Under the Liberals." How Ottawa Spends 1994-95: Making Change. Ed. Susan D. Phillips. Ottawa: Carleton University Press, 1994. 1-37.
- Polster, Claire. "Shifting Gears: Creative Resistance to Corporatization." The Corporate Campus: Commercialization and the Dangers to Canada's Colleges and Universities. Ed. James L. Turk. Toronto: James Lorimer and Company, Ltd., 2000. 195-200.
- _____. "A Break from the Past: Impacts and Implications of the Canada Foundation for Innovation and the Canada Research Chairs Initiatives." Canadian Review of Sociology and Anthropology 39.3 (August 2002): 275-299.
- Porter, M.E. Canada at the Crossroads: The Reality of a New Competitive Environment. Ottawa: Business Council on National Issues and Minister of Supply and Services, 1991.
- Ray, D. Michael. "Employment Creation by Small Firms." Canada and the Global Economy: The Geography of Structural and Technological Change. Ed. John N.H. Britton. Montreal and Kingston: McGill-Queen's University Press, 1996. 175-194.
- Rutherford, Tod D. "The State of Training: Learning, Institutional Innovation, and Local Boards of Training and Adjustment in Ontario, Canada." Environment and Planning A Vol. 33 (2001): 1871-1891.

- Sharaput, Markus. "Biotechnology Policy on Canada: The Broadening Scope of Innovation." How Ottawa Spends 2002-2003: The Security Aftermath and National Priorities. Ed. G. Bruce Doern. Toronto: Oxford University Press, 2002. 157-175.
- Smith, Toby M. The Myth of Green Marketing: Tending our Goats at the Edge of Apocalypse. Toronto: University of Toronto Press, 1998.
- Standing Committee on Industry. Review of Science and Technology and the Innovation Gap in Canada. 4th Report. Ottawa: House of Commons, 1997.
- Standing Committee on Industry, Science and Technology. A Canadian Innovation Agenda for the Twenty-First Century. 5th Report. Ottawa: House of Commons, 2001.
- Sundbo, Jon. The Theory of Innovation: Entrepreneurs, Technology and Strategy. Cheltenham, UK: Edward Elgar, 1998.
- Swyngedouw, Erik. "Excluding the Other: The Production of Scale and Scaled Politics." Geographies of Economies. Eds. Roger Lee and Jane Willis. London: Arnold, 1997. 167-176.
- Tudiver, Neil. Universities for Sale: Resisting Corporate Control over Canadian Higher Education. Toronto: James Lorimer and Company, Ltd., 1999.
- Turk, James; Ed. The Corporate Campus: Commercialization and the Dangers to Canada's Colleges and Universities. Toronto: James Lorimer and Company, Ltd., 2000.
- Vonortas, Nicholas and Adam Tolnay. "Towards the Knowledge-Based Economy." Innovation Policy in the Knowledge-Based Economy. Eds. Maryann P. Feldman and Albert N. Link. Boston: Kluwer Academic Publishers, 2001. 375-408.
- Wallace, Iain. Geography of the Canadian Economy. Don Mills: Oxford University Press, 2002.
- Watkins, Mel. "The Political Economy of Growth." The New Canadian Political Economy. Eds. Wallace Clement and Glen Williams. Kingston and Montreal: McGill-Queen's University Press, 1989: 16-35.
- Wolfe, David A. "Economic Growth and Foreign Investment: A Perspective on Canadian Economic Policy." Journal of Canadian Studies 13.1 (Spring, 1978): 3-20.

_____. "Innovation Policy for the Knowledge-Based Economy: From the Red Book to the White Paper." How Ottawa Spends 2002-2003: The Security Aftermath and National Priorities. Ed. G. Bruce Doern. Toronto: Oxford University Press, 2002. 137-156.

Yates, Charlotte. "'Job Ready, I Ready': Job Creation and Labour Market Reform in Canada." How Ottawa Spends 1995-96: Mid-Life Crises. Ed. Susan D. Phillips. Ottawa: Carleton University Press, 1995. 83-106.