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Government and Governance in High-Technology Localities:

Ottawa-Carleton and Canada's Technology Triangle

by

JEFFREY ROY, B.A., M.B.A.

A thesis submitted to
the Faculty of Graduate Studies
in partial fulfilment of
the requirements for the degree of

Doctor of Philosophy

Carleton University
Ottawa, Ontario
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Ottawa-Carleton and Canada's Technology Triangle***

submitted by

Jeffrey Roy, M.A.

in partial fulfillment of the requirements
for the degree of Doctor of Philosophy

Director, School of Public Administration

Katherine Graham, Thesis Supervisor

External Examiner

Carleton University

November 15, 1999
Date

ABSTRACT

This thesis explores both governance patterns in a high-technology setting and the responses of local government to them. Building on the lessons from Saxenian's portrayal of Silicon Valley, we construct an alternative template, Strategic Localism, in order to examine two localities, Ottawa-Carleton and Canada's Technology Triangle (CTT), and the actions of government within each.

The objective is to ascertain the extent to which local government matters in today's shifting patterns of local governance. We aim to learn more about the potential strengths and weaknesses of local government's direct actions in economic development, as well as indirectly, in collaboration with private and civic actors. In doing so, this dissertation addresses the lack of research devoted to a specific investigation of local government's changing capacities within newly emerging, local governance systems.

Although both cases share a focus on technology, they also differ. Ottawa-Carleton's location in the National Capital Region means an unparalleled presence by the federal government. Therefore, we begin from the premise that development is relatively more top-down, shaped significantly by federal resources and processes. In comparison, CTT is more bottom-up, with much of the focus on high-technology rooted locally. This contrast enables a focus on local government capacities in different socio-economic settings.

The initial propositions developed in Part I of the dissertation expand on the premise that local government's primary role is to mobilize and align actors, energies and resources effectively within a shared template. It must therefore recognize new spaces for positive action, as well as its own limitations. Yet within the case studies, we find that local governments have, for the most part fallen short of executing this role - with some partial exceptions.

The research literature reviewed in Part I, as well as some of the findings in Part II indicate that local government is likely destined, in the not too distant future, to play an increasingly important role in economic development and governance. Therefore, this investigation concludes in Part III by providing specific recommendations for dealing with the set of choices facing policymakers in high-technology localities, and preparing local governments to play more instrumental roles in the future.

**Government and Governance in High-Technology Localities:
Ottawa-Carleton and Canada's Technology Triangle**

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PART I - STRATEGY

The main premise of this thesis is that in today's changing governance context, where there is a growing interest in the importance of local dynamics we need to learn more about the challenges facing state actors. More specifically, we will search for new insight about the changing capacities of democratically-accountable governments, particularly at the local level, and their present performance as they struggle to exert an influence in new settings driven by technology and knowledge-intensive industries. The case study methodology will be deployed to learn whether or not *the presence and actions of the public sector are significant variables* in local governance environments influenced by synergistic relations among all sectors. This investigation will be facilitated by a comparative examination of two cases, Ottawa-Carleton and Canada's Technology Triangle. We will ascertain the extent of the roles played by local government, and the factors shaping such roles.

The primary task of Part I is to construct an appropriate strategy for conducting this investigation. Upon a basic review of the context of this thesis in chapter one, chapter two considers the main conceptual dimensions of high-technology localities. Chapter three reviews the results of more empirical research undertaken in various localities, and emphasizes Saxenian's application of the Local Industrial System (LIS) template as an important reference point. We then provide a critique of the LIS, exposing its flaws as a template for examining government action. An alternative template, Strategic Localism (SL), is therefore proposed, along with a set of primary and secondary propositions for proceeding. The process will gauge the extent of local government's role, and consider new avenues for public sector action.

Chapter 1 - Purpose and Overview

The purpose of this dissertation is to gain a better understanding of the state's changing capacities as it is faced with new patterns of multi-sector governance. Specifically, we examine the role of local government in socio-economic environments characterized by technological change and innovation. Exemplified by California's Silicon Valley, these *high-technology localities* are characterized by a strong emphasis on collaboration and multi-sector partnerships. Moreover, they serve as a window on the emerging challenges faced, or to be confronted by most localities in forging responses to a knowledge-based, and globalizing socio-economy [The Economist 1997].

This particular investigation is both timely and important to the field of Canadian public policy. This is so, since our conceptual interest in local government has not kept pace with its implied importance in a socio-economic environment emphasizing the global and the local simultaneously. We simply do not know very much about how local government is coping, and adapting to these new challenges - despite a growing chorus of views suggesting that various local dynamics of proximity, innovation and collaboration are empowering it.

Internationally, there is a flourishing literature on industrial systems and technology strategies from a local perspective. Terms such as industrial and technology districts, and Local Industrial Systems (LIS) have been used to denote subnational entities, their patterns of coordination and learning, and their main determinants of socio-economic development [Saxenian 1994]. Their rising profile has generated a widening stream of literature that reviews

the experiences of European and North American subnational localities - where development has been the result of forces increasingly separate from national systems. Thus, a set of examples, including but not limited to The Third Italy, The Four-Motors of Europe, Sophia-Antipolis in France, and Silicon Valley in California become fertile testing grounds for the localization of technology and innovation policies, and socio-economic governance [Hilpert 1991]. Their growing importance is a consequence of a broader transformation of the international political-economy, and the role of the nation-state:

In each of the core triad regions, the national state is... "hollowing out"... due to a complex triple displacement of powers upward, downward, and to some extent outward. Thus, some state capacities are transferred to pan-regional, pluri-national, or international bodies; others are devolved to regional or local levels inside the nation-state; and yet others are assumed by emerging horizontal networks of power - regional and/or local - which by-pass central states and link regions or localities in several societies [Jessop 1993, p. 10].

Within Canada, there has been a more cautious exploration of subnational development strategies [Atkinson and Coleman 1989; Paquet and Roy 1992]. Yet in a manner consistent with Jessop's view, there is growing disenchantment with nationally formulated industrial strategies [Simeon 1990; Wilson 1992; Wolfe 1997]. The resulting shift has been detected:

A broad consensus is emerging in Canada, the US, Europe, and parts of the Pacific Rim regarding the importance of building innovative policy instruments into local and subnational economic development strategies. Successful regional strategies are those that build on local strengths, pool private and public resources, and enjoy the support of local public and private decision-makers [Andrew and al. 1993, p. 340].

The quotation here is instructive. According to this view, technological intensive localities are at the forefront of socio-economic transformations due to a number of factors. Such

factors include a rapid degree of innovation and change, and a simultaneous importance of globalizing organizations and market spaces which, paradoxically, empower local processes and bottom-up strategy [Jessop 1993; Naisbitt 1994]. The result is an emphasis on subnational units such as cities and municipalities, and a de-emphasis of national jurisdictions (and accompanying national industrial strategies from corresponding governments). These forces underscore the empowerment of local governance systems, and they raise new questions about the actions and capacities of state actors within them.

1.1 Objectives and Definitions

There are three direct contributions envisioned in this dissertation. First, at an empirical level we extend the growing body of research on multi-sector governance in high-technology settings to current Canadian examples. Second, these local cases permit us to investigate both the specifics of local government's changing policy capacities and its sphere of influence. Third, we draw from these findings in order to formulate a preliminary, and forward-looking set of recommendations for policy-makers operating at the local level.

Indirectly, this study also aims to improve our understanding of the evolving division of responsibility between each level of government in the Canadian polity. In practical terms, it is important not to lose sight of the fact that local forums in Canada are influenced by provincial and federal governments - and their actions. Not only is it impossible to uncover the role of local government effectively without consideration of the more senior levels of government, but this latter set of actors may also intervene to directly influence the local scene. In brief, despite the primary interest in local dynamics - beginning with government, this exercise cannot exclude

these other levels whose presence and influence must be accounted for.

The term *governance* is widely used in reference to mechanisms of coordination and decision-making, either within groups of individuals and organizations, or among them. For this study, which examines local systems, we refer to governance as a set of institutionalized processes of decision-making - inclusive of state, business, and civic actors. From this localized plane, then, governance is about how people (and organizations) come together to address problems that cut across jurisdictions in a locality [JVSVN 1995]. This definition, taken from Silicon Valley, emphasizes the growing interactions across sectors (government, business and civic spaces) as well as their interdependence within a local system.

The search for a new symmetry between *government* - the democratically-accountable set of decision-making structures and organizations, and a variety of new forms of multi-sectoral *governance* - mechanisms which comprise the formal or informal participation of organizational actors from more than one sector, represents a key challenge today. The fluidity of the relationships between sectors today also provides an important focal point in this study - namely the way in which the public sector adapts to these new conditions, and the relative strength of its capacities for policy-making, political leadership, and partnering.

Concise definitions of local systems, and their main elements have proved elusive. While Saxenian's Local Industrial System will ultimately be adopted as our starting point, preceding it is a mixture of views on what constitutes a *high-technology locality* [Miller and Cote 1987]. For instance, Miller and Cote provide an initial review, and focus on three methods often used for

selecting areas denoted as technology intensive: i) R&D intensity; ii) employment of scientists, engineers, and technicians; and iii) some measure of scientific novelty. The authors also expose the faults of all three methods¹.

Their preference is a blend of the first two indicators, emphasizing sectors (often clustered geographically) in which the vast majority of firms spend a substantial proportion of sales revenues on R&D and employ a high proportion of scientists, engineers, and technicians [1987]. The authors also recognize universities, support services, and non-commercial research organizations as important characteristics. These traits illuminate our path, as they are visible elements of California's Silicon Valley, of Ottawa-Carleton, and Canada's Technology Triangle². Moreover, they believe that urban centres are best able to nurture the sorts of institutional forums and technological externalities that are deemed central to the new local development³. Facilitated by both proximity and interdependent relations, urban centres of high-technology activity are well suited to the growing emphasis on new sets of multi-sectoral governance patterns driving a renewed localism [Storper 1997].

¹ The first approach, based on R&D selects those sectors in which organized research is intensively pursued. This approach can often be incomplete, as it ignores spin-off impacts such as business and employment creation. Also, it often ignores service-intensive industries. The second approach addresses the make-up of a workforce, since high-technology sectors are represented by a proportionally higher contingent of researchers and technicians. This method is deemed only partially adequate since it too can over-emphasize long-standing industries with a large core of workers accumulated over time. The third approach, scientific novelty, is dismissed as too dependent on present and fashionable scientific fields.

² In both of these Ontario localities, the title of Silicon Valley North is commonly used.

³ In fact, the identification of these clusters is largely US-based where substantial US data is reviewed. With respect to Canada, Toronto, Montreal, and Ottawa are recognized as high-tech localities comparable to mid-size examples south of the border.

The notion of interdependent ties among sectors is supported by the concept of co-evolutionary governance - a term adopted to describe the institutional processes of interdependence and learning across all socio-economic sectors. This depiction, based on the pioneering work of Kenneth Boulding offers a view of governance as an evolutionary process that begins with three distinct sectors of market, state, and civic-based activities. The resulting system of governance (encompassing a jurisdiction that must be defined, i.e., a locality, province or country) is then shaped not only by the changing composition of each of the three sectors, but also by the manner with which they interact and adapt collectively to all forms of social, economic, and political change [Paquet 1992].

The separate rules, norms and accountabilities in each sector determine the separate structures and strategies of public, private and civic organizations. Today, of course, we continue to witness an increasing amount of experimentation with initiatives and processes designed to partner across these sectoral boundaries in search of new forms of governance - often more multi-sectoral in terms of participants and processes. Mintzberg [1996] makes a complementary claim in welcoming inter-sectoral partnership and exchange as healthy developments for management in all sectors. Yet he also stresses the importance of a proper balance between these three socio-economic sectors which serves to determine the stability, adaptive capacity, and ongoing performance of a governance system: he reminds us that in a world of changing, and increasingly fluid governance arrangements, the public sector (or government) remains distinct.

These interdependencies conjure ecological analogies which are relevant to the synergistic forms of governance systems examined in this study. The dynamics of learning and

adaptation, central to the complexities of ecological systems are increasingly used as an analogy to governance relations between sectors in a knowledge and technology intensive environment. Bahrami and Evans [1996] point to processes of flexible recycling and high-technology entrepreneurship in Silicon Valley - underscoring that in much the same vein as a natural ecosystem, Silicon Valley's growth and success can be attributed to the incessant formation of a multitude of specialized, diverse entities which feed off, support, and interact with one another. Moore [1996] directly extends the same analogy to collaborative-based management which he views as the need for business to manage its interdependencies, balance competition with cooperation, and forge a set of formal and informal linkages which comprise its own *ecology*.

Within both the international contours of a new political-economy and the confines of governance locally, Saxenian's Local Industrial System will provide a useful application which integrates much of the research literatures reviewed in the subsequent chapter. Consistent with notions of co-evolutionary governance, and shaped by attributes of a particular collaborative ecology, her conceptualization is both local and multi-sectoral in attempting to capture the critical features of decision-making, coordination and adaptation with a system denoted by spatial boundaries (i.e., Silicon Valley and Route 128). Political boundaries may or may not be easily reconciled with such entities (such as The City of San Jose and other municipal units within Silicon Valley). In fact, this point directs us to some fundamental weaknesses of Saxenian's model, reviewed in chapter three, requiring the construction of an alternative template for this study (chapter three).

1.2 Case Studies and Data Sources

The methodology for this thesis is a comparative analysis of two case studies, both of which are selected as examples of high-technology localities in Ontario. The case method of inquiry is generally inclusive of three major options: i) a single, critical case study; ii) a comparative study of multiple cases using a large set of standardized variables; and iii) a contextual approach using a small number of intensively examined cases.

An example of the first, single-case method is Scott's examination of Southern California as a *Technopolis* [Scott 1995]. In terms of a comparative study with a large number of cases, Putnam's recent and highly influential work on civic culture and social capital, key explanatory elements in Italy's diverse socio-economic and political performance across subnational units, exemplifies such an approach⁴ [Putnam 1993]. Saxenian's work on Local Industrial Systems also adopts a contextual approach with a limited number of cases (two) which are examined through a common conceptual lens [Saxenian 1994].

For this project, a highly contextual approach with a small number of cases is most appropriate. The approach resembles Saxenian's two-case examination in the United States, and there is a solid basis for two-locale (case) comparative studies, including Saxenian in the U.S.[1994], Andrew et al. in Ontario [1993], and Cooke and Morgan in Europe [1994]. Finally, given the fact that we know so little about the topic at hand (i.e., local government's changing capacities), a high degree of contextualization is necessary not only to assess the influence of

⁴ This study involves 20 cases over a lengthy study period of 20 years: a comparative grid of tracking and measurement is used to draw lessons and conclusions.

local government in each case, but also to situate its role - and the potential points of engagement.

There are also the two examples of localities that stand out as good candidates for this sort of investigation - Ottawa-Carleton and Canada's Technology Triangle (CTT). The latter entity, located in Southwestern Ontario comprises the four urban municipalities of Kitchener, Waterloo, Cambridge and Guelph. Both localities make legitimate claims to high-technology growth and innovative economic activity. There are important similarities and differences as well. First, both areas currently house clusters of high-technology activity (of particular interest are telecommunications and information technologies, and computer hardware and software). Both areas are basing their future capacities for generating economic prosperity on these sectors. As such, these localities are currently placing technology and innovation at the centre of their local development efforts. If we were to temporarily borrow Saxenian's framework, both may be put forward as examples of Local Industrial Systems.

Aside from these common characteristics, there are also important differences which make them useful candidates for purposes of comparison. Essentially, CTT is put forward as a *bottom-up and emerging* model of a high-technology locality. The area is denoted by one of Canada's lowest unemployment rates, as measured locally. This socio-economic indicator is often invoked in CTT as proof of its successful transition during the 1990s. CTT has emerged from a sharp period of economic restructuring in the previous decade that significantly reduced the presence of traditional manufacturing and service industries [Roy 1996; Smith 1996]. The creation of CTT is a direct product of public sector action at the local level.

By way of comparison, Ottawa-Carleton has also faced the strain of a similar, downward shift in traditional employment patterns (the result of federal government downsizing⁵). Moreover, the present socio-economic focus is also clearly based on nurturing an already significant set of industries rooted in high-technology. In contrast to CTT, however, the area's significant endowment of market-based clusters and nationally funded research comprise key elements of the area's socio-economic mix. Ottawa-Carleton's position in the National Capital Region (NCR) implies a very different mixture of public sector levels than is the case in CTT. The attributes of a local governance system rooted in the national political capital generate an interesting challenge: high-technology activity in Ottawa-Carleton may well be intertwined with the federal government due to proximity, and the precise impacts of this situation must be carefully considered.

As a starting point, the two localities present a contrast with their respective patterns of bottom-up versus top-down development. Whereas CTT presents relatively more local exclusiveness in its governance relations across sectors, including a younger cluster of technology companies, Ottawa-Carleton's contrasting position includes a more established set of technology clusters, and a socio-economic environment that includes a significant federal policy community whose presence is tied to institutions with a national focus. This contrast is useful from a methodological standpoint, as it enables a focus on local government capacities in different settings, with due consideration given to both similarity and distinctiveness.

⁵ The Ottawa Citizen (06/01/96) reported that 20,000 jobs disappeared in Ottawa-Hull during 1995. The area suffered the worst job losses in the country over one year with the local unemployment rate rising from 7.7% (December 1994) to 9.5% at the end of 1995.

This project is an evolutionary process based on a variety of interests in, and involvements with several aspects of local governance and policy-making. The data gathered in order to construct the two cases comes from a variety of sources. The research covers a time-span of approximately five years (1993-1997), and the collection of data ends in the fall of 1997 - noted for both the Technopolis 97 International Conference⁶ and the Ontario Municipal Elections. A series of both primary and secondary interviews underpins the case studies.

Primary respondents include local politicians and economic development officials, private sector managers and entrepreneurs, researchers and educational officials, civic entrepreneurs and community and volunteer organizations, as well as the media. Secondary sources have also been drawn from extensively. In particular, they include surveys and profiles conducted in each locality, as well as networking forums and special events which both provide access to a wide variety of stakeholders, both individually and organizationally. Appendix one provides both a listing of those organizations contacted during the course of this project, and a description of the interview process deployed in direct interviews.

1.3 Three Stages

We proceed through three stages: i) setting up the strategy; ii) conducting the analysis; and iii)

⁶ Technopolis 97, organized by The Conference Board of Canada in cooperation with KVK Dyadic Consulting Inc, took place in Ottawa, Canada. The event brought together a variety of experts and representatives from high-technology localities around the world. Many notable authors reviewed in this dissertation were experts at the event, including Rosabeth Moss Kanter, Michael Porter and AnnaLee Saxenian.

interpreting the results. The remainder of Part I will focus on this initial stage, as we develop a strategy suitable for proceeding. Chapter two considers the main conceptual dimensions of high-technology localities. Chapter three reviews the results of more empirical research undertaken in various localities, with a particular emphasis placed on Saxenian's work. Upon a critical review of the LIS, an alternative template, Strategic Localism (SL) is proposed in order to outline precisely how we propose to test whether or not local government has played an influential role in the localities under review.

Part II first presents the case studies, and then dissects their respective systems of governance. Chapter four provides an overview of each locality, reviewing the main components of local governance within the SL prism developed in Part I. Chapter five and chapter six comprise the application of the Strategic Localism template. The former examines the main local attributes of each case study, whereas the latter looks at the presence and impact of both provincial and federal governments. In both chapters, the focal point is gauging the scope and impacts of local government action, and how they differ in each case. Chapter seven formulates responses to the hypothesized relevance of local government (the specifics of which are outlined in chapter three).

Part III takes the interpretation of our findings one step further. First, chapter eight presents a forward-looking set of policy recommendations applied to both Ottawa-Carleton and CTT. These recommendations attempt to envision the most effective manner by which local government can adapt itself to the new challenges it faces. Chapter nine closes with reflections on both the contributions and shortfalls of this process, shedding light on possible next steps.

Chapter 2 - Patterns of Local Governance and Innovation

This chapter searches for a nexus among spatial, economic and political dimensions of local governance systems that are driven by technology and innovation on the one hand, and the roles accorded to each level of government on the other.

First, by *spatial*, we consider the political-economic forces emphasizing a shift away from the traditions of national systems toward an emerging set of global-local dimensions. *Economic* denotes the externalities from flexible networking, learning and innovation strategies, and the new forms of horizontal coordination which underline the need to consider both allocative and dynamic efficiencies. Finally, the *political* dimension refers to the fluid nature of the Canadian polity, and the extent to which federal and provincial processes impact local systems and influence the potential for their empowerment.

These three dimensions help set the stage for more specific templates that examine high-technology localities and their systems of governance. First, the spatial examination of the current political-economy provides a basis for the empowerment of local systems. The economic literatures are a source for rethinking relations and associations between actors in such systems. The political and federalist policy-making context reminds us that local actions do not exist in a vacuum. This review will also help situate our interest in local governance. The first and second sections carry out this task in a more conceptual manner. They are followed by an applied look at Canadian policy responses, which is the focus of section three. Section four draws together the key points of this review, and offers a rationale for the LIS's emergence.

2.1 Glocalization and Concertation

In a manner consistent with Jessop's conceptualization of the hollowing nation-state, Naisbitt presents what he terms to be the paradox of globalization [1994]. He recognizes that globalization, while incomplete, is accelerating across many economic and technological domains, thereby creating bigger markets and economic spaces. At the same time, however, with respect to organizations and governance, smaller organizational units demonstrate the greatest adaptive capacities within this turbulent environment. This trend applies to business and the trend toward federating enterprises - capturing the benefits of expansion on a global scale, while creating flexible governance structures to respond to socio-economic, cultural, and political realities locally. This point applies to the third sector as well - where new social movements and non-private institutions are organizing transnationally, while action is increasingly localized (recall sustainable development's message of *thinking global and acting local*). The result is that the local economy can only be seen as mode in a global network [Jessop 1993].

Such global-local boundaries are the basis for the somewhat awkward, but nonetheless accurate, notion of *glocalization*. The term is meant to invoke the intensifying pressures of globalization on the one hand, and the rising importance of local responses on the other [Courchene 1995]. Todtling [1994] examines the extent to which localities are increasingly autonomous from, or inter-connected with global systems. The conclusion is that local systems are shaped by the fact that both processes are occurring simultaneously. It is not just the embedding of firms into the local milieu which we observe, but also their increasing integration into international and global R&D networks [Castells 1989; Todtling 1994].

Local embeddedness has been stressed particularly by the *milieu* approach [Maillat 1992; Todtling 1994]. A milieu refers to the collective benefits derived from the interactions and interdependencies of actors within a specific socio-economic environment. One result is processes of agglomeration, the roots of which are found in Marshall's earlier works of a century ago. Saxenian explains that producers benefit from sharing the costs of common external resources such as infrastructures and services, skilled labour pools, specialized suppliers, and a common knowledge base. When these factors of production are geographically concentrated, firms gain the additional benefits of spatial proximity, or "economies of agglomeration...[and] the advantage becomes self-re-enforcing" [Saxenian 1994, p. 23].

Marshall's work has been pivotal to those concerned with such spatial dimensions of economic interdependencies. The notion of shared externalities provides the rationale for a blurring of the boundaries between firms, and their interdependent ties. Accordingly, the basis for linking proximity, horizontal relations and competitiveness is the concept of an industrial cluster. Porter presents four key determinants of international competitiveness which, both collectively and locally, form his Diamond-model of clustering. The four determinants are as follows:

i) firm strategy and rivalry - the vigour of competition in a home market among the leading firms in an industry;

ii) related and supporting industries - the presence or absence of supplier and related industries that are themselves internally competitive;

iii) factor conditions - the cluster's factors of production including natural resource endowments and human capital and skills; and

iv) demand conditions - the size and nature of the demand for goods and services in the country [Porter 1991, p. 3].

Porter's framework is based almost exclusively on a market driven process. Government is limited to setting the parameters for the evolution of this process (i.e., establishing a general climate conducive to the four interdependent components of the diamond). D'Cruz and Rugman introduce a networking strategy, calling for new linkages among all sectors in order to further both collective learning and competitiveness. They outline a basic infrastructure for an effective network - with government involved only after the network is established and operating effectively [D'Cruz and Rugman 1992]. These models of both clustering and business networking patterns are important since they have exerted a strong influence over Canadian policy-makers, and they carry forward significant elements into Saxenian's LIS model.

This importance of interdependent relations between market-based and non market-based organizations, particularly those operating in close proximity, creates an emphasis on partnership. A literature survey of this field in the mid-1990s confirmed this shift, demonstrating the evolution of local economic development into a complex mixture of economic, social, and cultural factors: i) *economic* - the development of local resources through numerous innovations of products, markets, actions, and organizations; ii) *social* - local partnerships, negotiation, and the formation of new relationships; and iii) *cultural* - initiative and responsibility, citizenship, creation, innovation, solidarity and self-confidence at both individual and group levels [Fontan 1993; Fortin 1995].

As the emphasis on partnerships drives concertation, this latter, cultural dimension augments the importance of a socio-economic capacity to collaborate. The mix of competition and cooperation characterizing the new governance is based on a deeper recognition of

interdependence - between individuals, organizations and sectors. For Putnam, social capital is a measure of the underlying civic tissue, and the propensity of people to form organizations that are not based on kinship, but rather processes of more spontaneous socialability [Putnam 1993; Fukuyama 1995].

Putnam and Fukuyama both underscore how culture is at the nexus between globalization and community on the one hand, and the central importance of collaborative ties on the other. The so-called new competition therefore emerges as a simultaneous set of competitive and cooperative relations, the latter shaped by cultures of trust [Best 1990; Sabel 1993; Putnam 1993; Fukuyama 1995]. For Saxenian [1994], this view of local culture, shaped by both formal and informal institutions is similar to Moss Kanter's linking of the efficacy of market-based organizations (firms) and their connectedness to the surrounding community [1995]. This socialization of competitive behaviour underscores both the interdependency and connectivity between individual entrepreneurs, sectoral organizations and local institutions.

Accordingly, civic entrepreneurs emerge as new and central catalysts, both in forging alternative (non market, non state) organizations and shaping local culture in ways that aim to generate civic-based capacities for collaboration across sectors [Henton and al. 1997]. Foreshadowing civic entrepreneurship, Johannisson distinguishes between the autonomous entrepreneur and the civic entrepreneur. Whereas the former considers the community as a means to personal goals, the latter concentrates on the development of community as a primary goal [Johannisson 1986].

Johannisson's territorial strategy is an integrative set of processes and actors that coalesce around local mobilization. These three, interdependent sectors are the following: i) the market - and the need for intrapreneurship within the local context; ii) the state - and the importance of a decentralized public sector capable of partnering (i.e., shifting to governance); and iii) society - including the social entrepreneur and a catalyst for cooperative revival to bring together different interests from across the community [Johannisson 1986]. This latter component is the basis of community action and collaborative culture. The primary resource that the social entrepreneur mobilizes is non-material - the strength of local identity, and the creativity of community members. These works provide many elements of the conceptual foundation for Saxenian's LIS, and the specific role accorded to local culture.

2.2 Innovation and Learning

The purpose of this section is to move beyond the static choices of market and hierarchy in order to examine the institutional and strategic basis for more complex governance patterns such as flexible networks, and innovation and learning systems. The central feature of local governance in high-technology settings, requiring this discussion, is the dramatic rise in alternative mechanisms for coordinating individual entrepreneurs, smaller and medium-sized companies, and even the largest global corporations. These new attributes of local ecologies, said to be central to the performance of Silicon Valley-type localities, are significant new challenges to local governments in these settings. One aim of our investigation, as we progress, is to ascertain the extent to which there is a role here for public sector action locally.

Saxenian has already made the point, drawing on Marshall, that spatial proximity

facilitates inter-firm collaboration which, in turn, generates a variety of positive externalities. The form of these externalities and their influence over the institutionalization of choices by individuals and organizations must now be considered. More specifically, at the heart of new forms of governance is the pursuit of learning and adaptive capacities which move away from traditional, neo-classical measures of allocative efficiency. In their place, new strategies of coordination are examined through the prism of adaptive, or dynamic efficiencies which connect the firm not only to other firms in the market, but also to other knowledge sources which intensify inter-sectoral linkages.

The economics of organizing principles has its roots in Coase's 1937 seminal piece, "The Nature of The Firm" which proposes that firms and markets may be considered alternative means of economic organization. Whether transactions are organized without a firm (hierarchically) or between autonomous firms (across a market) is thus a decision variable [Coase in Williamson 1985]. In response to Coase's basic question, "why does a firm exist?", he begins by acknowledging the existence of multiple mechanisms for coordinating the allocation of scarce resources:

outside the firm, price movements direct production, which is coordinated through a series of exchange transactions on the market...within a firm, these market transactions, and in place of the complicated market structure associated with exchange transactions is substituted with the entrepreneur coordinator, who directs production [Coase 1937, p. 391].

In recent years, the role of transaction costs in explaining the structure of market and non market forums of economic governance has been subject to increasing attention by economists (i.e., Williamson, 1975, 1985) and economic-geographers [Scott and Storper 1990; Storper and

Harrison 1991; Hepworth 1990]. There is a consensus that firms engage in a wider range of collaborative arrangements than static choices between the open market and internal hierarchy. In what has been termed the "swollen middle," there are numerous forms of inter-firm engagements that exist between pure market exchanges and intra-firm hierarchy, and it is in this space that the concept of a "network firm" exists:

Network firms are the result of the attempts of firms to take into account strategically the major factors of externalities in defining the borders between Markets and Hierarchies. Network firms can be considered as the intermediate institutional model, comprised between markets and hierarchies...constituted by the web of organizational devices built to achieve the coordination necessary [Antonelli 1992, p. 279].

Antonelli shows that network firms are especially aware of the relevance of externalities in knowledge and technology - and the collaborative nature of the innovation process. Thus, the pure theory of transaction-cost economics is widely acknowledged to over-simplify many choices facing firms, governments, and other actors on several counts.

Of particular relevance to high-technology sectors is Hepworth's focus on two considerations inadequately dealt with by transaction-cost models: i) strategic considerations by the firms beyond those of cost-minimization or profit maximization; and ii) the effects of the environment within which firms and institutions co-evolve [1990].

On the first point, the basic argument is that firms may choose not to minimize their transaction costs. For instance, an additional cost to the firm may well be compensated adequately by the increase in revenue made possible by improved control of the market resulting

from the adoption of this structure [Hepworth 1990; Nelson 1991]. The attention and resources which are devoted to the formation of technology strategies (examined below) by firms, and networks of firms are driven by the existence of numerous forms of externalities which make static considerations of pure cost-minimization unlikely.

With respect to environmental factors, many students of inter-firm relations have also questioned the completeness of transaction-cost frameworks in explaining organizational choices. Lazerson examines this issue in the context of Italian localities which carry a high density of collaborative networks: he argues that small and artisan firms are highly influenced by both cultural norms and legal regimes. Thus, state policies promote certain forms of business combinations more than others, often for reasons that are socially and politically, rather than economically motivated [Lazerson 1988]. The choice between market and hierarchy is therefore complicated by many decision variables, as sources of both positive and negative externalities encourage more complex organizational hybrids, such as networks.

North's work on institutional change provides a useful bridge between the foundations of transaction cost economics and more dynamic approaches to technology and innovation strategies. He points to adaptive efficiency as the willingness of a socio-economy to acquire knowledge, induce innovation, undertake risk and creativity of all sorts, as well as to resolve problems and bottlenecks of the society through time [North 1990]. Indeed, adaptive efficiency is at the core of a much broader movement of students of technological change and discovery

capacities [Nelson and Winter 1982]⁷.

The central questions are how firms and industries change over time, and how to incorporate technological change and Schumpeterian-like discovery forces in economic theorizing. The critical response is that neo-classical guideposts of profit maximization and market equilibrium are restrictive, and ineffective in analyzing both the forces of technological innovation and the forces of both competition and collaboration among firms. The result is a shift away from pure price signals and rigid market mechanisms toward innovation processes and an ongoing disequilibrium that characterizes the interface between firms, markets, and other non market processes.

This school of economics has been given the label, neo-Schumpeterian, due to the assertion that a central driver of change, and the corresponding need to adapt continually is innovation. Schumpeter described entrepreneurial innovation as a product of one of five possible events: i) the introduction of a new good or of a new quality of good; ii) the introduction of a new method of production; iii) the opening of a new market; iv) the conquest of a new source of supply or materials; or v) the carrying out of new organization of any industry [Schumpeter 1961; Nelson and Winter 1982; Malecki 1991].

The disequilibrium, and destabilizing impacts of such entrepreneurial behaviour could

⁷ Williamson's assessment was as follows: "The book spans an enormous literature - dealing with economics as process, evolutionary modelling, Schumpeterian competition, organizing form...It will influence teaching, research, and public policy in complex economic systems for years to come" from [Nelson and Winter 1982, back-cover].

result from individuals or from organizations [Nelson and Winter 1982; Malecki 1991]. A related cause of disequilibrium stems from the tremendous informational problems associated with entrepreneurship and discovery, as technological change is the major root source of informational problems [Malecki,1991; Kelly 1994]. These informational problems, and their effects on knowledge dispersion provide a crucial link between Nelson and Winter's systems of innovation from an evolutionary perspective, and North's process of learning. This link comes in the form of tacit knowledge, and how it is acquired, deployed, and managed:

Tacit knowledge (a term coined by Michael Polanyi, 1967) is acquired in part by practise and can only partially be communicated; different individuals have different innate abilities for acquiring tacit knowledge... Learning by doing in organizations, as the term implies, means that an organization acquires coordination skills and develops routines that work as a consequence of repeated interaction [North 1990, p. 55].

Forecasting the tremendous rise in knowledge management strategies, particularly in high-technology localities, Nelson and Winter [1982] conceptualize their notion of a *selection environment* - defined as the context that determines how relative uses of technologies changes over time. Freeman adopts a similar view, though he also underscores, more explicitly, the social and political institutions that accompany technical innovations [Freeman,1979; Niosi et al.1993].

A direct product of these efforts is the formal conceptualization of a *national innovation system* [Lundvall 1985/1992; Niosi et al.1993]. Yet, if one combines an emphasis on learning and adaptation with Saxenian's usage of spatial proximity, it becomes apparent that the localized setting provides the most likely venue with which the institutional context can be understood in

accordance with the spatial relationships between various actors in the governance system [Acs, de la Mothe and Paquet 1996]. In building our investigation, this point is crucial since it permits us to examine two localities for both evidence of this assertion and insight about the specific role played by local government.

Firm strategies - Environmental complexity has been identified as one important factor in the need to extend beyond a simple market-firm depiction of economic organization. The complexity of firm behaviour is the second. Nelson and Winter show that in an environment characterized by technological change and innovation the firm does not exhibit the traits ascribed to it by neo-classical models. Nelson emphasizes process-oriented innovations as the key element of technology adaptation and firm success over time [Nelson 1991]. The result is a greater emphasis on understanding the complexity of a firm's R&D and technology strategies, both individually and collaboratively.

The highly influential work of Cohen and Levinthal introduces the concept of absorptive capacity (similar in many respects to the notion of organizational learning). They show how firms engage in cooperative R&D networks (both between firms and across sectors) in order to increase their knowledge-capacity, stay plugged into the environment, and strengthen their adaptive and innovation capacities linking the firm to its external environment [Cohen and Levinthal 1989]. The multitude of arrangements shape what Piorre and Sabel refer to as extra-firm infrastructure [Piorre and Sabel 1984; Best 1990].

In such a world of technological, economic, and institutional evolution, Best characterizes

the complexity of behaviour as a characteristic of the entrepreneurial firm, underlining a distinction from the hierarchical firm of Williamson [1990]. For the entrepreneurial firm, the key success factors are ongoing capacities for product, process, and organizational innovation - abilities dependent on the firm's *learning systems* (similar to Cohen and Levinthal 1990)⁸.

Weiss and Birnbaum [1989] conceptualize a link between the entrepreneurial firm and its institutional environment which they call the technological infrastructure. While much of their discussion echoes the issues outlined here, their fundamental conclusion is noteworthy: technology strategy is about institution-building. Thus, a firm's planning is inclusive of its *technology strategy* - and this strategy is about promoting institutional linkages within the network of relationships that constitute an infrastructure.

In short, section one in this chapter reviewed the extent to which globalization has heightened the importance of local responses: these responses build on the enabling potential of spatial proximity as a source of positive externalities which, to be realized, requires concertation across all sectors. This section presents a complementary perspective in examining the economic incentives of firms, and the reasons for which intra-firm flexibility and inter-firm collaboration are key attributes in a technology and innovation-intensive environment. These incentives to learn and adapt to a changing market also extend a firm's boundaries (or blur them, according to

⁸ Best provides an interesting distinction with respect to firms and learning: "learning suggests that a distinction be made between information, a core concept for the conventional theory of the firm, and knowledge and its refinement. Creating production knowledge by problem-solving involves more than the flow of information: information is already existing; problem-solving is the creation of knowledge. The latter is the secret weapon of the entrepreneurial firm" [Best 1991, p. 38].

Saxenian) to include a variety of external partnerships with both market and non market actors.

2.3 National - Local Tensions

Within these spatial and institutional dimensions, it is also key to contextualize the preceding issues within the changing Canadian polity. A key policy field for all governments is economic development - including more traditional definitions federally, such as industrial policy, and more recent forms (both federally and provincially) of technology and innovation strategies. Despite the localizing tendencies of the spatial and economic dynamics already examined, the main point is that local systems will be influenced by the degree to which all governments appreciate these arguments, as well as their individual and collective responses.

In her examination of the global-local pressures empowering local systems, Blais outlines four areas in need of new thinking with respect to economic development: i) rethinking federal policy and programs toward local governance and development; ii) a new economic role for urban centres; iii) (reforming) systems of urban governance; and iv) (reforming) the functioning of city governments [1994]. Although one may choose to reverse the order of the four points and emphasize the bottom-up dimension to this challenge, Blais is correct. Localized governance systems must be viewed within their multi-level contexts. Innovative and effective governance strategies locally can be stymied by bad federal or provincial policies. They can also be aided by effective ones.

Blais's presentation is a useful formulation of local systems connected to a federal context. She ignores federalism, however, and the notable importance of both federal-provincial

impacts on, and provincial constitutional control over municipal government. One interpretation of Blais is that the federal government might serve as a partner to more empowered and autonomous forms of local and urban governance. While devolutionary trends support this notion to some degree, provinces cannot be bypassed. Moreover, in areas shaping economic development, particularly new technologies and innovation, there are notable involvements by both provincial and federal actors.

In short, Blais reveals both opportunities and constraints, and an over-riding truism from Canada's past is that the formation of a national consensus on economic development has remained elusive [Atkinson and Coleman 1989; Paquet and Roy 1992; Paquet and Roy 1995]. Here lies a central lesson and fundamental reality of Canadian policy-making. Any country hoping to implement a meaningful national strategy - irrespective of the degree of interventionism - requires, as a prerequisite, the capacity to set priorities collectively.

This process of social learning hinges on consensus-building, and its absence from the Canadian national level is well documented [Atkinson and Coleman 1989; Valaskakis 1990; Paquet 1992]. Atkinson and Coleman conclude that the most common Canadian arrangement involves a reactive approach to industrial policy through pluralist policy networks [1989]. They point out that Canada, a country with a weak state tradition and a significant degree of diversity and fragmentation of organized interests, will continually be frustrated in attempts to create more anticipatory strategies, as these strategies require corporatist-leaning representation where state agencies are strong and business mobilization is high. Consequently, they cannot be optimistic in their prognosis, and their appeal for the creation of corporatist-like conditions at the national

level (pointing to sectoral exceptions as signs of hope) seems to hold little potential in the face of their comprehensive historical analysis depicting a nation both structurally and cognitively incapable of fostering process formations of this sort.

Most of the literature in the industrial policy field which examines subnational approaches to economic development is skewed by a traditional (and outdated) assumption that industrial strategy is largely synonymous with national planning. Valaskakis provides one example. Upon accurately depicting the malaise within Canada's federalist structures as the product of four sets of adversarial relationships - business vs government, business vs labour, business vs business, and federal vs provincial governments - he envisions a solution from a system of nationally engineered tripartite cooperation, drawing on Austria as a useful point of comparison⁹. Wilson counters that:

There is no one "best-way". The fact that geographic, social, ethnic, cultural, racial, historical-institutional, economic, and political factors come together in diverse and often unpredictable ways only underscores the differences between provinces and/or regions. These differences can be expected to increase rather than decrease...[p.154, Wilson 1992].

He argues that excessive centralization, already of great cost to Canadians, must be overcome before Canada's true economic potential is reached [Wilson 1992]. Such an acknowledgement must carry an alternative vision for economic development. Courchene endorses a similar view in his calls for a continuing process of devolution, and a simultaneous

⁹ In fact, Austria is not a particularly useful comparison to draw similarities: the small, homogeneous nation exhibits many of the characteristics of a Canadian province more than that of the country as a whole.

strengthening of local and provincial forums [1995].

These shifts illustrate the erosion of direct interventionism by Ottawa, rendering the sorts of national and comprehensive strategies envisioned by national governments in the 1970s and 1980s nearly obsolete. They are central to the paradigm of regional development which, according to Savoie, is in need of a complete overhaul [1992], one more in line with Blais's four questions. Savoie's emphasis [1992] on local entrepreneurship and empowerment, and getting the federal government out of direct engagements is consistent with many of the themes developed here.

This shift is the essence of Blais's four points - as outlined above. The important distinction between regional development and local development is as follows: the former has traditionally been a label for federally formulated strategies aimed toward local initiative, whereas the latter term invokes solutions devised locally - and driven by both actors and resources rooted there. While this distinction may be too categorical, the basic point remains that much of what local governance is about in the 1990s reframes, to a great extent, more traditional approaches toward regional development [Savoie 1992]. The emergence of this bottom-up perspective forces provincial and federal governments to rethink their actions accordingly. Along the path from Cote and Miller to Saxenian and others, interest has grown, at all levels, in finding ways to foster a local ecology of entrepreneurship and innovation that, by definition, must be rooted in, and driven by local processes and actors [Fortin and Prevost 1995].

Silicon Valley North(s) - Before its disbanding, the Science Council of Canada began to

explore the possibilities for localized science and technology strategies. Ahead of its time, *Local Initiatives to Promote Technological Innovation in Canada* makes the case that cities and metropolitan areas find it necessary to conceive and implement strategies for enhancing technological innovation [Davis 1991]¹⁰. Davis correctly underscores the fact that grass-roots level strategies for innovation are an unexplored policy area (particularly at that time).

A related Ontario comparison comes from Andrew, Houle, and Theriault [1993]. They study the political-economic transformations in both Ottawa-Carleton and CTT. They also point to three key priority areas which permeate these localities: i) economic development (with an emphasis on high-technology sectors); ii) international contacts; and iii) local cooperation. They conclude that "without overstating the local renaissance, it is possible to see signs of post-Keynesian political restructuring...and new possibilities resulting from global restructuring" [Andrew and al. 1993, p. 344].

2.4 Toward The LIS

Spatially, the connectedness between transnational integration and subnational empowerment implies increasingly autonomous and localizing socio-economic systems of governance. These localities are characterized by complex and interdependent governance relations involving a diversity of actors and networking relationships. Moreover, local economic development, once an exclusive focus on micro-policy initiatives by specialized and highly functional local

10 The eight localities examined in this project are: Edmonton, Saskatoon, Hamilton, Canada's Technology Triangle (Kitchener-Waterloo-Cambridge-Guelph), Toronto, Ottawa, Montreal, and Quebec City.

governments, has been transformed into a more encompassing set of actions. Such actions must be designed to promote capacities for collective action within a local system increasingly tied to transnational forces.

Institutionally, three main points emerge. First, local institutions play a fundamental role in determining actions and policies: by institutions, we mean both formal and informal processes rooted in, or connecting industry, government, and civic actors. Second, with respect to high-technology, the particular mix of local institutions provides an important bridge between the understanding of continual processes of R&D and innovation on the one hand, and their relationship to local governance on the other. Third, evidence from a variety of localities suggests that subnational venues provide the most effective laboratory in which we can gauge the individual, organizational and sectoral interdependencies linked to the existence of externalities and their place in local governance.

Politically, the embedding of the current shift toward bottom-up development within a federal polity is important for all localities - particularly centres of technology-intensive activities. The four points outlined by Blais underscore the sorts of issues which need to be addressed. Locally, the thrust so far has been in support of the flexible and continually adapting boundaries between organizations such as firms, the state, universities etc., and the emergence of new synergies between actors and their surrounding institutional environment.

The LIS is our conceptual starting point in the subsequent chapter, as it demonstrates three key dimensions emerging from this chapter: i) the nexus between geographic proximity and

a socio-economic culture conducive to collaboration; ii) the networking-based externalities of learning and innovation; and iii) the changing and flexible apparatus of a firm with a high degree of connectivity to its external environment. Saxenian's model is insufficient, however, in the crucial aspect of explaining government's changing role - particularly locally. Therefore, upon a balanced review of this LIS, we formulate an appropriate template for undertaking a specific investigation of public sector action in the type of environment introduced by Saxenian.

Chapter 3 - The Strategic Localism Template

This chapter includes four sections. First, we carefully review Saxenian's application of the LIS in both Silicon Valley and Route 128. Second, we consider the insufficient aspects of the LIS in studying government and public policy. Third, we propose a more suitable template, entitled Strategic Localism. Finally, we use this template as the basis for a preliminary propositions which will guide the investigation through the case studies reviewed in Part II.

3.1 Saxenian's Findings

The main challenge undertaken by Saxenian is to examine the contrasting fortunes of Silicon Valley and Route 128 in the early 1990s, and explain the reasons behind their separate development trajectories:

Silicon Valley in California and Route 128 in Massachusetts are America's leading areas of electronics innovation and entrepreneurship. The regions are similar in many respects: both trace their origins to university research and military spending, and both faced severe downturns in the early 1980s. Today, however, Silicon Valley is again flourishing while Route 128 continues to decline.

What accounts for this difference in fortunes? Why did Silicon Valley adapt successfully to intensifying international competition, while Route 128 ceded its longstanding advantage in computer design and manufacturing to the West [Saxenian 1994, p. 1]?

The LIS comprises three components: i) local institutions and culture; ii) industrial structure; and iii) corporate organization. We briefly define each in turn.

Local institutions and culture include all non-firm entities, such as universities and other education and research centres, business associations, local governments, and formal and informal groups that create and sustain patterns of social integration locally. The shape and contributions (and even existence) of these institutions are closely related to a local culture defined as "the shared understandings and practises that unify a community and define everything from labour market behaviour to attitudes toward risk-sharing" [Saxenian 1994, p. 7]. Tonnies's definition of community (*Gemeinschaft* in German) as a cohesive society organized on the basis of shared values and norms that command strong allegiance from its members fits well with the unified image presented by Saxenian, and the importance of culture in underpinning it. While such ties may be ethnically rooted, they are not primarily so [Fretz 1989; Henton and al. 1997].

Industrial structure refers to the degree of vertical integration linking firms in the LIS. They include multiple types of linkages among producers, suppliers, and customers. The author points out that while this aspect of industrial organization has been studied extensively, it must be fully embedded within a model (the LIS) incorporating all three components. The third component of the LIS is *corporate organization*. This term is defined as "the degree of hierarchical or horizontal coordination, centralization or decentralization, and the allocations of responsibilities and specialization of tasks" within firms [Saxenian 1994, p. 8]. The relative size of firms within their LIS is also an important element of this component. Therefore, while industrial structure is concerned with relations between firms, corporate organization is within the firm.

Saxenian's argument stems from the three components of the LIS (local institutions and

culture, industrial structure, and corporate organization). Essentially, she concludes that local institutions and culture do matter in fostering innovation and wealth creation. Assisted by such a culture, a local economy built on flexible networks of multiple-sized firms is more desirable than larger, more autonomously structured firms in terms of economic competitiveness, market responsiveness, and by extension, local growth and resilience.

The author begins her analysis by exploring the parallel origins of both LISs. Federal government funding, university linkages (MIT in the east, Stanford in the West), and some key individual entrepreneurs provide a starting point which lead to both areas becoming renowned for electronics and computer-related industries by the 1970s. It is at this point where their fortunes began to diverge significantly¹¹.

Within Route 128, she sketches out the three components of the LIS. The local culture is conservative and not well suited to social integration and networking. This stifles the development of local institutions to facilitate cross-firm communication, flexible relations, and ultimately new firm creation. Accordingly, the industrial structure remains rigid and closed - so there is little development of synergies among different agents such as producers and suppliers. The corporate organization, consistent with the other parts of the LIS, grows around large, more hierarchical firms with little capacity for flexible adaptation within the firm.

¹¹ Saxenian's work documents Route 128's decline through the 1980s. However, other scholars (i.e., Moss Kanter 1995) would argue that Route 128 has rebounded (i.e., more closely duplicating many of the traits ascribed to Silicon Valley by Saxenian).

The story of Silicon Valley is quite different. Here the local culture grows from a more entrepreneurial and open culture where risk-taking, networking, and social integration had become embedded within the LIS. As a result, local institutions strengthen around these values and encourage more open relations between individuals and companies. Similarly, the industrial structure represents what the author terms a network-based system, with flexible and fluid synergies among firms (and institutions facilitating R&D). The corporate organization is then less rigid with many more small and flexible producers operating in Silicon Valley networks. New firm creation is much stronger in this environment.

A key chapter, entitled *Running With Technology*, illustrates the differences between local environments and how they shaped the growth and evolution of high-technology clusters [1994]. On the east coast, the legacy of corporate secrecy, more historically conservative universities, and independent and hierarchical firms are barriers to learning and innovation, and the effective diffusion of new technologies and knowledge. On the west coast, a more open and entrepreneurial environment (also reflected in the university culture, notably Stanford) facilitates a network-based LIS with a greater capacity to innovate and share knowledge. More flexible production and governance arrangements are the result.

3.2 The Absence of Government

Saxenian, herself, has indicated that her LIS model has "surprisingly little to say on the planning and public policy" consequences of her lessons from Silicon Valley and Route 128¹². In fact, we

¹² This comment was made during her presentation at Technopolis 97 in Ottawa, Canada (September).

may identify three significant areas of concern, in terms of Saxenian's approach, which are crucial to our subsequent case study investigation. These issues call for a template different from that of Saxenian's LIS. The three points include the following: i) a lack of precision on the role of local government, and its actions and policies affecting (positively or negatively) collective governance patterns; ii) an overly crude encompassing of all non market-based synergies under the prism of *local institutions and culture*; and iii) little acknowledgement, and no consideration for the potential impact of higher-order governance levels, such as provincial (or state in her U.S. study) and federal environments.

The critical weakness of the LIS as a methodological template, then, is an inability to explain the role of government and specific forms of public sector action. Within the LIS, government is a relatively implicit and ill-defined actor - one of many elements in the local institutions component of the LIS. An effective study of government and public policy impacts within high-technology localities requires an unbundling of this widely encompassing component. Public sector forums also comprise a set of actors within these *local institutions* in need of further elaboration and consideration.

Yet, in terms of how local government handles itself, and shapes the processes and actors comprising this component, Saxenian's investigation makes no attempt to address this question. For instance, her view of collaborative capacities emerges from a local culture of both competitive and cooperative practices - explained mainly as market and civic forces tied together in a fashion similar to Moss Kanter's [1995] linking of market and community. However, both authors remain silent on a response or role for local government. Indeed, their respective works

did not undertake to focus on the public sector, and this point differentiates their methodologies from what we hope to learn as we proceed.

How might local government matter? Despite the neglect of Saxenian and others, the empowerment of local government is beginning to be supported conceptually and politically by arguments of subsidiarity - a philosophy favouring more responsive and efficient governments through policy-formulation and service-delivery at the level closest to the citizen [Fontan 1993; Fortin and Prevost 1995; Paquet and Roy 1995]. While any application of this philosophy is clearly dependent on politically subjective debates, a strengthening argument for devolution is proposed as a means to achieve more flexible and responsive forums than national institutions are able to accommodate [Courchene 1995; Paquet 1997]. Flexibility and adaptive abilities, both for *re-inventing government* internally, and partnering with other sectors externally, are the focal point of those who espouse a bottom-up vantage point [Osborne and Gaebler 1992].

The potential for a positive nexus of devolution and flexibility must be considered, and it is the new place of government, acting within increasingly complex and multi-sectoral governance systems that must be addressed [Barnett 1997]. A key objective in exploring the case studies is to ascertain the extent to which local government possesses the capacity to facilitate and shape the purpose of such governance forums, as well as the forms of local initiatives generated by them.

In an important and closely related look at the link between *enabling government* and *urban governance*, Barnett synthesizes these tensions in a useful manner:

- i) what size, level and structure of government is best suited to perform an enabling role;*
- ii) how can government facilitate activity by the private and voluntary sectors in order to bring about pluralistic governance; and*
- iii) how can higher levels of government facilitate lower levels of government in the discharge of their duties [Barnett 1997, p. 67]?*

These questions present important dimensions - dimensions that remain ignored in Saxenian's LIS. They must therefore be included as elements of a methodological template appropriate for the task at hand. This task is to examine government's place, particularly locally, within the new patterns of governance. Yet at the same time, government is not exclusively local.

Local, provincial and federal - Barnett's aforementioned questions reinforce the need to rectify the absence of government in Saxenian's model. They also emphasize that the local level of government cannot be viewed as completely autonomous, as provincial and federal contexts continue to matter. Even debates on the principle of subsidiarity centre on the changing inter-relations between multiple levels of government, rather than selecting only the local plane.

The recent, and ongoing complexities generated by Ontario's self-titled process of disentanglement (between provincial and municipal processes) are a case in point which also help set the stage for our selected cases. Most of the attention and energy accorded to these reforms have centred on attempting to understand the logic of provincially initiated change (in many cases, radical change with numerous rounds of reforms and revisions). Municipal decision-makers are left struggling to adapt [Graham and Phillips 1997]. Similarly, the preceding chapter

reviewed the inertia of national systems and resulting strategies (i.e. industrial policies). It remains the case, despite the legitimate trends invoked here, that federal resources and actions may well be significant factors in determining governance at all levels, including locally.

In summary, with the growing interest in local systems, there is a partial recognition of local government's changing role, and the potential for an increasingly important one. What is required, therefore, is a template that both builds on the utility of Saxenian and responds to the questions underscored by Barnett.

3.3 The Strategic Localism Template

In order to hypothesize specifically how, and if, local government matters in a dynamic governance context, we must clearly identify the synergistic forms driving local systems of multi-sector governance. These synergies will then permit a preliminary investigation of each of the secondary premises that local government matters by first outlining the areas where government action may have an impact, whether positive or negative. They encapsulate the essence of the LIS framework, and provide additional clarity, in large part due to a better separation and depiction of elements that are encompassed collectively in a single LIS component (local institutions and culture). This alternative template must also recognize the multi-level existence of government.

We proceed, therefore, with three potential forms of *a local advantage*. Each one presents a separate set of challenges for local development strategies, and local government in particular:

- i) *competitive advantage* is determined by the strength of market-driven linkages within clusters;

ii) innovative advantage is shaped by the Knowledge Infrastructure of intellectual and human capital sources; and *iii) collaborative advantage* is nurtured from local capacities for cooperation and the efforts of civic entrepreneurs. We briefly discuss each in order to both clarify their connections to preceding literatures and specify their purpose.

i) Competitive Advantage (Market Linkages):

Two of Saxenian's three components are closely aligned with the logic of an industrial cluster (industrial structure and corporate organization). Models of industrial competitiveness point to the strength of market forces within clusters [Porter 1991]. While both competition and cooperation play roles in economic governance today, Market Linkages stress the former [Best 1990; D'Cruz and Rugman 1992; Moore 1996].

ii) Innovative Advantage (Knowledge Infrastructure):

The role of both knowledge flows and innovation capacities is central to local governance in a high-technology setting. This infrastructure includes knowledge-generating institutions such as universities, colleges, research institutes and laboratories, and various consortia or partnership arrangements among them. The infrastructure also includes the local labour pool of human resources and skills, a critical determinant for technology-intensive industries.

iii) Collaborative Advantage (Community Culture):

The notion of Community Culture provides a basis for the institutionalization of shared practises and beliefs that emphasize connectivity and reciprocity between members. These norms and values underpin collective capacities for both institutional adaptation and socio-economic

inclusion. Civic entrepreneurs are organizations with a mandate to build collaborative capacities, particularly in the form of new and innovative initiatives joining socio-economic sectors.

This template (illustrated below) will allow for the two case studies, Ottawa-Carleton and CTT, to be the basis for attempting to determine the extent to which local government is a determinant in socio-economic governance.

Strategic Localism - Scope for Public Sector Action

In the template below¹³, the three synergistic components are identified, along with each of the three levels of government.

Level of Government

National Jurisdiction Provincial Jurisdiction Key Zone for
Local Advantage

(*)

national framework	provincial strategy	local clusters & networks (*)	Market Linkages
research infrastructure	training & education	innovation processes (*)	Knowledge Infrastructure
indirect (Ottawa-Carleton as possible exception)	indirect	learning & collaboration (*)	Community Culture

(*) key area of investigation to both explain new patterns of local governance and examine the response by local government (for this study, we limit our focus on local government to economic development functions at the municipal level - either as internal departments or separate agencies)

¹³ This template is adapted from the initial version developed jointly as part of a collaborative research project with MITEL Corporation [Roy and Wilson 1996/1997].

3.4 Propositions for Investigation

On the preceding template, encompassing both governments at three main levels and more synergistic and relational forms of governance locally, the main focus of this dissertation is highlighted as the *key zone for local advantage*.

Our primary proposition for investigation is that local government's proximity to other sectors allows it to partner and foster positive synergies in each component of the governance system, Market Linkages, Knowledge Infrastructure, and Community Culture.

Locally, this premise translates into a flexible and empowered local government that would take action effectively in order to generate positive externalities from production (Market Linkages), learning (Knowledge Infrastructure), and collaboration (Community Culture). Such a general and ideal scenario is both unlikely and unproven: it is therefore not helpful in learning about local government's changing capacities. The aim must be to realize more precise findings about local government's changing situation, while considering the potential for disproportionate impacts from provincial or federal levels.

Consequently, within the Strategic Localism template a more specific set of secondary propositions are presented to help guide the investigation in the two case studies selected:

P(1) Market Linkages - Local government may actively support the competitive advantage of key technology clusters by helping to nurture the conditions for both strong competition and inter-firm linkages.

P(2) Knowledge Infrastructure - Local government action may foster an innovative advantage by contributing to the collective learning capacities of all sectors, particularly education and research.

P(3) Community Culture - Local government may play a significant role in nurturing a collaborative advantage through efforts to strengthen civic engagement and cooperative ties across all sectors.

These departure points are rooted in the preceding discussion and literature review. In the case of Market Linkages, or cluster models of industrial competitiveness, government's role is expected to be indirect, as its main focus is providing the set of broad socio-economic conditions which allow for industries to flourish. As many of these conditions lie in a provincial or federal domain, local government's scope is said to be limited. Indicators of local public sector action on this front may include strategies to strengthen positive externalities for specialized clusters in areas such as knowledge and information dissemination. Similarly, efforts may be undertaken to spark or support inter-firm collaborations, such as networking forums. This latter point is key: local government action aimed at, or undertaken in collaboration with, new mechanisms of inter-firm cooperation (such as business networks) signals an important degree of awareness which may underpin specific actions aimed at strengthening specialized clusters.

With respect to Knowledge Infrastructure, here again, the more paramount provincial and federal jurisdictions suggest a somewhat indirect role for local government. Nonetheless, there is a growing emphasis on multi-sectoral initiatives, including such examples as local innovation forums

and research collaborations, labour market development strategies, training and new skills partnerships, and multi-sectoral learning. In these areas, local government may be expected to direct tangible resources or political leadership in efforts to align sectors and foster expanded and better-performing synergistic linkages among them. Despite the relative lack of direct policy jurisdiction, we will search for evidence of initiatives, engineered by local government either directly or indirectly, that aim to strengthen collaborative ties among sectors. These ties are particularly prevalent in strategies for innovation, commercialization and knowledge-sharing which underpin this component of governance in high-technology localities.

Community Culture should be the component most closely connected to local government action by virtue of proximity and the potential for a true co-evolution of all sectors. Therefore, local government may be expected to support, either directly or indirectly, community-building efforts and civic engagement - and harness these forces into collective projects and common development goals. An important indicator of local government action on this front is recognition. The extent to which local actors are attempting to both measure and benchmark such collaborative factors as trust, civic engagement, and distribution of wealth are relevant examples. Similarly, we search for evidence of local government efforts to promote or nurture civic entrepreneurship, and the extent to which this fledging movement, rooted in community or social action, is being helped, hindered, or ignored by the public sector. The fledging relations between civic entrepreneurs and local governments are a key, and particularly exploratory focus.

At the same time, it is important to highlight the fact that the types of indicators available vary. Precise definitions prior to reviewing the cases are elusive for several reasons. First, the

contextual case method deployed adopted here relies on a more qualitative presentation of local circumstances, rather than readily quantifiable measures. Moreover, in proceeding through the case studies a central task will be to scope out the changing circumstance facing local government. Rather than testing out the propositions with specific tests, we aim to compare their implied roles for public sector bodies with the realities emerging in both case studies. The results will be less of a definitive result and more of an initial basis to learn about both the relevance of local government today within new governance patterns, and how this relevance to date previews a policy agenda in moving forward.. The setting of local governance and high-technology means that the synergistic components are guiding parameters, and not strict boundaries.

Finally, the literature review underpinning this template says little about the actual or optimal responses of local governments. Instead, it exposes the lack of attention accorded to such issues. There is therefore a legitimate element of exploration in this methodology.

Part II - Analysis

Having adopted Strategic Localism as a template suitable for proceeding, Part II shifts to the development and investigation of the two case studies.

Chapter four presents both case studies, Ottawa-Carleton and CTT. The purpose is to provide an overview of the main aspects of local governance within the Strategic Localism template. We begin with a review of local government's main characteristics and recent efforts in economic development. Subsequently, we review the main features and actors connected to each form of synergy (ML/KI/CC) partially shaping each locality. Largely descriptive rather than analytical, the set of key issues and actors emerging from this chapter will then serve as the basis for a more critical analysis - within the same Strategic Localism template - beginning with chapter five.

Chapter five thus examines these interactions strictly from a local plane, searching for evidence of local government's role in the three synergistic governance components. The subsequent analysis in chapter six undertakes a similar task, although the focus is on the presence and impact of provincial and federal levels of government in each locality. These two chapters combine to provide a complete analysis of governance in each locality. We will then possess a strong basis on which to offer precise findings about the effectiveness of local government to date. Consequently, chapter seven formulates our findings from the strategy outlined in Part I.

Chapter 4 - Ottawa-Carleton and Canada's Technology Triangle

4.1 Ottawa-Carleton

In a few short years, Ottawa has transformed itself into Canada's high-technology capital...swiftly growing into a \$5 billion industry, encompassing more than 700 private sector companies that employ over 40,000 highly skilled workers. In addition, another 95,000 jobs are indirectly associated with this thriving sector, providing work for a total of 133,000 people. The industry has become self-sustaining and it is growing at a tremendous rate. The secret of that success lies not only in the entrepreneurial spirit of those within the industry, but in its history. Ottawa high-tech is home grown

[Introduction, Ottawa Technology Business Guide, Summer 97, p. 5].

Ottawa-Carleton has witnessed, and continues to be shaped by significant socio-economic change. According to many local boosters, the status of *National Capital* remains relevant today, though the essence of the label is perhaps shifting. Whereas yesterday's image is a national centre of political power, tomorrow's vision is one of a *technopolis* of innovation and entrepreneurship. Recent events have crystallized the importance of transitional challenges. The federal government's 1994 Program Review was a notable turning point for Ottawa-Carleton. Although federal government cutbacks, and the Program Review itself, were nowhere to be found in the Liberal's election platform Red Book, the exercise delivered estimated job losses of nearly 45,000 across the federal public service. Consequently, for the National Capital Region, and most acutely for Ottawa-Carleton, a downsized federal government would no longer serve as the exclusive engine of prosperity to the extent that it once did. Technology has thus become a primary focus¹⁴.

¹⁴ For both case studies, two industrial sectors define the scope of analysis: the primary cluster is that of telecommunications; the secondary group is computer software. Technological convergence across industries, increasingly common, is particularly prevalent across the two sectors.

4.1.1 Local Government

The important presence of the state is not only federal in scope, but its weight also extends to the municipal level. Ongoing debates continue unabatedly as to the most effective arrangement for local government in Ottawa-Carleton. Eleven local municipalities remain in operation, bringing the total number of elected politicians to 84 for Ottawa-Carleton's two tiers of local government. Despite frequent musings of resource-sharing and the like, eleven different municipalities operate in a rather separate fashion, within the upper tier Regional structure.

Recent reforms undertaken in 1992, in the aftermath of the Kirby Commission, strengthened the upper tier Regional Municipality of Ottawa-Carleton (RMOC) and resulted in a directly elected Council that adds direct political authority to this layer of municipal government. Along with this Council, a directly elected Regional Chair (currently Mr. Bob Chiarelli) was also established¹⁵. Moreover, these changes sever both tiers of local government by removing local Mayors from the newly elected Regional Council (a move not recommended by the Kirby Commission). This decision yielded frequent public reminders by former Chair Peter Clark that he was the only directly elected official for all citizens of Ottawa-Carleton. In brief, the personalities and institutions, coupled with the sudden severing of ties between RMOC and local municipalities, made for a tense relationship.

¹⁵ RMOC is the upper-tier government for the entire Ottawa-Carleton population of approximately 750,000 (often rounded to one million when the Outaouais side of the NCR is included). The lower-tier encompasses eleven municipalities, including seven within a largely urban centre (Ottawa, Gloucester, Nepean, Kanata, Cumberland, Vanier and Rockcliffe Park - Village) and four predominantly rural, encircling townships on the periphery (West-Carleton, Gouldburn, Rideau and Osgoode).

Recent debates on local governance reform (discussed as we proceed) have failed to generate a consensus on an agreed-to model. Since November 1997 (the end-point of this case study), however, RMOC and The City of Ottawa have both become proponents of a single government for all urban municipalities, a plan that also gives the four rural partners the option to join or remain separate. Such debates are contentious, as they often are when attempting to modify political structures. Many factors that have led to the current system, as well as debates on how to reform it, reflect Ottawa-Carleton's historical mixes of urban and rural lifestyles, downtown versus peripheral development, private and public enterprise, linguistic communities (both within Ottawa-Carleton and across the NCR), and even newly emerging territorial identities within current municipal units (i.e., Orleans within Gloucester).

Economic development, within this context is denoted by shared and over-lapping (and at times, contentious) jurisdictions. Some Regional Councillors have pushed for a stronger, and more centralized economic development function within RMOC directly. Others have remained relatively content with a more indirect role. We focus our examination primarily on two economic development agencies, both funded by RMOC - albeit in different proportions. The Ottawa-Carleton Economic Development Corporation (OCEDCO) and the Ottawa-Carleton Research Institute (OCRI) are important actors in this study¹⁶.

¹⁶ In 1998, both changed their names to The Ottawa-Economic Development Corporation (OED), and The Ottawa-Centre for Research and Innovation (OCRI) respectively. Though we discuss the rationale for such moves, we adopt OCEDCO as the single acronym for the former (reflecting its existence for the entirety of the case's time span).

Both agencies play key roles in linking different sectors within the locality, particularly industry and government. The first of these two agencies, OCEDCO, is funded largely by Regional government, although its direct accountability lies with a multi-sectoral Board of Directors. The agency has carried responsibility for the broad contours of an economic development strategy and the official plan - on a Region-wide basis. In contrast, OCRI is more technology-oriented. This agency's mandate is the facilitation of partnerships between local industry and the research and educational sectors.

For this case, OCEDCO will be defined as primarily a public sector agency. In contrast, OCRI will be deemed to be a civic actor, or a civic entrepreneur (a non-profit agency with a variety of funding sources acting in a non-private, non-governmental role). This depiction is justified by respective funding arrangements and the resulting accountabilities. In 1996, more than 90 per cent of OCEDCO's operating budget (approximately \$2 million) came directly from RMOC (and the rest from membership revenues). OCRI received approximately \$300,000 in annual public funds (less than 10 per cent of its own operating budget). A largely private sector membership, as well as educational institutions, and a very small number of projects leveraged by provincial support provides it with a more diverse funding base.

OCEDCO's presence is significant. As a membership-driven organization, the agency's Board of Directors is presented as one element in a model that embeds economic development within all sectors of the socio-economy - particularly industry¹⁷. This responsibility for the overall

¹⁷ Discussions on reforming OCEDCO (accelerated by recent municipal elections) suggest a move away from memberships to a partnership-based model, still multi-sectoral in nature.

economic development strategy of RMOC co-exists with municipal plans, and it is also complemented by the agency's own specific initiatives. For instance, OCEDCO manages the only publicly funded entrepreneurship centre in Ottawa-Carleton. The agency also has a range of initiatives in community economic development, strategic investment, venture capital, international marketing and promotion, and others.

The organization's 1996 strategic objectives call on the agency to develop a long-term strategic economic development plan, stimulate the growth of local businesses, assist in the formation of viable new businesses, attract investment, economic activity and businesses to the area, and build suitable partnerships. OCEDCO can boast a wide-ranging support base of over 300 volunteers serving on the Board of Directors, Advisory Council, task forces and committees [OCEDCO 1996]. This model, and the resulting mind set imply a single, flagship agency rooted in multi-sectoral participation with a primary mandate for pursuing economic development. OCEDCO is, therefore, closely examined as we proceed through Part II.

4.1.2 Synergistic Governance

The story of Ottawa-Carleton's technological origins is a distinctive blend of private ingenuity and public subsidy. Such a mix is often transformed into a backdrop for idealized, local portrayals such as the following example:

The roots of Ottawa's high-technology industry go back to the second world war...In 1948, Ottawa's first high-tech company was formed. Computing Devices of Canada Ltd. commercialized a position and homing indicator (PHI) device, which had, until that point, been used by a military aircraft as a navigational aid...The happy and lucrative marriage gave birth to an industry that forever changed the face of Ottawa's economy [Ottawa Technology Guide 1996, p. 5].

i) Market Linkages:

Within the growing technology-oriented component of local activity, we focus mainly on firms and activities in the telecommunications cluster based around Nortel, Newbridge (and its affiliates) and Mitel. Secondly, our scope also extends to computer hardware and software, and information technologies. The connection here is the rapidity of technological convergence, reducing the barriers between these sectors - an intensifying incentive for inter-firm cooperation¹⁸. These clusters exhibit the arrangements suggested by the literatures, reviewed in Part I, including flexible networks, university-industry partnerships, and more informal cooperative ties [Voyer and Ryan 1994].

The initiative examined in this component of governance is the Ottawa-Carleton Manufacturer's Network (OCMN), joining more than 200 practitioners and researchers from industry, government and education. The industrial structure of Ottawa-Carleton is closely linked to the emergence, and the role of OCMN. The network is the most interesting and developed example of an initiative rooted within the high-technology cluster, focused on production and the market.

The origin of OCMN is Carleton University's Research Program in the Management of Technological Change in Manufacturing. Dr. Donald Gerwin, the Chair of the Research Program,

¹⁸ To illuminate, Mitel today characterizes itself as an integrated communications systems provider (targeting telephony and computer convergence); formerly separate, Ontario Centres of Excellence for Telecommunications and IT have now been amalgamated; and many of the Newbridge affiliates are based on emerging niche-markets that defy traditional boundaries between formerly separate communications technologies (i.e., new internet-based tools).

devised the idea as a means to foster closer connections between the university and local businesses. In its first session in 1991, it became apparent that the issue of transferring knowledge from the universities to industry was not of primary importance (despite being an expressed interest). Of greater importance were the social interactions among companies, including desires to become more acquainted with each other, to share experience and insight, and to work together on collective problems and projects, often informally¹⁹.

It was clear from the outset that OCMN members wanted to focus on manufacturing and management issues, as opposed to (what had largely been) a more research-oriented focus at OCRI, or the more diversified business interests and broader focus characterizing OCEDCO. Members recognize that with the advent of new technological product and process innovations on an increasingly accelerated pace, any competitive advantage related to technological knowledge is short-lived. Members agreed to set up a variety of forums, based on their own particular interests, to share information between firms and recognized experts across the community (and where feasible, outside the community as in the case of guest speakers, seminars etc.)²⁰.

Ottawa-Carleton's key technology clusters comprise firms of varying shapes and sizes. Importantly, and in contrast to that of CTT (examined below), the historical evolution of the area's

19 While membership in OCMN has changed over its evolution, it is significant that at least 75% of the original members remain today as active participants. Currently the OCMN has a locally based membership of more than 300 individuals, from a variety of organizations and sectors.

20 Andrew Young, the first OCMN Coordinator reports that, "whereas the University (Carleton) viewed the network initially as a source of research opportunities for professors and students, it [became] a forum in which local companies and educational institutions alike can work together to solve common problems and learn from one another" (comments from a Fall 1996 guest lecture, Faculty of administration, The University of Ottawa).

technology sectors has resulted in a number of flagship firms, particularly in the telecommunications sector. Nortel, amalgamated from the previously separate Northern Telecom Research and Bell Northern Research, is not only a flagship firm for Ottawa-Carleton, but it is also often termed to be one of only a few Canadian global enterprises. Its presence in the global telecommunications market is denoted by its top-five standing in terms of total sales worldwide.

Nortel's presence within Ottawa-Carleton is clearly dominant, and it permeates widely. The degree of recognition here is perhaps most synonymous with the presence of Hewlett-Packard in California's Silicon Valley. The evolutionary manner by which a significant portion of Ottawa-Carleton's current profile of technology firms is linked to some degree with Nortel has been clearly demonstrated²¹. Frequent references to Nortel as "the government of high-technology" reflect the giant's organizational stature, and the challenges of managing such a large and complex entity²². As such, the relative degree of stability within Nortel's environment is, at times, viewed as an incentive for the most entrepreneurial minded to leave²³. In some cases, the departing may start new ventures, or they may shift to smaller and medium-sized firms (which comprise nearly all other companies in the area).

21 A useful reference is Denzle Doyle's famed flow-chart of the local technology clusters [Doyle 1997].

22 These references come from Nortel employees who devote some of their evenings to MBA courses at The University of Ottawa: I have had the opportunity to teach and learn from them simultaneously.

23 Perhaps an overly simplistic characterization, but it is also a sound one in comparison to more cyclical experiences of other firms such as Digital (now downsizing massively under Compaq), now-defunct Gandalf (reborn as an internal division of Mitel), and struggling Corel (all reflections of Schumpeter).

If Nortel reflects the growth of Ottawa-Carleton into a high-technology locality, Newbridge President Terry Matthews perhaps personifies a next-generation leader. The spectacular growth of Newbridge Networks over the past decade has made a huge impact on not only the present make-up of its industry in Ottawa-Carleton, but has also attracted a major influx of workers from other local area firms²⁴. The firm's growth strategy, which personifies the horizontal linkages in Silicon Valley described by Saxenian, is to create its own family of spin-off ventures (a sort of network of Newbridge Network affiliates) that are autonomous in nature and contain a degree of flexibility and innovation that many industry leaders feel can only be nurtured within small-sized firms²⁵.

In a final example from this cluster, Mitel's volatile past is now complemented by a steadier expansion across its operations in Ottawa-Carleton and globally. This expansion is based on both external acquisitions and internal expansion²⁶. Moreover, the company has forged an increasingly diverse set of external relations within Ottawa-Carleton. An expanding set of partnerships with both local universities facilitate an exchange of human and intellectual capital. Complementing efforts with the provincially funded Centre of Excellence (Communications and Information Technology Ontario - CITO), OCRI, and the NRC further its connectivity to this local innovation system.

24 One of the recent (summer 97) Newbridge spin-offs, ClientSide Devices is headed by Hillary Smith and Rob Milne, President and VP Engineering respectively who between them have 21 years of industry experience with neighbouring Mitel.

25 Consequently, the number of spin-offs is now 19, more than half based in Ottawa-Carleton. The Ottawa Business Guide showcases recent examples of locally based firms including CrossKeys Systems Corporation, Televitesse Systems Inc. and ObjectTime Ltd.

26 A case in point - the demise of Nepean's Gandalf Technologies (a long-time area firm) led to its rebirth as a division of Mitel, with the former's name, technologies and most of its staff moving there over the past year.

Finally, the former President's leadership in the local Innovation Forum (an NRC-OCEDCO-OCRI initiative described below) also reflects a growing outwardness, despite the fact that internal repercussions of such undertakings are only beginning to be explored²⁷. Thus, different firms articulate varying strategies, though the overall business dimensions of local clusters would appear to reflect the competitiveness models reviewed in earlier chapters [Roy and Wilson 1996].

ii) Knowledge Infrastructure:

The scope of Ottawa-Carleton's resources within the Knowledge Infrastructure is viewed locally as a critical asset for industry in technology-intensive sectors. The Ottawa Business Guide estimates that as Canada's leading per capita locale for R&D spending, the figure of \$1,088 per citizen compares favourably to both that of Montreal (\$250) and Toronto (\$295). Total estimates of annual R&D spending, both direct and indirect, by the NCR alone are approximately \$1 Billion. With 1,000 R&D professionals, this area is promoted as home to 75 per cent of Canada's R&D spending in the telecommunications sector²⁸.

27 Mitel sponsored an applied research project, using the SL template in order to explore the ways in which a firm organizes itself internally to better connect to, and capture the synergies from within its local environment. Mitel is also the initial business sponsor of one of the most successful educational partnerships between universities and the NRC. O-Vitesse is a pilot initiative which has now been expanded. The 16-month training program allows graduates in various degrees to retrain as software engineers, while firms commit to hiring them upon completion of the program.

28 These figures are proportionally accurate; they are based on both Statistics Canada and local government sources and included in Metro Ottawa marketing literature - often cited in the media across the country. Yet, they can also represent local formulations: for example, the 75 per cent R&D reporting was first publicly reported by the past President of OCRI (current President of CRC), Gerry Turcotte who openly claims the figure as his best guesstimate (an illustration of local boosterism!).

A substantial federal presence, in terms of research, is the National Research Council (NRC). The Council, locally based and nationally mandated, personifies the local-national connectivity so prevalent in the National Capital Region:

According to...Vision 2001, NRC will...provide the national integrative force to bring together the existing community and regional-based innovation systems by building on its strong regional presence...Together with the [OCEDCO & OCRI] the NRC announced its Action Plan for Innovation...expected to act as a model in NRC's strategy to play "a lead role in developing a national innovation system" [Barker, Campbell and MacDougall 1997, p. 5]²⁹.

Indirectly tied to provincial jurisdictions are several research and post-secondary education institutions, including two local universities (Carleton University and The University of Ottawa). Moreover, CITO (the provincial Centre of Excellence) is based in Kanata and is widely recognized across local industry. The Centre provides financial contributions, leveraged with those from the private sector, in order to create collaborative research partnerships linking primary research to opportunities for subsequent commercialization³⁰.

In 1995, two prominent local actors, the NRC and OCEDCO (soon joined by OCRI) struck a joint working task force in order to examine the need for better innovation processes in the local economy. Their efforts resulted in the inception of the Ottawa-Carleton Innovation Forum - a first

29 This term paper was completed for Professor Glen Toner, School of Public Administration, Carleton University. The paper is a strong review of NRC's evolving role historically, and its present local-national quandaries. These issues will be revisited in a closer look at the Innovation Forum below. I would like to thank the authors for making a copy of their report available to me for my own study.

30 CITO is the result of an imposed amalgamation of two former Centres of Excellence, the Telecommunications Research Institute of Ontario (TRIO) and the Information Technology Research Centre (ITRC). CITO President Peter Leach formerly led TRIO, also based in Kanata and closely aligned with the area's telecommunication's cluster.

attempt at creating a local innovation system to serve as a foundation for collaborative governance. In launching the Forum, four major points are proposed: a) the central link between new jobs and an entrepreneurial spirit; b) the NRC as a window on new technologies; c) the need for community-based innovation within the NRC; and d) encouraging commercialization of public research through spin-off ventures [OCEDCO and NRC 1995].

Since these organizations had not previously engaged in this type of effort to collaborate locally (i.e., specific partnering initiatives), the intent at the outset was to put in place a common working forum, and subsequent partnerships in accordance with shared working directions. This objective of nurturing an *industrial loop* is increasingly invoked elsewhere as a crucial prerequisite to effective local governance conducive to technological innovation and joint learning [BankBoston 1997].

iii) Community Culture:

With respect to Community Culture and civic entrepreneurship in Ottawa-Carleton, we focus particular attention on OCRI³¹ which is an agency whose extremely modest reliance on public funds (and leveraged private sources) is complemented by a mandate and strategic focus to partner aggressively with industry, education, and other levels of government. The agency's expanding array of activities helps spur connectivity in a variety of ways. Despite a continually diversified set of activities, we can say that conceptually, OCRI's roots lie within the space between Community Culture and Knowledge Infrastructure:

31 The Ottawa-Carleton Research Institute (via its 1997 name change) became the Ottawa Centre for Research and Innovation - meaning no new acronym required.

(OCRI) is a not-for-profit research co-operative with the mission of accelerating the growth of a world class technology infrastructure within the Ottawa-Carleton Region. Our mandate is to enhance the collaborative research and development activities among industry, government laboratories, and the participating universities and colleges [preface, Annual Report 1996/97].

The agency's specific goals include: a) increasing interaction among people from educational institutions, government and industry to enhance the effectiveness of research and development; b) increasing the resources available for research and development; and c) promoting the development of the [locality] in the high-technology sector [OCRI 1997]. Closely aligned to OCRI is the Ottawa-Carleton Learning Foundation (OCLF), an initiative whose specific aim is to promote partnerships between the private sector (predominantly high-technology firms and elementary-and secondary-level schools)³².

One element of local culture, as a foundation for collaborative capacities, is the importance of entrepreneurial spirit. Such a spirit encapsulates a capacity to view itself, and be viewed by others, as a locale where risk-taking is welcome and creativity encouraged [Saxenian 1994]. Local marketing efforts imply that such roots are both valid historically and prevalent today:

entrepreneurial spirit has always thrived here in Ottawa...Beginning with Ottawa's founder, Lt. Col. John By, who built the Rideau Canal, which at the time was considered an engineering wonder...entrepreneurship and innovation have fuelled Ottawa's economic engine [Ottawa Business Guide 1997, p.5].

32 Their flagship program, co-managed by OCRI and OCLF, is *PARTNERS*, an initiative created to "develop new relationships, driven by business-education partnerships, to foster a superior, cost-effective education system, and an internationally competitive business community" [OCRI 1997].

The extent to which the preceding account of local boosterism reflects the present socio-economic culture is a complex issue. One local municipal leader laments that "this [area] has absolutely no capacity to collaborate at all"³³. Yet other observers point to the tremendous growth of OCRI-led (and others) networking forums and business-community partnerships as examples of a positive shift. Such issues are a key focus of the subsequent chapters. Clearly, there are important local impacts to consider from the area's role as political capital, and the corresponding endowment of federal institutions.

4.2 Canada's Technology Triangle

Canada's Technology Triangle has become an economic banner and symbol of team spirit for the entire region - the Silicon Valley of the North! It has focused the efforts of many into one powerful image that immediately captures the attention of business prospects throughout the world. Ernst & Young's chief economist, Steve Tanny, predicts that the region's economy will outperform both the national and provincial economies in 1996. Much of the positive surge forward can be attributed to the promotional might of regional image building and the power of Canada's Technology Triangle.

[CTT News, Summer 1996, p. 4]

Canada's Technology Triangle (CTT³⁴) joins the four cities of Kitchener, Waterloo, Cambridge, and Guelph. The purpose of this entity is to pool resources of four urban governments in an alliance to better serve CTT as a whole. The idea "grew out of the mutual awareness that the four communities could band together and draw on their complementary strengths" [Lindsay and Lindsay 1994, p. 9]. The area has been continually identified as one of Canada's strongest performing locales through

³³ This comment is an off-the-record remark by a local mayor.

³⁴ The employment of a triangle is in reference to the fact that, topographically, the four cities form a triangular-like entity across their jurisdictional borders.

both lower than national unemployment rates and higher than average growth rates. Specifically, in the first half of this decade, CTT's GDP per person, reflected a standard of living higher than that in Canada, Germany, Japan, France, Italy, and in the United Kingdom [Smith 1993/96].

The urban and industrial core of CTT are the twin cities of Kitchener and Waterloo - with a combined population of approximately 275,000 by 1996. The total population of the four CTT cities is now close to 500,000 (and the area is located within one day's drive of a population base of approximately 120 million). On opposite sides of Kitchener-Waterloo are the other CTT members, Cambridge and Guelph. The economic development of Cambridge resembles that of Kitchener, with an even more pronounced reliance on what are often termed more traditional manufacturing industries - in particular, the automobile sector. Lacking the larger and more diverse socio-economic base of its neighbour, however, has meant that the city's fortunes have been volatile. The area suffered greatly through the sharp recession of the early 1980s, though it subsequently rebounded with a significant renewal [Smith 1993].

Guelph, conversely, is both geographically and economically removed from its three CTT partners. Given its historical and natural emphasis on agriculture and environmental activities, sectors supported to a significant degree by The University of Guelph and the province, the city has developed into a more diversified urban centre. This somewhat narrow specialization, and its growing association with advanced technology research and commercial activities fosters the potential for complementarity with a broader CTT emphasis on research and innovation. Such a fit encouraged Guelph to partner in CTT - despite its position outside of the upper-tier, Regional Municipality of Waterloo.

4.2.1 Local Government

The three CTT cities (excepting Guelph) are part of the lower tier of a two-tiered municipal system. Relative to Ottawa-Carleton, the upper tier Region of Waterloo plays a more indirect role - particularly in economic development³⁵. Yet the arrival of the first directly elected Regional Chair in November 1997 (Mr. Ken Seiling), and the devolution (and offloading) of services by the province, imply that its importance is likely to grow.

In contrast to Ottawa-Carleton, there is little discussion of local government reform. All sectors support a continuation of the two-tier model (reflective of the Region's modest historical presence, notwithstanding its creeping expansionism as of late). Accordingly, each city maintains its own economic development function. The KW Record (11/10/97) reported some of the recent changes to the local system, in place for the most recent civic elections³⁶.

CTT began as a *virtual network* between the economic development officers (one from each) of the member-cities. The initiative itself began modestly - to achieve economies of scale in areas such as international marketing and investment promotion. Over time, the focus of CTT's purpose and activities has shifted from an external orientation to one emphasizing the internal aspects of

35 This comparative stems from the relative equilibrium of a much smaller number of (CTT) urban municipalities, more historically diversified in economics, culture and political identity than their urban counterparts in Ottawa-Carleton (translating into the indirect and more passive upper-tier Region). Unlike Ottawa-Carleton, there are no calls for single government, even from local business groups.

36 A reduction in the number of Wards in Waterloo, from seven to five; a realignment and renaming of wards in Kitchener; and a smaller Regional Council - reduced from 26 members to 22. The membership includes the Regional Chairman and seven councillors from Kitchener; four from Waterloo; four from Cambridge; two from Wilmot Township; two from Woolrich Township; one from Wellesely Township; and one from North Dumphries Township.

CTT's socio-economy. CTT's Steering Committee (the four EDO officers of the city-members) subsequently decided to commission a local academic, Dr. David Douglas to assist them in a strategic review of CTT³⁷ which considered the following options:

- a) A Refined Present Structure* - involving *selected* enhancements and modifications to the present structure, in particular a strengthening of governance through the establishment of a formal and expanded CTT Board, broader representation, additional resources and a greater CTT-internal role;
- b) The Region plus Guelph* - involving removing economic development from the four city-municipalities, concentrating it within the Regional government, and creating a new CTT partnership between the Region and Guelph;
- c) A Private Corporation* - based on the creation of a fully privatized development corporation acting on a contractual basis for CTT members;
- d) A Public-Private Corporation* - much like the preceding option, this partnership corporation would work in concert with municipal development efforts;
- e) A Public Corporation* - a separate CTT public agency to complement the municipalities with a consolidated effort on external issues (i.e., international marketing and promotion);
- f) Abolishing CTT;*
- g) The Regional Option* - essentially replacing CTT with a concentrated Regional effort; and
- h) An Expanded Multi-Municipal Option* - including the addition of other surrounding municipalities and/or townships [summarized from Douglas 1996].

37 The following set of CTT objectives guided the strategic review: a) internal and external marketing programmes for the area; b) facilitate the establishment and maintenance of networks and partnerships among the business, technological, education and other communities; c) design, establish, and manage an area economic development information system; d) facilitate innovation, through the design, development, application and commercialization phases in all technologies; e) promote a climate conducive to innovation, investment and enterprise; f) complement and augment individual municipal economic development priorities; and g) to continue and improve upon CTT's diverse activities in enquiries management [CTT 1996].

These options include a range of controversial issues. With respect to the Waterloo Region, one element driving CTT collaboration has been a concerted effort amongst the four member-cities to exclude the Region from economic development. This view reflects the more modest presence of the upper-tier Region historically, and the preference of local municipalities to limit its role. Many of these options may also never have been in serious contention³⁸. Moreover, the possibilities of alternative development agencies (private or quasi-private) gave rise to concerns about political accountabilities. This extended degree of autonomy leads to immediate opposition from two of the four member-municipalities, particularly at the political level. The second option would mean the removal of economic development from present CTT members. For much the same reasoning, such a move is unlikely. The first option has thus become the template for revising CTT - the details of which are presented by Douglas:

This alternative is characterized by increased formality and the implementation of CTT's first Strategic Workplan; [it] would involve a very close and expanded working relationship between CTT and the private sector; and [it] would also involve a much closer working relationship with the four Municipal Councils and CAOs [Douglas 1996, p.9].

These suggestions provide a sense of the proposed contours for more ambitious CTT-based governance. The proposed system would extend itself both within the public sector and in partnership with other sectors. By the end of 1997, however, discussions had still not yielded

38 The options reviewed here are part of the process engineered and strictly managed by CTT's Steering Committee (plus one academic). Thus a degree of stage-managing took place, as the EDOs clearly preferred a cleansed and no-surprise strategy to take to municipal CAOs, Mayors and Councils.

definitive decisions (though support remains for the broad philosophy expressed here). This situation is examined critically in the subsequent chapter.

4.2.2 Synergistic Governance

Kubasta's³⁹[1996] profile provides a useful starting point:

CTT is rooted in a strong regional manufacturing base; traditional industries - furniture, textiles/clothing, rubber and heavy manufacturing - were originally founded here by the skilled Mennonite and European craftsman who settled it (Dean 1995). The fact that this industrial development took place within a land-locked and primarily agricultural region which possesses few of the required raw materials in significant quantity to make it a natural location for these industries makes its subsequent strong and lasting growth quite remarkable....[Kubasta 1996, p. 71].

i) Market Linkages:

As in the first case study, it is primarily two technology-driven clusters, telecommunications and computer software and hardware, which represent our main focus. A further parallel can be drawn between the manner in which the emergence of these clusters follows the decline of the more traditional CTT industrial core, and a similarly inverse relationship between technology firms and the federal government in Ottawa-Carleton.

³⁹ Dietmar Kubasta defended his Master's Thesis in Geography at The University of Waterloo, comparing Japan's Technopolis program with CTT.

A CTT self-portrait presents this transformation: over 40 per cent of companies in CTT are high-tech industry leaders in software and hardware development...they will account for up to 8,000 new jobs over the next decade [CTT News, Summer 97]⁴⁰.

Within CTT's high-technology clusters there does not exist a CTT-based complement to the OCMN. One stalled initiative to create an OCMN-like flexible network began in 1991 with the creation of The Computer Technology Network (CTN). Created initially as a partnership between a Waterloo-based software company and the provincial government, the goal was "to facilitate the exchange of information among the numerous high-technology firms in the Waterloo-Wellington Regions of Ontario...an industry-driven association for businesses within CTT" [CTN 1995, p.1]. Although officially in some form of virtual existence for several years, this network floundered since the outset - hampered by little interest from industry, eventually ceding to Communitech (presented below) as the technology sector's main associational body.

There is recognition within CTT of both the dynamism of its relative strength in small, entrepreneurial firms, and the challenges of lacking more large scale, globally recognized flagship firms. This absence, in direct contrast to Ottawa-Carleton, is well-noted by local observers: "CTT has an enviable record of creating growth-oriented companies but has yet to create a "Mitel", "Newbridge", or "Corel""[CTTAN 1996, p.3]. CTT's corporate base is its emerging set of SMEs and spin-off ventures, particularly those linked to The University of Waterloo (discussed below).

40 Companies like Open Text, MKS, WATCOM, RIM and Spicer Corporation have already demonstrated significant success in the global economy [CTT News, Summer 97].

The accent on smaller-sized firms denotes a pattern that is validated by socio-economic history in the locality⁴¹.

ii) Knowledge Infrastructure:

At the heart of CTT's Knowledge Infrastructure are three universities, including the relatively youthful and reputable University of Waterloo (UW). Created in 1958, it has been described as unorthodox in comparison to more traditional traits of higher-learning institutions (i.e., isolationist and closed Ivory Towers).

The success of UW's approaches to linking learning, research, employment and commercialization is well-documented [Maclean's annual surveys 1993-1997; Lindsay and Lindsay 1994; Simone 1995 in Kubasta 1996]. This reputation stems largely from innovation in employment placement programs for students (i.e., its founding role in cooperative education). It also reflects the ownership and application of research - where UW was one of the country's pioneers (though others have since followed) in adopting an extremely *laissez-faire* approach to intellectual property management⁴².

41 For both Kitchener and Waterloo, this degree of flexibility between small firms, reflecting the organizational tendencies of local businesses to engage in such efforts, has been well documented [Eastwood 1987].

42 This point means that the institution does not normally pursue ownership of IP from academic research spun-off into commercial-based activities off campus (encouraging faculty members and students to commercialize ideas directly into new ventures). UW does pursue technology licensing agreements, however, particularly with larger companies (including many outside of CTT) and the institution led Canadian universities with royalties averaging over \$1.4 million from 1992-94 [Kubasta 1996].

At times compared to Stanford in Silicon Valley, UW is the focal point of local innovation and commercialization. A 1994 survey concluded that the University of Waterloo is responsible for 106 spin-off companies (with ideas or individuals transferred from campus). Over half of these firms are still located and based in CTT (within one hour's drive - encompassing Toronto and London, the proportion increases to nearly 90 per cent) [CTTAN 1996]. Many of these companies are, or have been based in the business park and research incubator located on Philip-Columbia Street corner (literally next door to UW's main campus)⁴³.

The presence and recognition of UW can, at times, overshadow other players and programs in CTT, including two other local universities. For example, Wilfrid Laurier University (WLU), also located in Waterloo, houses a reputable business school and a diverse set of academic disciplines. WLU's Business School has made a conscious effort to both raise its profile locally and expand its set of activities linked to the entrepreneurial focus of CTT [Davis 1991]. The University of Guelph is also expanding its dialogue with City officials and other CTT activities⁴⁴ in order to better leverage its own relative strengths in fields such as agriculture and environmental sciences, areas which are closely tied to provincial research activities. Also, CTT-based Conestoga College,

43 OpenText, a Canadian leader in software development and applications, and one of CTT's fledgling flagship firms is based here.

44 This point is from interviews with Professor Douglas and The City of Guelph's economic development Director, Jim Mairs, both of whom make the same comments publicly. One recent example of inter-university collaboration within CTT is the inter-linked library system, featuring an open LAN connecting resources at the three universities.

recognized as the province's most successful in terms of job placement success⁴⁵, is an active and founding member of CTT's Communitech, a recent example of civic entrepreneurship.

iii) Community Culture:

With respect to civic entrepreneurs, the aspiring CTT-based equivalent to OCRI is *Communitech, CTT's Technology Association*. Communitech is significant for two reasons. First, the recently formed group is the first predominantly private sector body formed around CTT boundaries (as opposed to industrial sector or municipal borders). Second, the mandate of Communitech fits with the term civic entrepreneurs already accorded to OCRI. Namely, the agency is charged with the facilitation of cross-sectoral linkages, particularly between the private, educational and public sectors⁴⁶.

Communitech summarizes its objectives as endeavouring to: a) strengthen current CTT technology companies; b) attract new technology companies to CTT; c) provide a business climate conducive to new start-ups; and d) foster an environment to attract and keep employees in CTT. The impetus for Communitech is familiar in any technology-oriented locales:

45 From a study completed by the provincial Ministry of Education, showing that 86 per cent of Conestoga's 1,083 graduates in the 1995-96 academic year found employment (11/10/97, KW Record).

46 In fact, Communitech President Vince Schiralli passed several days in Ottawa with OCRI President Bill Collins, and Communitech staff speak positively of the support received from OCRI staff. One key difference lies in their respective ages of OCRI's 13 years and Communitech's 8 months. When Mr. Schiralli was asked to comment on the possible dangers of attempting to duplicate OCRI's range of activities in year one, the former IBM Marketing Executive smiled and did not respond. Perhaps a partial reply was demonstrated at Technopolis 97, where he aggressively worked the floor with CTT EDOs, promoting the area and his initiative (yielding, in the days following a David Crane article in the Toronto Star, on CTT and Communitech).

On June 11, 1996 entrepreneurs from 44 companies joined with politicians, academics and colleagues from the business community in Waterloo, Ontario to launch Communitech, a new community-based technology association...The brainchild of several established local entrepreneurs, Communitech's purpose is to provide a singular voice, cooperative marketing, and common ground for technology companies in (CTT) [Kubasta 1996, p. 76].

Education and quality of life are often viewed as hallmarks of the area. The local culture is rooted in a mixture of historical legacy and present-day confidence that exudes the importance of identity. It is often remarked that a small-town atmosphere still prevails in Waterloo and Guelph, and that old ethnic qualities continue to add to the flavour to the locality's social setting [Kubasta 1996]. Underpinning these traits is a socio-economic environment with a large German contingent and cultural influence.

Aside from the central attraction, the much-famed and successful Oktoberfest activities, the history of the area reveals local development that is often linked with consequences of events occurring afar⁴⁷. Such links are said to foster an export-oriented mentality for local business [Kubasta 1996]. This historical legacy, rooted in strong German and Mennonite contingents, is partially the foundation for an economic resilience underpinned by a strong sense of community that permeates both civic and business engagement [Walker 1987; Fretz 1989]. Today, while still visible and evident, the precise socio-economic impact of this culture is more difficult to ascertain. Nevertheless, the historically nurtured and relatively homogenous characteristics of the area reappear repeatedly as a source of local pride and image. Such elements also support the

⁴⁷ The first world war brought tension and difficult times. In 1916, Kitchener was named as such, shedding its previous, industrious-laden name, Berlin. Also, amalgamation with Waterloo was seriously considered. The second world war then mobilized the area, providing a wartime and post-war stimulus [Walker 1987].

socialization process as Saxenian, and others have defined it. This discussion is an important aspect of our analysis of CTT's Community Culture in the subsequent chapter.

Chapter 5 - From Below: Cluster, Knowledge and Civic Synergies

Using the Strategic Localism template, the purpose of this chapter is to critically assess the nature and impact of local government action within each of the three forms of synergistic governance in each case (Market Linkages, Knowledge Infrastructure, and Community Culture).

Our objective is not to individually assess these different dynamics as separate or autonomous processes. Instead, we examine the main actors within each, and look for evidence of specific actions undertaken (or not undertaken) by local government in each domain. The objective is to first learn about the nature of these local responses (in line with the exploratory dimension of the thesis). Subsequently, we draw some preliminary responses to our initial propositions outlined in Part I (i.e., evidence of an impact by local government). The results that are presented in this chapter are preliminary since the next chapter examines each locality from both the provincial and federal perspective. Upon this step, we will have a complete analytical portrait of each case study, and therefore a complete basis with which we may formulate more precise findings on local government's role. This latter, more complete level of findings is the focus of chapter seven (in Part II).

5.1 Ottawa-Carleton

The analysis of Ottawa-Carleton begins with an initial critique of each synergistic component. Drawing from its description in the preceding chapter, the focus here is a more specific and critical look at local government's actions, and interactions (if any) in each area.

i) Market Linkages:

The preceding chapter reveals the well-established nature of firms in Ottawa-Carleton, as well as their growing interest in exploring and harnessing inter-firm linkages of various sorts. Does local government shape this process? The response is that local government's impact has been very indirect, in terms of actions undertaken via other market-based actors such as networking forums or firms themselves. There is little evidence of local government undertaking actions that have been determinants in this component of Ottawa-Carleton's governance system.

The Ottawa-Carleton Manufacturer's Network (OCMN) is a recent addition to local governance, and a key actor within the Market Linkages component⁴⁸. OCMN is driven mainly by private sector firms. The network's scope of activity is expanding, having forged an interactive set of activities among those working or interested in advanced manufacturing processes⁴⁹. From several interviews with OCMN Advisory Board Members, there is strong support for this new type of forum. Many respondents underscore the utility of such a vehicle in raising awareness about common problems, new practises, and potential solutions being adopted both within and across firms⁵⁰. The members themselves reject any notion of more formal organizing options, such as becoming an industry association, largely because they are strongly suspicious about being viewed

48 Although the OCMN was an early, and leading example of a flexible network in Canada, there are now many examples of such networks across the country.

49 This assessment is from multiple sources. They include published profiles by both The OCMN Coordinator (Andrew Young) and Industry Canada (Phillip Roy). It also stems from my own interviews across the Advisory Board and its Membership.

50 Through OCMN quarterly meeting and subgroup events, I interviewed a variety of members engaged either directly or indirectly with OCMN. Nonetheless, the main target group comprises individual members of OCMN who work professionally for local companies (as well as nearly all members of the Advisory Board).

as "yet another lobbying group" (words borrowed from responses invoked by several Advisory Board members).

There is strong recognition of other players, such as OCEDCO and The Board of Trade, and their closer connection to the public sector. This leads to the view that yet another such forum would be redundant⁵¹. Thus, the logic is that OCMN should maintain a strict focus on the manufacturing and production infrastructure - and issues of relevance within it. Its primary role, as identified by members, is to provide a forum that is open to all companies in order to encourage sharing, collaboration, and learning in ways that are both practical and relevant to meeting market-driven production cycles.

In terms of its resource base, the OCMN did not begin with direct government financing (indirectly, however, a federally-sponsored Research Chair leveraged private sector funds). The network's current status suggests that such funds are neither required, nor desirable. In interviews with Advisory Board members, there is a consistent view that unless specific projects warrant the use of government-based funds or other competencies, the group should remain self-sustaining financially.

Conceptually, the OCMN embodies Porter's cluster, D'Cruz and Rugman's business network, and Saxenian's industrial structure. In searching for the right organizational mix to

⁵¹ This view is both individual and organizational. Individually, manufacturing-oriented professionals have less interest and incentive to engage in multi-sectoral forums. Compounding the sentiment, however, is the fact that their organizations already commit resources to such processes via other channels.

maximize the network's capacities locally, OCMN has remained fluid in its structures, and its mandate and set of activities are under continual and open review by members and the Advisory Board. This ongoing process of reflection is due partly to the fact that the sources of value-added for member firms of OCMN may often be intangible or unrecorded. Despite being inherently recognized by participants, such impacts often remain fuzzy in terms of bottom-line performance measures and operating results.

The network's potential capacity to deliver realizable benefits to local companies comes from it serving as a vehicle for more horizontal, flexibly oriented industrial structures. Yet, improvements in the collective performance of the industrial structure locally do not necessarily flow directly to the bottom-line of individual companies. The evolution of the OCMN testifies to the existence of such ties, and it has yet to maximize its utility in making these ties more visible and measurable⁵². Encouraging this type of connectivity is a potential role for local government that has not yet been well-recognized.

The limited government ties are further illustrated by OCMN's ongoing, yet primitive relations with both OCEDCO (RMOC's economic development agency) and other municipal government units such as The City of Kanata. In the case of the latter, an underutilized source of value of the OCMN has been its education role in the area of advanced manufacturing. The OCMN has worked with Council and City officials to increase their sensitivity to the realities of high-

⁵² Although outside of the domain of local government, this point has been a key element of my own observations within the network (and recommendations to The Advisory Board). OCMN's continued deepening as an inter-firm mechanism requires a stronger basis to foster communication and attract interest and resources from members.

technology activities (i.e., local planning and regulatory issues for example). Yet these linkages remain primitive and underutilized, a point underscored by interviewees from both the private and public sectors⁵³. In line with the indirect, support roles accorded to government by the literature reviewed in Part I, local governments may be catalysts of positive information flows, generating a form of public interest from the learning externalities captured from this common resource. This role includes initiatives designed to gather and present both adequate and accurate data on socio-economic activity which can then be channelled and disseminated via forums such as OCMN⁵⁴.

This task has been the recipient of progress in Ottawa-Carleton, as local area municipalities have followed a national trend of producing socio-economic profiles of leading clusters, particularly those deemed technology-intensive [OCEDCO 1996]. Yet data on manufacturing and production in Ottawa-Carleton have often been overshadowed by the research infrastructure. Even economic development officials at The City of Kanata acknowledge that beyond general profiles, there are no solid depictions of the workings (as one example, inter-firm supply chains) of technology clusters based there⁵⁵.

53 The ties to The City of Kanata have been underlined in public interventions by Mayor Nicholds (herself a periodic attendee of OCMN events), supported by her economic development staff, and leveraged as the basis of informal interaction on a variety of issues. A less impressive result came from an initial presentation by OCMN representatives to a wider meeting of local area Mayors. Both sides reported difficulty in understanding the other's relevance and importance.

54 National governments are focused on both broader jurisdictions internationally, and outdated or inappropriate units of measurement locally [de la Mothe and Paquet 1998]. There is no direct source of provincial action in defining local units. As a result, it follows that a local public sector is left with an important mandate to profile their locality - focussing on its strengths and exposing its weaknesses.

55 A lack of both budgetary resources and time is the main reason invoked.

A better leveraging of OCMN's role and presence by local government, particularly OCEDCO, would almost certainly improve the quantitative basis for understanding manufacturing's presence and impact on local socio-economic activity. In Silicon Valley, for example, private-public sector collaboration has yielded an extensive series of indicators on the importance of flexible networking, making participation for firms a more tangible decision variable [JVSVN 1996].

In the case of OCEDCO, the agency has remained virtually disconnected from the networking forum. Through OCMN's existence, the network has been largely left to its own devices, and poorly understood by other local actors such as OCEDCO⁵⁶. One outcome of this weak link is the exclusion of OCMN from the Innovation Forum, despite the latter's mandate to support and promote the technology sector and its needs, and the critical linkages between R&D and production processes. There would seemingly be some value in a process involving those directly engaged in production and design processes within the marketplace⁵⁷.

In brief, throughout the time-span of this case study, flexible business networking in Ottawa-Carleton has been viewed largely as something of a novelty. In the case of OCMN, its roles remain

⁵⁶ Many OCMN participants express the view that the network's recent inception explains this point, as does the fact that OCMN has not (until quite recently) made external communication a high priority.

⁵⁷ This point was made by many OCMN Advisory board members who, due to OCMN's exclusion shunned the Innovation Forum (a trend extending beyond The Board, as the manufacturing community has always been a weak link in Forum events).

more dependent on the energy of its Coordinator and its voluntary Board than any local strategy to nurture and utilize this new type of industry forum⁵⁸.

ii) Knowledge Infrastructure:

The paramount role of knowledge flows, innovation networks, and human capital is today recognized for its importance to both local governance and firm performance (and the connection between the two). This infrastructure includes knowledge-generating institutions such as universities, colleges, research institutes and laboratories, and various consortia/hybrid arrangements. The infrastructure also includes the local supply of human resources and skills, a critical determinant for technology-intensive industries. Finally, the infrastructure comprises those mechanisms, formal or informal, which contribute to the transfer and sharing of intellectual and/or human capital within local settings and across sectoral processes.

Evidence within this synergistic component suggests that local governments in Ottawa-Carleton have yet to respond to the growing potential for positive influences in this area. In particular, there may well be a growing need for a convening role, one that can strengthen the partnerships and dialogues among all sectors contributing to knowledge and innovation. In Ottawa-Carleton and elsewhere, high-technology firms across Canada are increasingly active in partnering with universities [OCRI 1996; Conference Board of Canada 1997; Doutriaux 1998]. Despite some

⁵⁸ One hypothesis for this characterization is the relative lack of engagement by OCEDCO in partnering with other actors in possession of potentially complementary competencies (we return to OCEDCO below).

rhetorical recognition of this role, late in the time-span of this case study, there has not been a strategy in place to target these types of synergies⁵⁹. The Innovation Forum is the notable exception.

In Ottawa-Carleton, the intensity of the federal presence creates a set of both opportunities and problems. The strong research endowment has been described in the preceding chapter (a source of envy in CTT and elsewhere). The scale of public sector resources, coupled with increasing R&D levels in the private sector is a major focus. Similarly, human capital is a key priority for all sectors due to a shared interest in attracting, nurturing and retaining people and skills in their locality⁶⁰.

With fewer resources to invest in areas such as research and development, and only indirect jurisdictional authority in policy jurisdictions such as training and education, local government's role is likely to be based around a more limited set of traditional policy instruments (i.e. direct funding programs, regulation and taxation) than is commonplace at higher-order levels. Nonetheless, the Strategic Localism template implies that we also look for a new type of role - emerging in a synergistic, indirect, and quite likely associational fashion. This potential is dependent on a more flexible capacity to facilitate, prod, and spur other local actors (i.e. businesses, civic associations or

59 The most recent municipal elections may have marked a turning point, with both candidates for Regional Chair putting forward ideas on RMOC's role as an education catalyst (the victorious Mr. Chiarelli spoke of a virtual university for the locality, but also of more RMOC involvement in facilitating action on human capital).

60 The federal-local dimension of Ottawa-Carleton is evident with respect to this issue. A leading proponent of more government action to address both human capital issues such as the brain drain (exodus) and high-tech skill shortages is CATA (Canadian Advanced Technology Association). Based in the National Capital Region, this group draws extensively from senior executives in the high-technology sector locally. However, With a national scope and federal government focus, CATA accords little direct attention to issues of local governance and development.

multi-sector forums) into undertaking concerted efforts. In Ottawa-Carleton, this role is one that remains vastly under exploited (notwithstanding more recent signs of recognition⁶¹). This point holds true in both case studies, though particularly in Ottawa-Carleton where interviews reveal that municipal politicians and economic development officials have tended to view these issues as mainly federal (research) and provincial (education)⁶².

Attempts to forge the Innovation Forum (linking local agencies and the federally funded NRC) provide one indicator of changing awareness. The Regional Chair co-chairs the annual event with a prominent leader from the private sector. Nonetheless, there is no evidence of sustained actions on the part of RMOC in contributing to the Innovation Forum, nor was it instrumental in kick-starting the process (though it did provide tacit approval via OCEDCO when this latter agency was approached by the NRC).

The most recent municipal elections saw *human capital* emerge as a key theme of the campaign for Regional Chair. Both of the main candidates (Clark and Chiarelli) promised more action in this area, suggesting that in the future, local government may become more aggressive and assertive. In this scenario, the Innovation Forum is a key venue for local action within the Knowledge Infrastructure, although its mandate requires greater clarification and support. For

61 The findings from Technopolis 97 also confirm this area as a key priority for aspiring locales, and one which requires concerted action joining all actors locally.

62 A small minority of Regional Councillors took different viewpoints and lamented the lack of local action. Several Councillors pointed to former Regional Chair Peter Clark as indicative of the problem. Clark's philosophy of local government had always stressed basic infrastructure and hard services; although these views evolved considerably as the 1997 election approached, and new initiatives (such as a software training centre within RMOC) were proposed.

instance, additional and ongoing linkages are required with public sector agencies, civic entrepreneurs such as OCRI, as well as the private sector. In sum, there is an evolution required which would see this initiative move beyond its present status as something of an annual event, supported tacitly, or even passively by the locality - and industry in particular. This next phase, perhaps requiring more aggressive action to define a specific path, must be the basis of a true innovation and learning component to local governance.

Despite OCRI's natural placement as a lead agency for nurturing such connectivity (with a mandate designed around such partnerships) its organizational tensions with OCEDCO are a negative, and limiting factor. Interviews with OCRI officials reveal a view that OCEDCO has explicitly attempted to maintain control and limit the involvement of other public or civic agencies. The latter group denies this point, invoking the multiple sectors which are represented at The Forum as proof. In a fashion similar to that of Market Linkages (i.e., OCEDCO's lacking relationship with OCMN), one can conclude from these local viewpoints and The Forum's stalled evolution that expanded support from a broader spectrum of participants remains elusive⁶³. The indirect role of RMOC, acting via OCEDCO suggests the need for a rethinking of RMOC's engagements in this area.

iii) Community Culture:

In examining Community Culture, we begin with a focus on OCRI's efforts to act in a role consistent with the notion of a civic entrepreneur. OCRI has forged an expanding array of

⁶³ Specific issues surrounding OCEDCO's role, and the coordination difficulties between this agency and other actors are explored later in this chapter.

partnership initiatives between the private and educational sectors, enjoying a growing operations budget within which a diminishing portion comes from public sector sources. The agency's expansion, underwritten by broadening private sector interest and support, demonstrates not only the willingness of business to act, but also its preference for doing so through this alternative route⁶⁴. OCRI's amalgamation with OCLF (Ottawa-Carleton Learning Foundation) in 1997 is consistent with what is perhaps the most central role of a civic entrepreneur - to forge more and more effective linkages across different synergistic components of the local governance system.

OCRI's activities can therefore be gauged in terms of the marginal synergies created within local governance, but most particularly the ties between the Market Linkages and Community Culture. Unfortunately, however, such impacts are not gauged - and this point, common to many localities, is a fundamental limitation to government's capacity to partner with, and leverage these new mechanisms for fostering concerted action. There are simply no performance metrics developed locally to help determine even a preliminary value for an aspect of local governance that respondents underline as an important model of success.

Accordingly, the philosophy espoused by OCRI, and its activities undertaken to generate a local spirit (an element of culture as we have reviewed it), both within the high-technology sector and across the locality are well received. OCRI's leaders cannot claim to speak as private entrepreneurs, but their view is that they can legitimately provide an improved mind set, and

64 In searching for alternatives, a key motivation is the fact that firms are often ill-equipped to act individually (as the positive externalities are collective), and they may also be sceptical of partnering directly with the public sector (fearful of bureaucracy and/or ignorant of governmental processes).

additional support for entrepreneurial risk. The agency's impacts on the local culture are generated not only through formal programs but also through social interaction. For example, the synergies fostered by the networking forums (bringing together hundreds of individuals from across the locality each month) and partnership initiatives are new features of the local governance scene that constitute the *vital intangibles* of Silicon Valley's successful promotion of an entrepreneurial spirit⁶⁵ [The Economist 1997]. By the end of 1997, approximately 1,200 people, from across Ottawa-Carleton attend OCRI-sponsored events. Given that most of these events are linked in some manner to high technology industry or research activities, these socialization processes are important facilitators in cultivating a new local culture - one driven by the Silicon Valley image of a civic entrepreneur forging links both within industry and among sectors.

The positive spirit associated with OCRI in the high-technology sector has also carried into the local political scene where the Fall 1997 grand opening of the agency's new facility turned into a *who's who* of municipal leaders, and tense discussions around which personalities would speak to the crowd gathered for the event⁶⁶. In the absence of performance metrics and more tangible evidence (the need for which we return to), such indicators represent the growing attention from government toward new mechanisms and movements, such as civic entrepreneurship.

65 In interviews across all sectors, OCRI is far ahead of other public or civic agencies in terms of recognition, participation, and identification of positive impacts on the area. This point seems to have been sensed by local politicians, particularly in the race for Regional Chair (challenger Bob Chiarelli embraced "the OCRI model" - resulting in efforts by the incumbent, Peter Clark to underline RMOC's support for OCRI more than he had in the past).

66 Organizers of Bob Chiarelli's campaign, having made OCRI a key plank of their economic development platform, felt cheated when (then) Regional Chair Peter Clark was invited to speak (though such was not the case for his challenger, and eventual successor).

The spirit of such forums, now extending beyond OCRI to include a multitude of venues and events, is captured by the recent creation of a new media outlet catering primarily to the technology community (Silicon Valley North), as well as a greater focus on this area in other sources such as *The Ottawa Citizen* and *The Ottawa Business Journal*. While credit for all such initiatives is not accorded to OCRI, the local agency has nonetheless emerged as an "envied hotspot", to quote one local economic development official who suggests that any new civic activity is much more likely to succeed if it carries OCRI's endorsement (i.e., if the event is sponsored and promoted as part of the OCRI circuit of events).

Gauging the role of local government in this movement, and the nature of the relationship between OCRI and RMOC (the only government to directly fund the agency) are difficult challenges. Regional government's role began as a crucial one, making OCRI's inception possible by funding one half of its initial \$200,000 start-up budget in 1983. Since that time, RMOC's contribution, as a proportion of OCRI's total operating budget has continually diminished to less than 10 per cent by the end of 1997⁶⁷.

While RMOC deserves credit for its initial support, this diminishing trend has meant that the public sector, while continuing to be supportive, has become an increasingly passive player in OCRI's operations. In comparison to OCEDCO's budget allocation, for example, OCRI's public grant has never received scrutiny from Regional Councillors, either at Council or at the level of the

⁶⁷ RMOC contributed \$300,000 while OCRI's operating budget, including all projects and events, neared \$7 million by 1997.

Corporate Services Committee. OCRI's President rarely, if ever, came to these public forums to defend the agency's budget: the allocation became routine.

Throughout the time span of the case study, then, there is little evidence of a direct relationship between OCRI and RMOC, nor has the former had much involvement with local municipalities such as Kanata, where it is located. On the one hand, this passive role would appear to have served OCRI well, in allowing it the degrees of freedom to innovate with new forms of collaboration, particularly with industry. The success of OCRI as a membership-based organization (more than 300 member organizations by late 1997) is a model that could not likely have been duplicated by a more traditional form of government department for example.

At the same time, the enhanced scrutiny on local economic development strategies, brought on by the federal government restructuring and a gradual empowerment of local processes (the rationale for which is presented in Part I), has led to questions about whether OCRI might either be more closely associated with public sector action, or serve as a model for other agencies in the area (the Regional Chair's race as a case in point). My own conclusion, from interviews across all sectors, is that OCRI's success has been in a specific niche role, albeit an important one. Yet the agency's initiatives have not been tied to an underlying multi-sector strategy for example, nor are there any meaningful coordination mechanisms between OCRI and other local agencies. This point is less a direct criticism of OCRI than an attempt to expose an important limitation on its role, and how its role must be viewed as interdependent with the actions of other groups across the locality.

OCRI's experience and its position locally also speak to collective challenges facing Ottawa-Carleton's governance. First, relations between OCRI and OCEDCO are strained, and the opportunity cost from the absence of better relations comes in the form of a reduction in the potential for effectively aligning the latter's overall planning mandate with OCRI's presence and more direct reach into the technology community. The missed opportunity of the Innovation Forum is at least a partial product of these tensions. Another product of these tensions is the relatively weak links between local (in particular Regional) government and OCRI. Despite the limited funding base, the lack of any mechanism to better link OCRI to the economic development priorities of RMOC (priorities indirectly transformed into strategy via OCEDCO) results in this form of synergy operating in an autonomous fashion, disconnected from other elements⁶⁸.

Another source of division which carries repercussions for Community Culture is the political fragmentation and uncertainty over local government reform. The present paralysis on this question is more conducive to solidifying divisions - as opposed to promoting collaboration. As one consequence, there are serious complications for any future decisions over a possible rethinking and restructuring of OCEDCO (an issue emerging in the municipal campaign for Regional Chair leading up to November 1997).

There are several barriers to more concerted action on this front. First, each of the eleven municipalities conducts its own economic development and planning. Second, since the demise of

68 A more specific focus on OCEDCO's capacities as part of the public sector is presented in chapter seven.

the local Citizen's Panel⁶⁹, both the previous and current Regional Chairs have been publicly *clarifying* the provincial designation of the economic development function to upper-tier Regional Municipalities (a role not presently practised by most upper-tier municipalities in Ontario, including both Ottawa-Carleton and CTT). Adding to a sense of pessimism for a locally contrived solution, other groups such as The Board of Trade and The Ottawa Business Journal have accelerated calls for a provincial imposition of a single-tier model of government (a move that had been deemed unlikely before the provincial election in 1999)⁷⁰.

The final element of Community Culture which we consider is the human patterns of employment and socio-economic development. Such patterns are driven by the distribution of work, time, and income - and how individuals are able to manage, and balance these different demands. Part I pointed to growing questions about the extent to which local capacities may prove insufficient to respond adequately to the polarizing tendencies of labour markets within high-technology localities in particular⁷¹.

69 The Citizen's Panel was a locally selected group of individuals formed in late 1997 to develop recommendations for reformed municipal governance. The group disbanded in the winter of 1998, citing a lack of political support, and in some cases, more blatant attempts by municipal leaders to stifle their efforts. Interviews with members also revealed a frustration with their inability to mobilize the local public and nonpolitical groups (following the process, The Panel's Chair Grete Hale publicly blasted the business community for their indifference to the process).

70 In some cases, such as The Ottawa Board of Trade, the credibility of this position diminishes in light of their own rivalries with other business groups, such as the Chambers of Commerce which operate separately in many local municipalities.

71 This issue (100,000 on a form of public assistance) was invoked regularly by the (now)Regional Chair, Mr. Chiarelli in his calls to refocus on human capital and a better distribution of the new wealth being created by the area's private sector.

Already, recent studies in Ottawa-Carleton confirm the beginnings of such polarizing trends, reflected in a public sentiment that the traditional middle-class is losing out⁷². One informed observer states that "the economic trends are leaving a lot of people out"⁷³. Yet little attention is accorded to the potential for an intensification of the polarizing trends that are so prevalent in Silicon Valley and Route 128 in Boston. In contrast to clearer metrics being created elsewhere (i.e., Joint Venture Silicon Valley Network, and their counterparts in Route 128 produce ongoing indices, including metrics demonstrating changes to income polarization), there are no similar indices currently in existence⁷⁴ in Ottawa-Carleton.

If local government's basic responsibility in this area is to encourage awareness and mobilize attention, action on this front has been sparse, and there is little evidence of attention being accorded to such issues⁷⁵. There is no direct mandate accorded by municipal government to examine such issues (despite the evolving discourse). There are both uncertainty and apprehension within OCRI as to whether they should want, or perhaps even be forced to move in such a direction. There is a near complete absence of linkages across the technology sector and the social services community⁷⁶.

72 These findings are taken from an Ottawa Citizen-Angus Reid poll [03/12/96; The Ottawa Citizen].

73 The findings of this important (and indicative) study by Market Research were recently reported by The Ottawa-Citizen (25/04/98). The study confirms a growing wage gap between Ottawa-Carleton's east and west ends - reflected in the growth and concentration of high-technology in the latter.

74 This point is confirmed by interviews with The Social Planning Council, RMOC and OCRI.

75 My own interviews with Regional Councillors, for instance, revealed a stark distinction between traditional economic development and planning on the one hand, and social policy on the other. This point is important since the former has been managed indirectly through OCEDCO: the latter area remains largely under provincial regulation and control.

76 This observation stems from my own interviews and involvements with The Social Planning Council of Ottawa-Carleton (as well as OCRI).

Accordingly, the community economic development function within OCEDCO is neglected and marginalized, so much so that in OCEDCO's more recent self-described strategic objectives, it often remains unmentioned⁷⁷.

The absence of more effort to study and address the relationship between technology-based growth and the distribution of both opportunity and outcomes will call into question the capacity for sustainable forms of collaborative advantage⁷⁸. Whether a bottom-up movement of civic entrepreneurship can emerge within a locality that remains relatively fixated by federal processes and a national-centric culture politically is a key challenge. To date, there is little evidence of a strategic partnership between RMOC and OCRI (beyond a modest funding contribution), although the recognition during the 1997 municipal elections, that government may well leverage its energies more effectively with civic partners such as OCRI is a signal that this relationship will receive further attention in the future.

5.2 Canada's Technology Triangle

The analysis of CTT also proceeds by reviewing each of the three synergies. Drawing from the description in the preceding chapter, the focus is again a more specific and critical look at local government action in each area. The next section then provides a preliminary and comparative assessment of both cases.

⁷⁷ Shortly after the time-span of this case ends (i.e., in early 1998) this function was disbanded completely.

⁷⁸ While some more recent initiatives have been undertaken more recently in 1998, they fall outside of the time frame for the case study (ending November 1997).

i) Market Linkages:

With respect to the clustering of CTT-based industries, the contribution of local government has been tentative, indirect and inconsequential. In a fashion similar to that of Ottawa-Carleton, there is no pretense of local capacities to create clusters. However, what is different in CTT is the industrial mix, and precisely what is meant by the term, *high-technology*.

The preceding chapter's description of CTT and its inception underlines the emphasis of the local network on working to enhance existing clusters across the four municipalities, rather than creating new ones. Though knowledge-intensive areas such as telecommunications, software and environmental technologies may be the most visible examples of leading-edge, and emerging clusters, the broad emphasis within CTT has been inclusive of a range of other sectors.

For instance, Cambridge's view of the automotive sector as high-technology is supported by its recent evolution (of both the industrial sector and the city, in fact). This previously hierarchical and vertically-integrated industry has transformed itself into a neo-Schumpeterian example of new product and process innovations, horizontal supply chains and R&D networks, and global-local federations of small and large firms alike. [Morales 1995]. One consequence of this inclusive strategy is that specialization is difficult to achieve - for CTT holistically. While some attempts have been made to coordinate a better way to profile area clusters, CTT's network has made little difference to what is a diverse and varying industrial mix throughout member-municipalities.

Local EDOs often express a sense of frustration that instruments and benchmarks remain locally fixated (for each municipality), rather than collectively for CTT as a socio-economic entity.

In response to this frustration, and due to the gradually widening contribution of CTT's influence, there has been a steadily growing base of socio-economic data on CTT, as opposed to rough aggregates taken from sources across each of the four member-municipalities⁷⁹. But the information and analysis available is widely viewed as inadequate⁸⁰. This void, explained by differences between municipal and CTT boundaries, and economic development budgets determined by the former, is a common challenge for policy-makers in many localities. For example, the lack of quantitative information on Silicon Valley (comprising over twenty municipalities) was an important impetus for creating JVSVN (a point underscored by interviewees there).

In terms of networking forums, the lack of any notable equivalent to The Ottawa-Carleton Manufacturer's Network is reflective of the early stage of CTT's technology clusters⁸¹. With few exceptions, high-technology success is denoted by SMEs and rising businesses, leading to the suggestion by some local commentators that perhaps "time is the best strategy"⁸².

79 1996 marked the first year when local municipalities commissioned a "dynamic profile" for CTT [Smith 1996], as opposed to either individual municipalities or the Region of Waterloo (recall that the latter excludes Guelph). Since that time, a number of cluster profiles, business directories, and general information guides have been produced under a CTT banner.

80 One reason given by local EDOs for this inadequacy is the lack of financial resources devoted to CTT activities. Despite discussions linked to the most recent strategic review, local Councils have not agreed to expanded budgetary outlays.

81 The early stage clusters are those which comprise our common focus in both case studies - specifically, telecommunications, and computer hardware and software.

82 This comment is taken from interviews with staff at the university's Technology Transfer and Research Office.

The now stillborn CTN (Computer Technology Network) is an insightful example. Although CTN might initially appear to be well-suited to flexible networking within the emerging cluster linked to software development, the initiative failed. The primary reason for its failure is reported to be both a lack of clear focus and a leadership void⁸³. Unlike OCMN's initial roots within the private sector, and the investment in a network coordinator, CTN emerged more organically and was ill-defined. Some participants feel that its purpose was to foster closer ties to university-based research and researchers, whereas others point to commercialization and industrial development as its primary mission. No common direction is evident.

Although CTN's inception dates back to roughly the same time as that of OCMN, the attempt may have been premature in the setting of CTT. Flexible networks are meant to facilitate horizontal ties across existing firms of all sizes: but they may well be of greater marginal importance to clusters of medium-sized and large firms. The latter, otherwise more autonomous companies, become engaged in a networking forum that is both time-consuming and stimulating: they have the resources to do so. In the case of smaller firms, start-up ventures and individual entrepreneurs, the focus is more exclusively on establishing even an initial form of organizational structure. Networking across their industry with companies is thus a secondary priority.

This point is one dimension of the often alluded to problem within CTT tied to relative firms size and industrial structure. The advantages of smaller companies, and their dynamism and potential for growth are also offset by the challenges of younger, less mature industrial clusters.

⁸³ Comments were gathered from several R&D managers from local software companies who had either participated themselves or sent a staff member to a CTN event.

These firms may be less suited to developing common forums such as networks and as such, their presence and connectivity to other components of the local governance system may be stunted.

Despite this challenge, the lack of urgency accorded to this issue within CTT should be underlined for two reasons. First, it is far from clear what local government can do to accelerate directly the growth cycle of private sector clusters that are emerging as opposed to established in terms of firm sizes and industrial structure. Second, the industrial diversity of CTT, and its strong socio-economic performance throughout this decade, have served to inadvertently reduce the direct incentives for more aggressive action⁸⁴.

ii) Knowledge Infrastructure:

CTT is understandably promoted as a locality emphasizing human and intellectual capital. The area's notable lack of substantial natural resources has always been countered with an emphasis on training, education and the capacities of individuals to demonstrate adaptiveness and resilience (and as already noted, for some this historical legacy implies that CTT is but the latest phase of evolution). As a result, the notion of a local innovation system applies here, and the role of The University of Waterloo is central to this component of local governance. UW's creation in the 1950s

⁸⁴ CTT's Communitech is perhaps a more recent sign of a growing sense of identity and collective among technology firms; but its role is more closely aligned to that of a civic entrepreneur (and as such its role is expanded under the prism of Community Culture).

marks a radical departure from academic traditions. The institution began with an early degree of openness to industry - local or otherwise⁸⁵.

Yet there is a widely held view from within CTT that this local advantage, resulting from both a strong base of post-secondary research and supporting mechanisms for commercialization and business development, is under-utilized by CTT⁸⁶. In fact, there is a notable lack of initiative here. Other than promoting the area's three universities under a common CTT flag (itself a timid gesture, as there is little evidence of reciprocity from the universities themselves), the ambitious rhetoric of CTT's strategic review has not been translated into concerted and concrete action.

This point is an important quandary. The view that more should be done to link CTT to the local infrastructure of research and education resonates far beyond municipal CEOs. Upon asking local respondents from all sectors about their perception of critical CTT priorities, action on this front is invoked with near unanimity. Nonetheless, there does not seem to be any one explanatory factor of paramount importance.

Many local academics point to both the complacency and complexity of the universities, and their action. By complacency, they suggest that the successful reputation of UW stymies any urgency for action locally, while The University of Guelph has traditionally been autonomous in its

85 The evidence of UW's critical role locally, presented in chapter five, will not be re-presented here. Our main interest is not the effectiveness of the university in its role, but rather the actions of local government to leverage it within CTT.

86 This point is invoked frequently by interview respondents.

distinct, and more specific focus on areas such as agriculture and environmental sciences (a point that is not inconsistent with Guelph's geographical autonomy from other CTT members). In terms of complexity, there is also the view that the outgoing UW President, from an academic discipline in social sciences, pursued an implicit strategy of shifting his interest and effort away from the traditional strengths of technology, engineering and their spin-off innovations.

A final variable, often invoked, is the lack of political will on the part of municipalities. Despite strong EDO-level support, the responses among many local politicians reveal a relatively limited degree of interest in deeper partnerships between CTT and the education sector. At times, such a view is not focused on education and knowledge partnerships directly, but rather it reflects the limited, and varying degrees of support for a stronger CTT network more generally. An important lesson here is that the traditional lines of political accountabilities, separated by municipality, have clearly slowed the deepening of CTT governance locally, a situation caused less by opposition to the concept than both apathy and more urgent priorities politically. Another key lesson from interviews with elected representatives at the municipal level is that despite growing recognition of the rhetoric of a knowledge and innovation economy, such terms have been slow to translate into public sector strategies. Again, this point differentiates EDOs and politicians, as the former group is generally more prepared to move in this regard but a limited degree of political leadership or interest reduces both resources and clout in initiating closer relations.

The socio-economic diversity of the municipalities is also an important factor here, implicitly questioning, in the minds of many local politicians, the existence of a single Knowledge Infrastructure for CTT holistically. While both Waterloo and Kitchener are strongly supportive of

efforts to deepen connectivity, since nearly all post-secondary institutions are found there, the situation is more fuzzy elsewhere. Guelph's focus is primarily on its own university, and its political autonomy from The Region of Waterloo must be noted. Moreover, Cambridge has traditionally been less interested in issues of knowledge and innovation, and despite the strong support at the EDO level for changing this view it has not yet begun to permeate local Council and municipal economic development priorities⁸⁷.

The inability of CTT's economic development committee to parlay the network into a more broad and encompassing system is without question a missed opportunity. Such a view is recognized, and it partly explains the recent inception of Communitech (designed to foster closer connections and better synergies between the private and education sectors)⁸⁸. As well, there are indications that the next stage of CTT's strategic focus will place education and human capital at the forefront of local development strategy, but such progress remains to be seen⁸⁹.

Thus, a key challenge for CTT is the necessity for a mechanism to link local business, government and education sectors. An important initial step would be to establish cooperative ties

87 Despite a strong EDO-level commitment, a review of Cambridge promotional material reveals the least explicit association to CTT. Moreover, municipal economic development strategies during the 1990s are notably less inclusive of Knowledge Infrastructure elements than its CTT partners.

88 Interviews with CTT Communitech staff and its private sector members highlight this rationale, as has the President of the organization in a variety of public forums since its launching.

89 Such indications are long-standing among local EDOs who express frustration at previous lack of action (frustration explained by an absence of will from both senior political officials and university leaders). They are also reactionary, in response to growing pressure from the private sector (typified partly by Communitech) for more concerted action (a movement that could, in turn, support the expressed views of EDOs).

between Communitech, the post-secondary institutions, and CTT's Steering Committee. But such action is only timid recognition of the need for more aggressive action in a component which holds considerable potential for advancing CTT governance.

iii) Community Culture:

In an ideal linking of Knowledge Infrastructure and Community Culture, the socialization of an entrepreneurial culture permeates both components as businesses born from local initiative nurture stronger roots and richer connectivity [Cooke and Morgan 1994; Storper 1997]. This foundation of historical resilience in the marketplace, coupled with supportive civic ties, helps provide a robust basis for both confidence and collaboration locally [Moss Kanter 1995].

Within CTT, a strong sense of confidence in the socio-economic performance of the locality is apparent from both research on the area and my own investigation. For instance, there is a long history of strong community spirit supporting economic resilience, as well as civic forms of local activity [Walker 1987; Kubasta 1996; Filion and Rutherford 1996]. Many observers suggest that a key engine of local entrepreneurship is The University of Waterloo [Eastwood 1987; Roy 1996].

A remarkably consistent response from individuals, across all socio-economic sectors, points to both the autonomy (from GTA) and quality of life of the area. In fact, when asked what should be the main priority of local government in terms of its economic development efforts, the preservation and promotion of quality of life are the most frequent responses. As well, there is a strong attachment to historically nurtured impressions of a self-reliant community. This point means that the emergence of high-technology as the primary focus is viewed (and often reported during

interviews) as a more natural transition for a place consistently responding to the absence of natural resource endowments with a focus on human and knowledge-intensive capacities.

Unlike Ottawa-Carleton, where respondents often present themselves as politically-oriented (often highly engaged in federal processes) or technologically-oriented (engulfed in the *new high-tech* activities), CTT delivers a stronger sense of balance. This sense of balance can be expressed as the product of historical consistencies in the mix between private, public and civic space⁹⁰. While the nature of each (and in particular the private) set of activities continues to shift over time, the overall socio-economic balance between private, public and civic interests has remained largely consistent. My own impressions formed from interviews are that individuals within CTT are less oriented toward extreme professional classifications (i.e. high-technology entrepreneur or federal Deputy Minister) than is the case in Ottawa-Carleton. Such a characterization translates into a more cohesive mind set shared by local actors, developed through the trade-offs and challenges of changing market specializations that nonetheless maintain a relatively consistent portion of people's time and energy.⁹¹

Perhaps for this reason, there is what some observers regard as a substantial degree of ignorance, or indifference to the specific nature of CTT's industries. The point is not that people do

90 One may contrast this point with Ottawa-Carleton, where the more dramatic shifts from forestry (private) to federal government (public) to high-technology (private) may well negatively impact the strength of civil society and community.

91 This point compares notably to Ottawa-Carleton which has been forced to respond to dramatic reductions in a previously dominant public sector by emphasizing high-technology, and the public sector as the way forward.

not view it as important, but rather its relevance is tempered by compartmentalizing it within a limited portion of their lives. This mood is reflected in a local profile by the KW Record on the technology sector which highlighted that much of what is being produced in the area is poorly understood, or of little relevance to the typical household. Yet the profile also reveals a gradual shift in local attitude towards recognition of technology's role in the local economy.⁹² This gradual transition may be regarded as a more cautious, but steady formation of linkage between CTT's externally portrayed image and its penetration locally⁹³.

A related consequence of this balance is a stronger sense of community and its value. While not being dismissive of the separateness between the four CTT municipalities, there is a stronger expression of the civic through a variety of means. The Germanic and Mennonite cultures are prominent even today in festivals and tourism. The historically rooted and friendly, inter-municipal rivalries co-exist nicely with a common desire to limit the Region's expansionary tendencies. Moreover, they often produce civic boundaries that are partially ignorant of the political ones (a point particularly prevalent within Kitchener and Waterloo where numerous groups, ranging from The Chamber of Commerce to volunteer associations operate under a K-W banner).

As a result, local companies seem to be aware of this sense of place as well. In a locational survey of CTT entrepreneurs and companies, the number one locational benefit of operating there

92 From an interview with KW Record Reporter Mike Strathkee (also reported in The Record).

93 While most respondents agree that CTT has not been well known among many segments of the population, there is an equally consistent view that its recognition level is rising. Accordingly, many respondents discuss the importance of the local media and the more frequent coverage of CTT issues in place of a municipal-centric focus.

is familiarity - interpreted as support for the tendency for entrepreneurs to launch firms in their own geographic area [Filion and Rutherford 1996]. While this tendency is not clearly supported by research from other Silicon Valley settings where immigrants have often played key roles (many key Ottawa entrepreneurs are from outside the area for example), it is a characteristic which is both reported and accepted in the case of CTT [Filion and Rutherford 1996; Kubasta 1996].

Such an emphasis on civic attachments may also provide a source for further ensuring socio-economic stability. Presently, despite some early stage speculation that income distribution is likely to become more polarized in the future [Filion and Rutherford 1996], such concerns are simply less of an issue in CTT, and they have yet to make a significant mark on local political debates⁹⁴. While one should not be dismissive of the potential for such a trend to emerge, keeping in mind the early stage of CTT's technology-based activities, the Silicon Valley-like proportions of social exclusion and polarization are clearly not key issues in a locality whose major short-term challenges remain the nurturing of emerging clusters into more developed medium-and larger-sized companies. If high-technology continues to maintain strong local roots, however, the historical balance alluded to previously, coupled with the present focus on quality of life and community strength suggest that concertation among sectors may be more attainable here than elsewhere⁹⁵.

94 In comparison to Ottawa-Carleton for example, where during the most recent race for Regional Chair such issues featured prominently, the Regional Chair of Waterloo was virtually acclaimed with relatively little discussion of social exclusion and income polarization.

95 One indicator of this point is the more extensive array (in comparison to Ottawa-Carleton) of initiatives linking local business and nonbusiness groups, such as community care networks, social service agencies and religious and ethnic affiliations that are invoked by interviewees in CTT. The trend from own interviews implies a sense of pride in private-civic engagement to a degree that simply does not exist in Ottawa-Carleton. Parallel research on Ontario Works across both localities, for instance, reveals more acceptance and activism on the part of business in CTT, reflected strongly in the diverging discourses on the contentious issue.

One potential difficulty in moving forward is the fact that this local spirit of confidence often seems to be highly ambivalent in its target or source. Despite the presence of a strong educational and entrepreneurial culture that is widely recognized, divergent opinions often exist as to its primary source⁹⁶. Serving as a foundation, these shared values have nonetheless helped facilitate the creation of numerous other initiatives, such as business service centres, innovation and information-diffusion mechanisms, and research pertaining to entrepreneurship and labour market development⁹⁷. Moreover, city officials and their political leaders have played what is acknowledged to be a partial role in the building of CTT governance, and their modest degree of progress in leveraging these cultural assets is difficult to explain. Most respondents imply that the absence of a recent crisis (in this decade) within those areas deemed to be engines of high-technology activity may have reduced the urgency for more extensive strategies. Another factor is

96 Yet the cause and effect of local culture remains less clear. For example, Larry Smith, UW Professor of Economics and Entrepreneurship often points out that UW's location is the latest of a series of historical examples of such developments. In other words, the University thrives due to the socio-economic culture of the locality, rather than fostering it.

97 Notable examples include:

- Computer Technology Network - an industry-driven association for businesses within the information technology sector of the Triangle;
- Canada's Technology Triangle Export Network - a trade association formed to promote interactions, growth, and expansion in export-related activities;
- Business Community Programs - an alliance of the private sector, the CTT steering committee, universities, and the provincial government to assist local SMEs;
- Canada's Technology Triangle Enterprise Centres - an initiative for small businesses to become more proficient in entrepreneurial management development, training and support services (an alliance of university-and college-sponsored assistance centres; and
- Canadian Institute of Technology for the Environment - established to encourage the commercialization of environmental technologies [Kitchener/CTT 1995].

the challenge of managing by consensus, even among four relatively equal partners joined by the alliance of CTT. This factor may also be deepened by an absence of common or severe threats⁹⁸.

Nonetheless, CTT's presence has now permeated economic development strategies, at the municipal level, for ten years. Despite a legitimate sense of laggardness brought about from a widely held view that the more recent advances in moving CTT forward are long overdue, these new local initiatives (i.e., Communitech) have also furthered the CTT identity, as well as its reach into new areas of local governance (particularly the private and educational sectors). Despite its infancy, Communitech's role may thus prove pivotal in nurturing CTT's Community Culture toward a wider and more encompassing set of actors, particularly those companies, research organizations and other forums tied to technology and knowledge-based activity. In other words, it may provide the local voice through which more elements of local governance become sensitized to the changing needs of growing firms and clusters in this new socio-economic setting. A clear test of this premise will be the evolving relationship, still being defined, between CTT Communitech and CTT's public sector (the EDO network and The Region), destined to be an important determinant in the pursuit of a more holistic CTT system of integrative governance and collaborative strategy.

Essentially, the Community Culture, with important attributes of historical consistency, civic strength and connectivity is an asset to be leveraged into strengthened linkages among all components of the local governance system. To date, this role has been only partially addressed by

98 Despite agreement on the fact that CTT competes with other localities in an increasingly intense fashion, the point here refers to the relative differences across municipalities in terms of moving forward with deeper CTT initiatives. The delicate balance between local municipalities and gradually strengthened Regional government is a key theme of Part III.

local government through its indirect support of an expanded array of CTT initiatives, though it is important to underline that the very existence, and sustained evolution of CTT is itself a modest achievement produced by a local willingness to collaborate - and overcome the potential barriers of political territories to do so.

5.3 Preliminary Assessment

We may now deliver a preliminary assessment of local government action in each locality - as it pertains to each of three synergistic forms.

This assessment serves two purposes. First, it provides a response to the propositions offered in Part I (specifically that local government can play a positive role within these forms of synergistic governance). Second, the findings provide insight for us to learn more about the nature of local government action in such an environment. Finally, this assessment is incomplete, pending the inclusion of the following chapter and its focus on both provincial and federal impacts within each locality.

i) Market Linkages:

In both localities, the evidence presented in this chapter makes it difficult to accept the notion of supportive action and positive impacts by local government. In Ottawa-Carleton, the more established clusters are a relative strength of this locality, due to both the presence of a diversity of small, medium and large firms, and the networking presence of OCMN. Despite the fact that this latter body has been poorly leveraged by local government (OCEDCO in particular), its role has raised the profile of advanced manufacturing in the area, thereby sensitizing the local public sector

to some degree. There remains little evidence, however, that local governments in Ottawa-Carleton have undertaken coordinated action to either improve the socio-economic setting of key local clusters, or connect to new forums of Market Linkages such as business networks.

CTT presents the more stark challenge of an emerging set of clusters, not fully predominant in the locality to the extent that one finds in Ottawa-Carleton. Local government has thus been only indirect here as well - responsible for raising the profile of technology clusters, but neutral in their performance and evolution. Moreover, the absence of an OCMN equivalent further weakens local government's capacity to learn and adapt to the constantly changing characteristics of this new and emerging focus in CTT.

ii) Knowledge Infrastructure:

In contrast to Market Linkages, there is evidence from our two cases that local government is beginning to identify more opportunities to play an expanded, and more strategic role in this component of local governance. Yet in a fashion similar to that of Market Linkages, local governments have been extremely timid in executing this role in an effective manner (although a greater degree of recognition may be apparent).

In Ottawa-Carleton, the density of the federal research infrastructure is an important variable. Local government action in this area has been indirect via the two RMOC-funded agencies, OCEDCO and OCRI. Whereas the former has had no clear impact, potentially even

constraining more effective mechanisms, such as the Innovation Forum from emerging, the latter's characterization as a civic entrepreneur moves away from a strict definition of government.

CTT, as a case study reveals a missed opportunity for local government. Despite recognition of the potential for CTT to facilitate more concerted action in this area, it has not yet evolved. Similar to that of the OCMN comparison, there is no local equivalent in CTT to the Innovation Forum. This point is central in attempting to explain local government's failure to make better usage of the strengths of the area's Knowledge Infrastructure, and the lack of more ambitious CTT-UW linkages in particular.

iii) Community Culture:

Facilitated by both proximity and familiarity, the Community Culture component of local governance was presented as a newly emerging, and potentially key, venue for local government action. This action, however, may be based upon new and alternative forms created in partnership with other socio-economic actors, such as civic entrepreneurs.

Ottawa-Carleton, as a locality, is notable for a direct federal presence located there (one that is more fully accounted for with the help of the next chapter). The findings here, with respect to Community Culture, suggest rather weak local government capacities, in terms of both inter-governmental concertation and the ability to positively shape collective action for Ottawa-Carleton as a whole. The most important point is the absence of direct initiatives to address this component

of local governance which, as we have seen, is being recognized as a crucial variable to the ongoing performance of high-technology localities.

The support directed to OCRI by RMOC is a partial exception. On the one hand, the upper-tier Region deserves credit for funding this mechanism. Yet at the same time, the relatively passive form of support has meant that OCRI's role has been viewed in an overly precise manner, associated with a near-exclusive focus on business-education partnerships. As OCRI's sphere of influence has evolved, its dependence on government has declined dramatically. It has also become apparent that the notion of civic entrepreneurship - while being developed in practise, is not internalized as part of a broader governance strategy linking sectors. In short, a large discursive gap remains between OCRI and local government (and as indicated earlier, it is important to underline the signs of recognition of this problem which became apparent during the municipal election campaign in late 1997).

While there is no evidence demonstrating that local government weaknesses have reduced the performance of the locality, the growing signals pointing to geographic and socio-economic polarization suggest that, in the future, a continuing absence of more effective action will be costly. The challenges of fostering both more cohesive mind sets and collective strategies are complex, derived partly from the impact of being located in the same locality as the federal government, as well as the acute socio-economic change brought about by recent shifts in the private-public-civic mix of both current activity and potential opportunity.

The story of CTT can be said to be more exclusively local in both its socio-economic focus and set of participants shaping this development. In this sense, it is based on a more stable and shared cognitive understanding of what the area's strengths are perceived to be: such consistency owes a good deal to an evolving, but more historically balanced mix of civic, private, and public interests (the latter, unlike Ottawa-Carleton, somewhat less complicated due to an absence of a direct multi-level presence). Local government created CTT, and the identity and presence of this alliance has spread to other actors such as CTT Communitech. While local government has only partially fulfilled its potential role, having failed to generate a deeper commitment to CTT internally (as a case in point, Communitech is viewed locally as an initiative which is long over due), CTT's identity remains an important contribution of local government.

The direct socio-economic impacts of CTT-based action by the public sector remains difficult to gauge. This is so since much of its impact can only be realized as CTT governance spreads itself across sectors (and across SL components) and joins more organizations and interests within its sphere of influence. A certain basis for optimism, however, lies in the relatively more symmetrical alignment between local governments, coordinating with one another and increasingly with other sectors: the civic identities associated with CTT's existence such as quality of life, community support, locally rooted business, and a historically resilient socio-economic performance create a shared expectation that government's role cannot be unilateral in moving CTT forward (although the debate remains as to whether or not it has done as much as it might have during the first decade).

In concluding this chapter, these results are presented visually, using the Strategic Localism template below. In order to facilitate comparison and discussion, the following measures offer a rough synthesis of these findings.

The first mark, a plus or minus sign, characterizes either a positive or negative trait of that particular synergistic governance component - in terms of its general significance to the locality. The second mark, again either a positive or negative sign, indicates judgement on local government's role in positively or negatively influencing its evolution.

Strategic Localism - Highlights of Main Findings (I)

The key findings, from this chapter, are summarized for each of the three synergistic components:

Ottawa-Carleton

National Jurisdiction (chapter 6)	Provincial Jurisdiction (chapter 6)	Key Zone for <i>Local Advantage</i> (chapter 5)	
		(+ -)	Market Linkages
		(+ -)	Knowledge Infrastructure
		(- -)	Community Culture

Key Findings

Market Linkages (+ -) Ottawa-Carleton benefits from mature clusters with several flagship (locally grown) firms and the presence of networking forums such as the OCMN. However, the latter has not been effectively utilized by local policy-makers - particularly OCEDCO - in integrating the private sector forum within local policy-making.

Knowledge Infrastructure (+ -) Ottawa-Carleton is endowed with the largest per-capita research infrastructure in the country, and is home to several post-secondary teaching institutions. However, local policy action has largely avoided this component - with the notable exception of the Innovation Forum, whose influence came largely from the federal level, suffering from a lack of local support (particularly in industry).

Community Culture (- -) Concerted public sector action toward economic development (and governance) has been elusive. Also, despite the demonstrated risks of socio-economic polarization in other localities, and evidence of such trends beginning to emerge, the policy issue remains largely unaddressed. The challenge of nurturing entrepreneurship and risk-taking in the market co-exists with a recent culture of a relatively dominant public sector in terms of local employment, and a traditional focus on national institutions.

CTT (I)

National Jurisdiction (chapter 6)	Provincial Jurisdiction (chapter 6)	Key Zone for <i>Local Advantage</i> (chapter 5)	
		(- -)	<i>Market Linkages</i>
		(+ -)	<i>Knowledge Infrastructure</i>
		(+ +)	<i>Community Culture</i>

Key Findings

Market Linkages (- -) Despite a strong base of local start-ups and spin-offs, the locality lacks a cluster of larger companies to both drive growth and attract more attention. As well, and linked to this first point, there is less evidence of flexible networks in the technology

Knowledge Infrastructure (+ -) The flagship University of Waterloo (and two other universities), a leading community college, and a strong emphasis on human capital are all positive attributes. Nonetheless, CTT has not demonstrated an effective linking to these key local players - a significant shortcoming of CTT's potential in this component.

Community Culture (+ +) Building on historical identities which stress self-reliance, there is a strong focus on supportive and collaborative capacities for new business and entrepreneurship, community engagement, and quality of life. Although a potentially generous interpretation, our preliminary conclusion is that local government fulfilled its role, albeit in a minimalist fashion, during the initial phase of CTT. The absence of more aggressive action is partly explained (though not justified) by the relative success of the locality through this decade, translating into a lack of urgency, as well as the other factors discussed in this chapter.

Chapter 6 - From Above: Federal and Provincial Impacts

This chapter examines the main forces shaping local governance in each case that are derived from action or authority at either the federal or provincial levels. Their inclusion is recognition that local systems evolve within a complex, multi-level environment.

Rather than pretending to assess the complete scope of both actions and activities owed to federal and provincial governments, our intent is more modest and specific. First, we ascertain the degree to which the provincial and federal presence is significant in each case (and the manner by which it is significant). Second, in building on the preceding point we attempt to examine how this presence shapes local government's capacities in both Ottawa-Carleton and CTT. In undertaking these tasks, it may be useful to distinguish between the diffused presence and deliberative policy action of the provincial and federal levels of government - and underscore our main interest in the latter. Thus, we may appear to underplay certain aspects of the federal and provincial presence in each case: the universities are a case in point, as we treat them mainly as local actors and elements of local governance and less as part of the provincial apparatus⁹⁹.

The fact that our primary focus remains attempting to understand the patterns of governance locally, and the role of local government within them, justifies such an approach. This chapter, in

⁹⁹ The treatment of universities, and other such examples are by no means presented as black and white. While provincial jurisdiction is recognized in the case of universities (and similarly for the federal government and the NRC), their autonomy as actors removes them from being viewed as direct policy instruments of any particular government.

turn, attempts to highlight only those examples of direct policy actions, by either the provincial or federal government, aimed at influencing either economic development or governance locally.

The findings from the current and preceding chapter jointly provide a complete analysis of governance in each locality. We will then possess a strong basis upon which to offer precise findings about the effectiveness of local government to date, and its potential tomorrow.

6.1 Ottawa-Carleton

The link between local structures and the presence of federal institutions is clearly central in this locality - and its position within the National Capital Region. We will attempt to recognize the potential advantages, as well the challenges arising from this particular context.

The 1992 initiative, *Partners for the Future - A Strategic Vision for Ottawa-Carleton* acknowledges this same point [RMOC 1992]. The report supports a rationalization of local government (albeit without selecting any particular model). However, it also recommends the creation (by RMOC) of new mechanisms, such as a "cooperative commission" to both conduct "vigorous lobbying efforts" at senior levels of government and facilitate more coordination with them:

Such a commission would include representation from the regional municipalities (Outaouais and Ottawa-Carleton), provincial governments, the federal government and the private sector [RMOC 1992, p.4].

The importance of the federal government's presence also permeates other sectors. For example, this presence harks back to the earlier discussion of the Innovation Forum as an initiative

attempting to root the national mandate of the NRC within a local innovation system. Similarly, it permeates local choices for marketing and promoting the area abroad, and the difficulties of reframing the powerful images of Ottawa as a political capital (a point addressed below).

Ottawa-Carleton is the only Canadian locality with a policy community directly linking federal government politicians and chief bureaucrats with business entrepreneurs and executives working in close proximity. There are many specific examples from which to draw in order to support this characterization. For example, in promotional material profiling the area's attributes of success, former Mitel President John Millard boasts about the advantage of proximity which results in close access to the Minister of Industry (who is also a local M.P.). The Innovation Forum explicitly links local and federal agencies in a strategic forum aimed at improving local development prospects. Jetform President John Kelly is also the Chair of the national body, CATA (Canadian Advanced Technology Association). Former OCRI President, and perennial local booster Gerry Turcotte becomes (in what is perceived locally as a near, quasi-lateral move) a Deputy Minister in the federal government (serving as President of the Ottawa-based, Canadian Research Centre). In fact, many prominent individuals have oscillated between positions of local and national authority (while remaining in Ottawa).

This relationship is the basis for a seemingly important aspect of Ottawa-Carleton's governance. The transition from political capital to technology capital carries the capacity for a reaffirmation of the area's centralized mind set (an argument developed in chapter three), albeit less in a traditional public sector manner and more in an alternative, industry-centric fashion. First, it is important to acknowledge the degree to which this evolution has been, at least in part, both

unavoidable and beneficial. Given the importance of the federal government's presence - as a provider of research funds, as a key regulator of new technology industries, and as a significant customer of new technologies, it is impossible to separate the roots of high-technology in this area from the presence of the federal government. Globalization is also a current consideration. Sectors such as telecommunications and computer software have, until quite recently, been excluded from global regimes such as the GATT-WTO. As they become further integrated, and as new pressures (and technologies) transnationally force national governments to adapt and seek new types of responses, collaboration between industry leaders and the federal government will further intensify (facilitated, in the case of Ottawa-Carleton by both location and familiarity).

Thus, the roles and importance of national governments remain. But it remains a declining role. For Ottawa-Carleton, historically shaped by, and still largely fixated with its national scope, tensions are inevitable. Here lies the nexus of Ottawa-Carleton's top-down, bottom-up governance quandary. This gradual affirmation of the nation-state's declining role is not being coupled with more awareness and deeper engagement locally. The impacts are thus important, particularly for public sector forums such as municipal elections, multi-sectoral consultations and ongoing policy-making mechanisms¹⁰⁰.

100 The most recent municipal elections (marking the end of this case study) yielded no change from the area's traditionally low voter turn-out rates (despite pending impacts of, and discussions around provincial downloading decisions). Similarly, The Citizen's Panel's initial consultations were poorly attended, and the process failed to ignite public interest (resulting in its eventual disbanding in early 1998).

Some of the innovative experiments in civic and industrial processes discussed in the preceding chapter (such as OCMN and OCRI) imply that the emergence of a local governance system here could largely depend on the efforts of the private and civic sectors - at least as much, if not more so than government. The corresponding challenge is that if local government in Ottawa-Carleton remains crowded-out by a more dominant federal presence, it will be unable to fully and effectively participate in new partnership arrangements emerging in a more bottom-up fashion¹⁰¹.

The Innovation Forum is an attempt to foster the conditions for at least one Ottawa-Carleton mechanism inclusive of both local and federal actors - capturing benefit from proximity. The Innovation Forum, in its most optimistic light, may be viewed as a step in the direction toward a sharing of local identities through a more collaborative culture. Yet the Forum's future is fragile and in doubt for several reasons. New leadership at RMOC, and its consequences for local agencies may impact The Forum's future¹⁰². Moreover, numerous questions remain unanswered about the involvement of both local universities and the private sector, and more importantly the nature of any such involvement¹⁰³.

101 The additional powers accruing to RMOC, the most recent elections, and ongoing discussions on reforming local government suggest an important opportunity to expose these dangers and mobilize effective responses. But here again, an inability to work collectively has weakened local capacities, producing a strategic game of local plotting and positioning aimed largely at awaiting clear signals from Queen's Park.

102 The election of a new Regional Chair in 1997 may shift the focus to new forums. Similarly, promises to significantly alter OCEDCO would also impact this local partnership.

103 In particular, interviews with industry representatives revealed a lack of clear purpose associated with the initiative. Most companies were inclined to treat the event as a technology-marketing showcase (sending key representatives who would pitch their latest corporate achievements - often exiting the event shortly after).

The evolution of new identities, forming from tensions between local and federal images, emerges most clearly during the 1997 municipal election campaign. The victorious candidate for Regional Chair would place at the centre of his economic platform the need for a major marketing effort to boost Ottawa-Carleton's status internationally. Chiarelli's remarks are aimed directly at OCEDCO. First, the idea put forward is to disband the agency entirely, though it shifts later in the campaign to a more moderate tone (i.e., the need to refocus the agency's role and priorities).

Local identities and their promotion peak as a campaign issue just days before the election, when The Board of Trade released a study by Dr. Nicolas Papadopoulos of Carleton University. Comparing the views of high-tech executives across North America on the various attributes of Ottawa-Carleton, CTT, Boston and Silicon Valley, he concludes that Ottawa-Carleton's image as a leading-edge centre of technology and innovation is "not very well known", both in key US markets and at home:

Overall we rated somewhat higher than CTT on most dimensions, but lower than Palo Alto and Boston as well as the much smaller Raleigh. More to the point, top of mind questions elicited stronger images and name recognition for American centres, both generally and among local respondents for our own region [Executive Summary, Papadopoulos 1997].

The report goes on to underline the need to complement external marketing effort with an equally prevalent internal message¹⁰⁴. The logic is that weak local recognition will translate into a

¹⁰⁴ It is perhaps insightful to note the selection of the four localities in this study, and the fact that Toronto was not included. Such an exclusion is consistent with the forthcoming discussion on a sense of isolation from the GTA, and Queen's Park in both Ottawa-Carleton and CTT.

similarly weak image abroad. While the study itself provides some interesting results¹⁰⁵, its impact is dramatically heightened by the timing of the survey's release. The date of the release is widely interpreted as an explicit attempt to weaken the re-election prospects of the incumbent, Peter Clark, by implying inadequate leadership on the part of RMOC¹⁰⁶.

The subsequent election of Mr. Chiarelli as Regional Chair will spotlight a number of key promises which include enhanced international marketing, revisions to the mandate and structure of OCEDCO, additional funding to OCRI and other human capital initiatives, and local government reform (supported by the new Mayor of Ottawa's election night pledge to serve in the last term of the city's present form). Mr. Chiarelli's agenda notably places a relatively greater emphasis on local initiative.

Yet the debate around imagery and international marketing re-enforces the interdependence of local and federal processes (and their corresponding images) and their mix in Ottawa-Carleton. Perhaps due to this mix, there is no consensus locally as to the most effective avenue for promotional and marketing activities - and to what degree local agencies should become engaged in such efforts at all. For instance, Mr. Chiarelli's pledges for more financial resources in this area generate mixed reviews locally, both in the media and from my own interviews. Many people point

105 Findings of the survey were the basis of Ms. Daniella DeCecco's Master's Thesis at Carleton's School of Business, for which a portion of the research was utilized in Dr. Papadopoulos's study [1997].

106 Peter Clark, as Regional Chair, had been a key supporter of OCEDCO (though by virtue of his approach to limited government action locally, this support translates into OCEDCO's relative autonomy from RMOC) and its structure. The frictions between OCEDCO and The Board of Trade are longstanding, as both groups have competed for status as a mechanism for business engagement in local affairs.

to a lack of clear evidence demonstrating marginal benefit, and in a fashion peculiar to Ottawa-Carleton, they imply that perhaps a corresponding effort by the federal government would prove sufficient¹⁰⁷. Yet this point is accompanied by a unanimous, and potentially contradictory, view that the local image of a political capital is insufficient to the needs of local industry and a growing technology infrastructure.

In short, despite a geographic basis for strong local-federal linkages which carry significant weight in shaping Ottawa-Carleton's governance, there is little evidence of meaningful coordination. The lack of success in effectively aligning these different levels is a challenge of significant proportions to a locality within the NCR. It is also an important variable in determining local strategy.

With respect to provincial impacts, governance arrangements are both more removed and more fluid. Municipal reform, disentanglement, and a significant ideological rethinking of the role of the state all intensify the forces of change pressing on localities. It is essential to underscore that the systems and structures of local government in Canada are the strict domains of the provinces. As demonstrated by the example of a newly amalgamated City of Toronto, the provincial government has full authority to impose change and reform at its discretion. For many key players (including para-public and educational institutions) the impacts of provincial decisions may be acutely important, particularly with respect to education and research.

107 Whereas editorials in local media sources emphasized doubts about the benefits of international marketing, this latter point emerged strictly from my interviews, aided by confidentiality. Many people implied (with varying degrees of explicitness) that such activities should be viewed as the federal domain, and leveraged through the close proximity of federal and local actors.

Nevertheless, with respect to provincial interventions aimed at either local economic development, or high-technology and innovation, the impacts and provincial presence are often indirect, particularly in Ottawa-Carleton. First, the provincial government's economic development strategies tend to be organized on primarily sectoral bases (rather than specific strategies aimed at either CTT or Ottawa-Carleton). At the same time, this sectoral focus is invariably intensified within the GTA - both for reasons of proximity and the proportion of Ontario voters and economic output located in this area¹⁰⁸.

Within the Knowledge Infrastructure, we have referred to the province's indirect role via post-secondary institutions, including two universities (Carleton University and The University of Ottawa). Other actors, such as Algonquin College and many private training companies are also furthering links within the local technology clusters, and a provincial Centre of Excellence (CITO) is now based in the area.

The relationship between local industry and universities is, quoting one local official with experience across all sectors, *getting better*¹⁰⁹. Historically, the local universities have not been looked upon as key engines of the technology sector (unlike Stanford and MIT in Saxenian's cases, and the example of The University of Waterloo in CTT), a point highlighted by several interview

108 Toward the end of the first mandate of the Harris government (and by extension, the end of this case study) the province had embarked on a series of local (or Regional) consultations aimed at searching for ways to better support strategies emerging in different parts of the province.

109 A comment by Graeme Kirby - Chief organizer of Technopolis 97, former President of OCEDCO, and former General Manager of the NCC (his range of activities, federal and local personify the local connectivity of Ottawa-Carleton in this regard). He is recognized here since the comment was made not in the context of a personal interview but rather in a class presentation on issues of local governance.

respondents from all sectors¹¹⁰. Their role has been overshadowed by the more directly engaged R&D sources such as the federal NRC and Bell Canada. Furthermore, the provincial presence has been in decline by certain measures of post-secondary spending, a trend consistent with the Harris government's overall strategy to reduce the size of the provincial government¹¹¹.

Today, this relationship is changing, from the local perspective, as post-secondary institutions are forced to be more locally responsive in order to compete successfully for alternative funding sources. Both universities are increasingly focused on high-technology, and its prominent place in the locality. Provincial funding cutbacks serve as powerful incentives to seek private sources and partnership (with according contention and debate). Moreover, the impressive growth of technology firms, and accordingly, the rise in importance of human capital and skills shortages have served as additional incentives to collaborate. In some cases, both institutions have begun to explore joint initiatives, usually prodded along by industry's resources and preference for doing so.

The evolution of this relationship is also reflective of a growing maturity on the part of business. The private sector is now more keenly aware and active in the areas of education, training and research - key performance factors for their own operations, both locally and abroad. The result is a greater willingness on the part of business to invest in partnering, and more aggressiveness in pursuing them. For example, over the past decade, industry's presence at the universities has grown

110 In fact, these interviews were conducted with government, business and civic sector representatives during both the April 1996 and April 1997 Innovation Forum meetings.

111 From 1977-1995, government spending for each university student "declined by 38%, placing Ontario 9th of 10 provinces [Council of Ontario Universities 1996, p. 4].

steadily: by 1995, the value of industry-sponsored research (as a percentage of total sponsored research) had risen to 30.7 per cent and 35.2 per cent at The University of Ottawa and Carleton University respectively [Doutriaux 1998]. While the figures vary somewhat from source to source, the trend of less public investment and more private resources is confirmed¹¹².

A reasonable expectation for the future is that both universities will continue to become more locally focused. They will likely integrate further within all three forms of synergistic relations in Ottawa-Carleton. Yet at the conclusion of this case study, their operating autonomy from the province has not translated into local activism. There is no mechanism to formally address these significant elements of the Knowledge Infrastructure within the context of strategic governance plans locally. Even the Innovation Forum has not been utilized as a vehicle for fostering such links (aside from periodic presentations by various academics from the local universities). The coordination challenge here is heightened, since this type of connectivity involves not only provincially funded research, but the direct federal research infrastructure as well.

¹¹² More specific 1997 figures come from The Report of the Expert Panel on the Commercialization of University Research (a federally sponsored study). For Carleton University, the breakdown of \$25.5 million in sponsored research is the following: 54% federal; 10% provincial; 20% industry; and 16% (other). For The University of Ottawa, the breakdown of \$59.5 million in sponsored research is the following: 40% federal; 7% provincial; 21% industry; and 32% (other). The differences from Doutriaux's findings are due to the "other" category which includes indirect and leveraged industry sources. The study also illustrates a continual decline over the 1990s for Canada as a whole in terms of government-funded higher education R&D as a percentage of GDP, and a widening gap between the larger U.S. levels of public spending and those of Canada (again in percentage terms of GDP) [ACST 1998]. While I know of no studies examining the proportion of industry-sponsored, university research coming from local firms, my own studies within specific companies in Ottawa-Carleton (Mitel in particular, but with supportive evidence from other OCMN members) indicates that the level is quite high. A likely consequence of these trends is a localization of R&D among sectors and sources, and a growing importance to their collective governance and deployment.

Thus, the advent of high-technology within Ottawa-Carleton has not altered the broadly held view locally that the focus of Queen's Park remains largely on Toronto, the broader GTA, and the Southwest. While spatial dimensions are one common explanation, Ottawa-Carleton's sense of isolation runs deeper than geography. For instance, interviews with Economic Development Officers (EDO) from across the province reveal a continually higher level of awareness and engagement in provincial affairs and decision-making than is the case in Ottawa-Carleton¹¹³.

This finding is supported by a scanning of the most prominent, print-media outlets with an interest in both local governance generally and the high-technology sector specifically (principally, *The Ottawa Citizen*, *The Ottawa Business Journal* and *Silicon Valley North*). These sources display an intense interest in local and federal affairs (at times, blurring the distinction between them). In contrast, provincial items (major stories exempted) often appear to receive more peripheral coverage. As a case in point, efforts to revive an Ontario Forum (formerly, the Premier's Council) reveal a completely Toronto-centric attitude on the part of organizers whose stated objective had been the establishment of a network of local initiative extending across the province¹¹⁴. While it is important not to dismiss the substantial portion of provincially allocated resources that flows, directly or indirectly, toward research and technology development, the evidence from Ottawa-

113 These interviews were conducted with participants in The Economic Developer's Association of Canada (EDAC) Certificate Program (recognized and delivered by The University of Waterloo).

114 One experience grew out of a chance invitation to a meeting of the organizing committee of this group, held at The University of Toronto. The group had no input from, or connections with individuals or groups in either Ottawa-Carleton or CTT. One member of the Forum's Committee is Toronto Star Business Writer David Crane. Following Technopolis 97 in Ottawa, Crane's reporting of the event was coupled with a series of articles on CTT - providing the GTA with a glimpse of the other centres of high-technology activity (in a manner suggesting an initial profile).

Carleton suggests that it is federal and local actors that are more engaged in the direct strategies of this particular locality.

Moreover, the suspicion and indifference expressed locally in Ottawa-Carleton toward the province is not new. The RMOC-initiated, Partners for The Future, a multi-sector initiative that produced far-reaching recommendations for governance reform communicates a similar message of provincial neglect - and it places a clear, and greater emphasis on the importance of improving coordination with the federal government [RMOC 1992]. Such sentiments are consistent with my own interviews in the area¹¹⁵.

An interesting example of provincial intervention is the overhaul of Ontario governance initiated by the current Conservative government in Ontario. One consequence, of direct relevance for high-technology activities, is a review and rationalization of public funds for education and research. This process has forced the amalgamation of the Telecommunications Research Institute of Ontario and Information Technology Research Centre of Ontario, two provincial Centres of Excellence (research institutes leveraging public funds with private sector sponsorship of industry-relevant projects).

There are intuitive reasons for supporting their integration, given the growing convergence of innovations in their respective areas of technical research. From a fiscal perspective as well, it fits

115 In asking Ottawa-Carleton respondents about both federal and provincial action, the negative view toward the latter's apparent neglect or misreading of local realities is consistent (and only tempered by those who characterize it with indifference).

the Conservative's agenda of efficiency and rationalization. While support for telecommunications had been a highly-relevant and favourably-regarded source of leveraged research in Ottawa-Carleton, its cousin, emphasizing information technologies maintained a much more limited set of partnerships, while emphasizing a stronger presence near Toronto-based institutions (in particular The University of Toronto and further west, The University of Western Ontario). The amalgamation has been perceived within Ottawa-Carleton's technology clusters as a form of shunning - in favour of other provincial locales,¹¹⁶ most notably, the GTA. Even with the decision to name an Ottawa-based President, and maintain its head office on Ottawa-Carleton (within OCRI's facility) such concerns have not been alleviated¹¹⁷.

Finally, the political climate, and resulting strategies in Ontario have not been conducive to strengthening ties to specific municipal areas, particularly Ottawa-Carleton. The Conservatives, under Mike Harris, began their first mandate in 1995 by dramatically reducing government intervention in nearly all policy fields including support for high-technology industries. While this trend was partially reversed in the second half of their first mandate, the devolution of powers from the province to municipalities, beginning with the so-called *mega-week*, does little to alter a generally tense and suspicious mood. In terms of Community Culture, the short term impacts may

116 This point is derived from interviews with industry managers in many of the area's largest telecommunications companies. Local industry representatives, including at least one Board member of the new entity (CITO) have since reported frustration with the new Centre's policies and processes and the formalized relations that have replaced more fluid, and locally facilitated linkages of the past.

117 Interviews with university researchers engaged in sponsored research partnerships reveal a growing concern about CITO's recent changes, and a greater inertia toward Toronto and Waterloo projects than within Ottawa-Carleton (presently, it is too early to detect any quantifiable shift in funding amounts).

be complex and difficult to ascertain¹¹⁸. Nonetheless, it is reasonable to expect a greater degree of importance accorded to local governance forums, such as RMOC, in the future.

6.2 Canada's Technology Triangle

In contrast to Ottawa-Carleton, the embedding of CTT within a federalist environment reveals a much different set of relations and outcomes. In brief, the evolution of CTT has been more exclusively local. The province has been both a sporadic and indirect partner, and the impacts of the federal level tend to be more modest, and less consequential for CTT in its present form¹¹⁹.

The strong degree of localism is not surprising, as it has been a large focus of CTT as a concept. In fact, CTT has made much of this autonomy in a geographic sense. It often promotes itself as just removed from the GTA - thereby close enough to sell goods and services to this huge market, but far enough to guard the quality of life that is deemed crucial to CTT's more community-oriented atmosphere. Even with respect to local government reform, and the future roles of both tiers, the cities of CTT find themselves with significant clout. The relative stability of an alliance of four (more-less) equal partners differs dramatically with the fragmented nature of Ottawa-Carleton's local government scene.

118 Industry's concern lies in Knowledge Infrastructure. In terms of the local public and social sectors, provincial cuts lead to two simultaneous responses. On the one hand, there is collective criticism aimed at the province, but on the other hand conflicting views emerge as to how best to respond. The Municipal Elections in November, 1997 denote an important crossroads in these currents.

119 The exception, in terms of a federal presence, is indirect research funding from federal granting agencies. CTT's three universities are competitive in this regard, and comparable in many ways with those in Ottawa-Carleton (the specific levels are provided later in this section). Nonetheless, as discussed at the outset of this chapter, this type of indirect presence is of less relevance for local governance patterns, and local government's role than are examples of more direct policy actions or related initiatives.

From the provincial vantage point, however, CTT's geography may also present a challenge to balancing autonomy and proximity effectively. One interpretation from many within the local technology cluster is that its growth is tied to more broadly encompassing sets of boundaries - which may be denoted as *GTA-plus*. Despite UW's reputation as the area's flagship university, for instance, the provincial government's Centres of Excellence are headquartered within the GTA and Ottawa-Carleton (the latter with the case of CITO). CITO tends to nurture a few key connections with individual researchers, some of whom may be involved in cross-provincial networks of one sort or another. In short, the province's role is important. However, it is based less on its direct interventions and more on its key jurisdictional functions within the Knowledge Infrastructure.

Thus, the proximity to both the provincial government and the broader GTA market is a point of differentiation between Ottawa-Carleton and CTT. Whereas Ottawa-Carleton tends to view itself as the area most often neglected by the province (and overshadowed by the federal apparatus), the view in CTT is more strategic. The attempt is to achieve a balance between the important GTA market in close proximity, and the quality of life advantages derived from the one-hour's drive away from the country's urban metropolis.

Otherwise, direct ties between CTT initiatives and the province are minimal. This point is explained largely by the slowness of CTT in expanding its scope of activities (as seen in the preceding chapter). But it is also underscored by interviewees in local government and civic organizations, where the shared tendency is to view the province as less consequential than local action. This viewpoint differs somewhat in the private sector, where both the provincial research

infrastructure and the market potential of GTA magnify Toronto as a focal point¹²⁰. Jim Mairs, Head of Economic Development for The City of Guelph and a past Chair of CTT speaks of the importance of provincial recognition. According to Mairs, CTT worked hard to ensure simply that Ontario's international promotion efforts, for example, profiled three (rather than two) high-technology localities within provincial boundaries (the others being Mississauga-GTA and Ottawa-Carleton). Don Eastwood, former EDO of Cambridge (and a founding CTT member) echoes this sentiment, pointing to the success in attracting Toyota as an example of CTT-provincial cooperation (and CTT's collaborative capacity internally in rallying other members to support Cambridge's bid).

At the same time, the strong presence of CTT's three local universities also form important, albeit indirect, ties to the province. Guelph's emphasis on research and commercialization prospects in agriculture and environmental technologies is closely tied to provincial sources: the footnote below shows that its university has the highest level of provincial support for sponsored research, of the universities in both cases (and one of the highest provincial levels in the country). Yet, not only is Guelph clearly separate in this regard, but there is no evidence of this provincial funding support being linked, directly or indirectly, to any CTT initiative (beyond The City of Guelph's basic admission in the alliance).

¹²⁰ The net result is a tension within local industry in particular. On the one hand, they have been less engaged in the CTT initiative (supported indirectly by a GTA-provincial perspective). On the other hand, the formation of CTT Communitel, and the attempt to accelerate the voice of technology companies in particular, demonstrates a deepening local emphasis.

The University of Waterloo has a longstanding tradition of a strong Toronto-presence, maintained and nurtured both by UW alumni and co-op students there¹²¹. Wilfrid Laurier University is a much smaller recipient of external sources of sponsored research (a point which may well add to its sense of being a local institution). The overall breakdown of sponsored research for universities in CTT reveals a relatively greater provincial presence than is the case in Ottawa-Carleton, and a similar reliance on indirect sources of federal funds¹²².

One component of the provincial funding sources is rooted in Ontario's Centres of Excellence, headquartered mainly within the GTA and Ottawa-Carleton (in the latter case, the example being CITO). CITO's relevance to telecommunications and computer software companies, and importance for researchers in related fields, are demonstrated, and managed through a satellite office on UW's Campus. The Centre has neither an institutional nor geographic focus there however. Instead, it nurtures a few key relations with individual researchers, some of whom may be involved in intra-provincial networks of one sort or another. Thus, the Centre of Excellence only

121 Calling the ever-present *Wat-Line* in Toronto for the location of next Wednesday's Wat-pub yields access to a weekly meeting of co-ops and alumni permeating the city, Queen's Park being one the largest employers of both.

122 As in Ottawa-Carleton, 1997 figures come from The Report of the Expert Panel on the Commercialization of University Research (see footnote, p.122). For The University of Waterloo, the breakdown of \$44.4 million in sponsored research is the following: 46% federal; 18% provincial; 19% industry; and 17% (other). For The University of Guelph, the breakdown of \$64.0 million in sponsored research is the following: 32% federal; 50% provincial; 9.0% industry; and 9.0% (other). For Wilfrid Laurier University, the breakdown of \$1.8 million is the following: 57% federal; 18% provincial; 11% industry; and 15% other. Again, this study also illustrates a continual decline over the 1990s for Canada as a whole in terms of government-funded higher education R&D as a percentage of GDP [ibid.] and a widening gap between the larger U.S. levels of public spending and those of Canada (again in percentage terms of GDP) [ACST 1998]. While I know of no studies examining the proportion of industry-sponsored, university research coming from local firms in CTT, the strong connectivity between local technology companies and UW in particular has already been discussed in the previous chapter.

serves to reinforce the patterns of governance locally - as the province is not directly engaged with CTT initiatives. Instead, it acts as a more indirect partner with a permeating influence on the area's Knowledge Infrastructure.

In fact, the ill-fated example of CTN (reviewed previously) is perhaps the only example of a direct intervention attempted to link the province and CTT. As with most cases across Ontario, there is a high degree of concern over provincial decisions in key areas such as health care, education, social services, public housing and others. Yet much like Ottawa-Carleton, CTT officials also view provincial policies and programs as highly GTA-centric. In sum, beyond seeking provincial recognition of CTT as a successful location - worthy of mention internationally, there have been no explicit efforts on the part of CTT governments to seek special arrangements or relations via the province¹²³.

Despite no CTT affiliation, one of the only two federally funded initiatives in the area is the Canadian Industrial Innovation Centre (CIIC). This Centre supports start-up firms, entrepreneurs and potential creators with a range of services available at what are essentially socialized costs (less than market fees facilitated by federal funding and non-profit stature). In 1996, the federal government funded a CTT-sponsored, initiative, Canada's Technology Triangle Accelerator

123 This finding was one of the most surprising to me - from my interviews. I had expected to find more CTT-provincial synergy, or evidence of a strategic usage of the province in some manner. Instead, an autonomous and GTA-removed image of CTT is consistent with the view of respondents in the area that the province has been marginal to CTT's evolution, and indirect to development prospects more generally (this latter point is tempered in Guelph by relatively more provincial sensitivity - and relatively less of an attachment to CTT, outside of economic development officials).

Network (CTTAN) designed to accelerate the financing and growth of small technology firms (via the Liberal's Canada Community Investment Program).

Beginning with the example of the Canadian Industrial Innovation Centre, it has nurtured itself into a node of The University of Waterloo's network of innovation and new venture incubation. CIIC supports new start-up companies and aspiring entrepreneurs with a range of services available at what are essentially publicly subsidized costs (less than open-market charges made possible by the Centre's government funding and not-for-profit stature). Yet the gradual, post-1994 phasing out of Industry Canada funding - comprising over 40 per cent of the Innovation Centre's total revenue - casts doubt on its viability. What is insightful about CIIC's relations with both CTT and the federal government is that the decision on the part of Industry Canada to cut funding may well be linked to CIIC's isolation, and its inability or unwillingness to connect to the local CTT system¹²⁴. The Centre carries no direct affiliation with either CTT or Industry Canada, and its loss of funding must be viewed in a tandem with the federal government's decision to pursue alternative vehicles locally. Such alternatives include at least one visible example explicitly linking Industry Canada to CTT.

In brief, at a time when the federal government is discovering and reaching out to CTT through other means, its direct support to CIIC is declining. As this process unfolds, CIIC appears

¹²⁴ The point is strictly a personal interpretation. Within CIIC, respondents point to the federal Program Review as the impetus for the funding cut. Elsewhere across CTT, there is a degree of indifference expressed by local actors which, in turn, lends credence to this viewpoint.

to be without a local voice to defend its interests¹²⁵. What is worrisome, from the viewpoint of its current and potential clients, is the response of CIIC in turning to what will be an extremely difficult (and seemingly counterintuitive) effort to "sell" themselves as a nationally based Canadian Centre with a broader set of sources of government funds¹²⁶. The danger with this path is that a withdrawal from the local-CTT environment, within which it could build on its partial-recognition as an important actor, will leave it in both a precarious and isolated position, pursuing what may be the futile goal of achieving a national scope of potential users¹²⁷.

The second, and equally revealing example is CTTAN, Canada's Technology Triangle Accelerator Network. The project represents the first initiative of its kind directly linking CTT and the federal government. Under Industry Canada's Canada Community Investment Program (CCIP - a Liberal Red Book promise in 1993) the National Selection Board for CCIP identified 11 localities in 1995 as eligible for funding to manage a Demonstration Project under the program. CTT is part of what the federal government refers to as an "exclusive" group.¹²⁸ The first Head of CTTAN, Don

125 As an example, despite being located next door to CTT Communitech, there are no signs of mutual interest, or synergies between the two local organizations.

126 The Centre's recent decision, as examined by the President, to open an affiliate office in Montreal seems driven entirely by this logic; there is little evidence of organizational competencies to justify such an expansion.

127 Precisely why there has been no attempt to link it with the fledging CTT governance system is unclear, though interviews suggests certain degree of scepticism on the part of CTT officials to engage with federal organizations - particularly one with a declining source of funds and sceptically viewed plans to situate itself nationally.

128 Public correspondence, October 31st, 1996, from Mr. George Woods, Senior Policy Advisor at Industry Canada, to Mr. Doug McKenzie, Director of Economic Development for Waterloo (city) and CTT Steering Committee member (and point-person for CTTAN initiative).

Eastwood, is the former EDO of Cambridge (one of four members of the initial CTT steering committee).

Local reactions to this program imply that federal action or support may be welcome, although it should not be relied upon as a rational tool for building coherent strategy. What is now CTTAN, including the same strategic and business plan, had previously been proposed to Industry Canada, in vain, several years earlier by a joint public-private-civic group aiming to secure financial support¹²⁹. The philosophy behind pursuing funding for CTTAN more recently is roughly as follows: officials within CTT, seeing funds available for an idea already developed, simply recycled what they view as a constructive idea, and something which should be pursued through local means - irrespective of federal support.

Further probing reveals a large dose of skepticism regarding the extent to which this [CTTAN-like community initiatives] is something that the federal government should be doing. Just the same, CTT officials view this opportunity as one to reap benefits from past investments in an efficient (from a local perspective) and self-serving manner¹³⁰.

129 While my own interviews here suggest that these prior experiences would themselves provide a doctoral student with an interesting thesis topic on the workings of the federal government, suffice to say that the lack of progress on this front augmented the local scepticism as to whether the federal government can be viewed as a worthwhile candidate for potential partnering initiatives.

130 This question was often-posed during interviews with local government officials. EDOs, as a whole felt that federal action in this area was less crucial and more convenient - in terms of helping to launch CTTAN.

The subsequent decision by Don Eastwood to leave his City of Cambridge post for a (non-permanent) two-year position at Head of CTTAN reflects a local determination to maintain control over the initiative (a move strongly supported by CTT's network of EDOs). It also reflects a personal calculation that the federal contribution, in serving as seed funding, can facilitate CTTAN's evolution into a mechanism more firmly rooted within CTT (and extend beyond the two-year pilot duration). Perhaps, over time its evolution will produce the seeds of a new form of transversal relationship between the local and federal levels. But there are few indications of any such evolution presently. As with all such demonstration projects tied to this specific program, the federal government's role is strictly limited to funding the pilot phase of CTTAN. The federal government has not participated directly in any fashion since its inception, and has yet to signal any plan for ongoing support. Thus, CTTAN's viability will be determined locally, and the evidence presented here strongly suggests that further federal action will not be a key determinant¹³¹.

The impetus for CTT ten years ago was the recognized need to promote the locality as a significant player on a global scale, and one separate from the GTA. In many ways, this rationale remains the essential role for CTT today. This interpretation is both positive and negative. Negatively, it has partly stymied CTT officials in their efforts to forge a deeper set of CTT internal governance mechanisms to complement external marketing efforts. On the positive side, it underscores the importance of a common identity and global recognition accorded by local

131 One must add that the federal government may agree with this view, as the Industry Canada program to support these local ventures was presented as a new type of federal instrument that would require local action and accountability to foster success. Nonetheless, there have been rumours of various forms of extensions of this program funding, or follow-up efforts based on federal support. The subsequent decisions by the federal government will be telling about its own philosophy in this regard.

governments, and a consistent strengthening of the local consensus that each municipality is too small to act in isolation.

This latter point is exemplified by events leading up to local Municipal elections in November, 1997. Reeling from a controversial decision to join a federal Team Canada Trade Mission¹³², the then-Mayor of Kitchener attempted to pacify criticism by appointing a Team Kitchener strategy team in order to develop a set of recommendations from a multi-sector vantage point¹³³.

Two points are germane. First, aside from questions about cost, the initial Trade Mission was controversial due to the fact that the Mayor travelled on behalf of Kitchener - and not CTT. Second, the Mayor's personally selected Team Kitchener reported back to him with a strongly worded, pro-CTT endorsement. Such an endorsement is well beyond a strict reading of the initial terms of reference provided by the Mayor in launching the initiative. The report was interpreted by the local media, particularly the KW Record, as a major embarrassment for the Mayor - although its CTT support was well-received in the media and elsewhere¹³⁴.

132 The Mayor's decision to participate proved controversial both due to the financial cost and debates as to whether Kitchener or CTT should be marketed (linked to cost as well, in terms of who pays - and to promote which jurisdictions).

133 This move proved controversial as well - as the initial set of individuals asked to serve on the Committee failed to include anyone who actually resided within Kitchener city limits. The list was subsequently revised, though the revisions would not prevent the Mayor's subsequent electoral defeat.

134 Naturally, local EDOs, who are CTT proponents were pleased (although Kitchener officials would not acknowledge it). Nonetheless, the group's endorsement is an accurate portrayal of the viewpoints within all sectors of CTT (a near unanimous sentiment from my interviews).

6.3 Capital Collusion and Community Collaboration

To summarize, there are clear differences in the make-up of each locality - in terms of how each case is embedded within and shaped by higher-order governance levels. Although differences between provincial impacts remain subtle, a more dramatic contrast is apparent when federal linkages are accounted for.

Whereas Ottawa-Carleton does reveal itself to be a particular hybrid of top-down and bottom-up processes, CTT's past and current prospects hinge more directly on local actors - and their collective action. The result of this contrast is that in Ottawa-Carleton, local governance patterns cannot be either discussed or designed without taking into account the direct federal presence. CTT's governance system, however, may involve a significant degree of both federal and provincial activity which permeates and supports high-technology activity. Its local strategies, however, are more exclusive and dependent on the coordinated actions of local actors.

These different perspectives are partly illuminated by the extent to which Ottawa-Carleton is monitored as a reference point from within CTT. First, it is often a comparison in terms of more established clusters and flagship firms. At the same time, there is a certain suspicion as well, one that is perhaps shared by many locales casually observing the National Capital Region. This suspicion is that Ottawa-Carleton's self-stated title of the National Technology Capital captures an inherent bias in the federal infrastructure toward Ottawa-Carleton.

The example of foreign investment is a useful illustration. With international efforts to bolster high-technology industry in Canada with a new, semiconductor (chip) fabrication plant, does

the federal government direct its efforts equitably and effectively, in working on behalf of all potential locations across Canada¹³⁵? Municipal EDO's in CTT acknowledge their lack of critical mass of larger firms weakens somewhat their case for selection in this specific area. However, they also express a privately held, although widely dispersed view that Ottawa's suitability may well be unfairly enhanced due its federal proximity.

The implication is a form of "capital collusion" between business and government in the National Capital Region¹³⁶. As indicated repeatedly, for Ottawa-Carleton there are both benefits and costs to any such arrangement. The Innovation Forum, attempting to link local processes into the federal research infrastructure could only take place in Ottawa-Carleton. Yet its limited success underlines limited collaborative capacities, a situation undoubtedly created, in part, by the complexity of local governance processes inclusive of national institutions. In the case of CTT (and elsewhere), such problems may be viewed with envy, as well as suspicion. The locality's diversity and strong economic prospects provide little cause for pessimism. However, for those who find patience an inadequate solution (in terms of the growth of high-tech firms into relatively large companies) the result presents a quandary as well.

135 Gerry Turcotte's response (former (local) OCRI President and now Head of CRC (federal)), both publicly and privately, is a strong preference for only one Canadian locale with a demonstrated suitability for such a major investment. The point is not technical merit, but rather the distinctiveness of Ottawa-Carleton's policy community where lines are often blurry between local and federal actors. This example reflects the view of many CTT officials that local strategy is increasingly central (a response to globalization) Whereas federal initiative remains remote and marginal.

136 The phrase is not my own: it comes from a public sector respondent in CTT.

As CTT evolves as a recognized locality for innovation, there may be complementing forces which encourage greater links to other areas, perhaps with Ottawa-Carleton and more certainly with the GTA. Companies such as Bell Emergis (based in Mississauga), whose recent plans for a new research initiative boost Ontario's telecommunications sector, may recognize CTT, but only indirectly, as part of a broader GTA-CTT system¹³⁷. The quandary, however, does not call into question CTT's existence. In fact, it may re-enforce the message of CTT which is a distinct and prosperous area in proximity to, but still quite separate from the GTA, but the challenge will lie in managing these potentially conflicting pressures.

Using the SL template, the subsequent pages attempt to summarize the main findings of this chapter in a visual form. First, we characterize the relative presence of the provincial and federal levels in each locality. Second, we characterize the nature of the ties between these governments and the specific governance component locally. We consider the extent to which provincial or federal action has been tied to local initiative either directly or in concertation with local government. Building on these perspectives, the third and final label provides an overall depiction of the degree of connectivity between both provincial and federal action and local governance in each of the SL components.

137 The Bell Emergis initiative recognizes Waterloo's excellence (and its CTT location) but links it to industry and research institutions within the broader GTA.

Strategic Localism - Highlights of Main Findings (II)

From this chapter, the key findings are applied to the three synergistic components:

Ottawa-Carleton

National Jurisdiction (chapter 6)	Provincial Jurisdiction (chapter 6)	Key Zone for <i>Local Advantage</i>	
direct presence informal ties low connectivity	indirect presence weak ties low connectivity		Market Linkages
direct presence formal ties high connectivity	indirect presence limited ties low connectivity		Knowledge Infrastructure
direct presence fragmented ties high connectivity	(N/A) due to absence of proximity		Community Culture

Key Findings

Market Linkages: Many firms in Ottawa-Carleton associate government with the federal level almost exclusively, diminishing the amount of attention accorded to collaboration with local government. There is no evidence of the federal government coordinating its own actions locally via local government or other sectoral bodies (such as OCRI and OCMN). In the case of the province, recent cutbacks have only re-enforced the lack of connection to the provincial government, creating a less collaborative relationship between industry in the area and the province.

Knowledge Infrastructure: Ottawa-Carleton is endowed with the largest per-capita research infrastructure in the country - largely attributable to federal institutions. This potential form of innovative advantage is a positive and direct factor in the national capital. Though it has been recognized via The Innovation Forum it remains under-utilized and poorly coordinated locally. Provincially, as with the previous point there is little evidence of direct local-provincial cooperation, and recent cutbacks to Ontario's education and research sectors weaken connectivity. Despite growing business-education linkages, there is no evidence of inter-governmental coordination being undertaken to address this component.

Community Culture: Ottawa-Carleton's political fragmentation locally is exacerbated by the federal presence which makes an exclusively local focus elusive. Moreover, the challenge of nurturing entrepreneurship co-exists with traditions of a federally dominant public sector, a transition further challenging holistic capacities and shared identities in terms of economic development. As the provincial role in economic development has been indirect in terms of our discussion of Community Culture as primarily local collaborative capacities, we define it as not applicable (N/A), explained in large part due to an absence of geographic proximity.

CTT (II)

National Jurisdiction (chapter 6)	Provincial Jurisdiction (chapter 6)	Key Zone for <i>Local Advantage</i>	
indirect presence limited ties low connectivity	indirect presence weak ties low connectivity		Market Linkages
indirect presence weak ties low connectivity	indirect presence limited ties low connectivity		Knowledge Infrastructure
(N/A) due to absence of proximity	(N/A) due to absence of proximity		Community Culture

Key Findings

Market Linkages: CTT's emerging clusters are locally rooted and a strength of this dynamism is linked to self-reliance and a general indifference to both provincial and federal policy communities (however mindful of the same policies and regulations common to the country and the province). One potential drawback here is the lack of promotion accorded to CTT by senior governments more closely aligned with Ottawa and Toronto. Accordingly, there is no evidence of inter-governmental coordination to manage the federal presence within CTT.

Knowledge Infrastructure: In comparison to Ottawa, the federal research presence in CTT is limited to indirectly sponsored, post-secondary research. Provincially, the closer proximity to GTA offers CTT the potential to link its Knowledge Infrastructure to an expanded pool of students, firms and resources. This advantage may also be tempered by the fact that such a dynamic may eventually erode CTT's cohesiveness and distinct quality of life, often linked to being removed from GTA. There is no evidence, however, of either inter-governmental efforts aimed to further develop or strengthen CTT governance in this component, or direct policy action from the province aimed at these same objectives.

Community Culture: CTT's relative autonomy from both provincial and federal policy communities re-enforces the strong sense that local actions matter. Moreover, federal and provincial actions are focused on either Market Linkages (i.e., CTTAN) or Knowledge Infrastructure (i.e., publicly funded R&D), with no explicit attempt to intervene in Community Culture. Since we have defined and discussed Community Culture as a local process, for this component the federal and provincial governments are thus denoted as not applicable (N/A). This viewpoint is a dramatic contrast to Ottawa-Carleton where federal actors are also directly part of the locality.

Chapter 7 - A Comparative Assessment of Local Government

With the Strategic Localism template and the preceding analysis, this final interpretation of our case study findings proceeds as follows. Section one begins with a specific focus on local government structure in each case study. The stance of a lead agency, OCEDCO, is contrasted with CTT's alliance of four municipalities in order to focus our examination of local government action. Section two then looks at each of three forms of synergies (ML/KI/CC) and the extent of local government's impact in each component: these findings are summarized. Section three then considers whether there is a basis for preparing a different sort of role for local government than what we have witnessed to date.

7.1 Local Government Structures

The structures and models of local government in Canada are both fluid and diverse. The contrasting situations of Ottawa-Carleton and CTT demonstrate this point. They also underline the extent to which population size may not be the best indicator of the most suitable model for deployment. For instance, Ottawa-Carleton's population base of roughly 750,000 corresponds to growing interest (though far from unanimous support) in a single-city model (with frequent comparisons to Calgary). CTT's somewhat smaller size, of about 500,000 people, finds much stronger support for a two-tiered model of municipal government¹³⁸.

138 In fact, a single-city model for Ottawa-Carleton could include a reduced population, depending on whether rural municipalities joined such an arrangement.

This contrast also permeates the management of economic development by the public sector in each locality. Whereas a small number of government funded agencies are highly visible in Ottawa-Carleton, with one (OCEDCO) attempting to play a particularly dominant role, there is a different pattern in CTT. In the latter case, CTT itself is rooted primarily in the actions of lower-tiered municipalities. One important consequence of the latter situation, then, is a greater dispersal of roles across a broader range of actors.

A key issue derived from the Ottawa-Carleton case is thus OCEDCO's self-proclaimed role as *the* flagship agency in economic development. In contrast to the current interest in network-based, associational, and distributed governance systems, OCEDCO's structure and mentality are that of *the lead agency* promoting the entire local system (and cutting across all aspects of the Strategic Localism template). A significant factor is the institutional structure of the agency. As a membership organization, its accountability is a complex mixture of organizational leadership (the President), political direction (RMOC), and multi-sectoral interests (the Board of Directors and its own Chair). Despite the noble aim of an empowered and semi-autonomous agency for economic development, the result has instead been a lack of both focus and flexibility. With respect to focus, the diversity of activities has been stretched and entrenched by these multiple accountabilities. In terms of flexibility, the agency has been unable to effectively partner and engage other actors in experimentation and joint-initiative (such as OCMN and OCRI), nor has it progressed in overcoming the tense co-existence with local municipalities.

Both politically and operationally, this tenuous set of relations with local municipalities is important. If RMOC consolidates into the key public sector forum locally, pressure will build

within it to both reassert greater control over OCEDCO and reach out to initiatives and interests across Ottawa-Carleton. Under any scenario marked by amalgamation, OCEDCO would not be the ideal venue for a fully-encompassing economic development function, and its fate remains tied to these unresolved issues¹³⁹. The main problem is more complex however. Not only would OCEDCO encounter difficulties in absorbing the current efforts of the lower-tier of municipalities, but its current range of activities already implies a single agency attempting to navigate the entire Strategic Localism template. Such an arrangement is an unreasonable proposition. A more effective alternative (not yet defined) requires a more flexible set of mechanisms and actors to better link different constituencies, albeit in a common direction¹⁴⁰.

In the case of CTT, the title now applies to a widening cast of initiatives and entities. With respect to CTT's network of local municipalities (and their EDOs), responsibilities and action remain more devolved than is the case in Ottawa-Carleton. Furthermore, in comparison to RMOC, the upper-tier Region of Waterloo may have an extra degree of freedom in its own opportunity to utilize both Regional Council and the growing stature of The Chair's Office as a renewed source of leadership in pushing CTT forward. Such is the case because neither the political culture, nor the traditional structures of the four CTT municipalities support a top-down imposition by The Region

139 An important subplot to local discussions on amalgamation was the RMOC Chair's commitment to process (Citizen's Panel) over any one particular model - limiting his capacity, indirectly, to act on his promise to refocus OCEDCO. The reason here is that any RMOC undertaking to prepare OCEDCO (or a new entity) for a single-city mandate (i.e., post-amalgamation) could further antagonize local municipalities who are watchful, and potentially hostile monitors of RMOC's reform efforts. Since the Panel's demise, The Chair has joined the Ottawa Mayor in endorsing a single-city model (inclusive of seven urban cities while providing an opt-out for the four rural area municipalities - a plan nonetheless resisted by many of the other more urban-based Mayors).

140 This predominance of coordination over centralization is an important principle which permeates our recommendations for each locality in the subsequent chapter.

of its authority in economic development. However, its growing presence may still provide voice and the marginal resources necessary to strengthen CTT's capacities for new partnerships and dialogues with all actors under a common CTT umbrella. In doing so, its present starting point may be viewed at the opposite end of the spectrum from the RMOC-OCEDCO vantage point - with this latter agency viewing itself as all-encompassing and multi-faceted.

The pending, and crucial test for CTT's evolving governance lies in its ability to harness these various niches and provide effective cooperation and strategic support. Can CTT realize a local network, inclusive of both the four member-municipalities and the upper-tier Region, capable of working collaboratively with Communitech, CTTAN, and other sectoral groups? For the Region of Waterloo specifically, the example of OCEDCO may well provide the route to avoid. What may be required is more coordination rather than centralization. A move toward the latter would invariably result in heightened tensions between both levels of local government - a danger compounded by the current support for two-tiered government in CTT.

To summarize, local governments in both cases share a similar challenge. They are attempting to foster governance mechanisms that can maximize the collective output from a diverse mix of actors, resources, and competencies across shared-jurisdictions (and accordingly, within the SL template). It's important to note that local government's responsibility is not necessarily synonymous with the need to undertake all elements of effective strategy.

Yet a closer look also reveals a distinct dimension to each locality. OCEDCO's centralizing tendencies (within a fragmented governmental apparatus) contrast with CTT's somewhat virtual,

and more decentralized positioning among local municipalities. In the former case, RMOC is increasingly solidified and assertive as the key municipal body. In CTT, the Region carries only an emerging presence. Critical tasks in both cases, such as reforming or replacing OCEDCO, or designing CTT's next steps, will nonetheless depend greatly on the leadership and choices of the two (upper-tier) Regional governments - particularly their movements along the coordination-centralization continuum.

Although the following chapter speculates and advises on the respective paths for each municipal government structure in each locality, the task at hand remains the extent to which local government has already influenced the synergistic make-up of each governance system through its strategic actions.

7.2 Summary of Findings

The preceding discussion is the basis of a set of preliminary findings which may now be discussed.

The secondary propositions (from chapter three) are as follows:

P(1) Market Linkages - Local government may actively support the competitive advantage of key technology clusters by helping to nurture the conditions for both strong competition and inter-firm linkages.

P(2) Knowledge Infrastructure - Local government action may foster an innovative advantage by contributing to the collective learning capacities of all sectors, particularly education and research.

P(3) Community Culture - Local government may play a significant role in nurturing a collaborative advantage through efforts to strengthen civic engagement and cooperative ties across all sectors.

In Market Linkages, P(1), the evidence from both cases does not support the notion that local government's role has been influential in this synergistic component. In one respect, this finding is consistent with Porter's conceptual model of a cluster (reviewed in Part I) in which government plays only an indirect role (normally without specifying which level). Yet at the same time, in our two case studies local government has failed to follow the sort of advice prescribed by Porter, D'Cruz and Rugman, and others - all pointing to inter-firm linkages and business networks as important variables of local competitiveness.

The challenges of nurturing high-technology clusters are multi-faceted, and they depend on a number of factors outside the realm of local government's influence. For instance, in Ottawa-Carleton, local actors are in a more enviable position of working with clusters of established firms. In the case of CTT, the more daunting challenge of an emerging industrial structure cannot be resolved by any actor unilaterally. One consequence is therefore that governance extending into Market Linkages must be inclusive of market-based forums, such as inter-firm networks.

Despite the fact that the cases do not reveal local governments attempting to create new clusters or rapidly expand existing concentrations, recognition of this point varies across the two cases. In Ottawa-Carleton, the under utilization of OCMN is a missed opportunity for local government. In CTT, the challenge is compounded by the lack of inter-firm networks in a formal

sense - although Communitech may provide a vehicle to address this void. In short, local government's role in this synergistic component is indirect, and it depends on partnering capacities with other actors more closely associated with its market-driven context. While we might expect local government to engage in the sort of supportive effort broadly prescribed to the public sector by the conceptual studies of cluster dynamics and competitiveness performance, there are, at best, only timid signs of recognition presently.

With respect to Knowledge Infrastructure, P(2), the findings are similar yet distinct. The similarities across both cases lie in the fact that despite a growing awareness of the need to act, there is little evidence of a mobilization of resources or energies in this direction. The mixed result means that the second proposition should be neither rejected nor accepted outright. Instead, we can say that action to date is too primitive to evaluate - despite some signs to suggest that local governments are moving toward a more direct and assertive role in this direction.

An important qualification, however, stems from the specific findings of the cases, and actions to date. In both Ottawa-Carleton and CTT, attempts to strengthen synergies and ties within the Knowledge Infrastructure have only been periodically promised and never delivered. The missed opportunity is probably greater in CTT - with its failure to institutionalize linkages with UW and other partners. In contrast, the presence of OCRI, OCLF and the Innovation Forum imply some movement on this front (albeit with extremely indirect involvement by local government).

Nevertheless, attention toward this particular policy area may well be expanding. This point is illustrated by local government's more recent, and accelerating claims in this direction which are

both well-intended and justified. Local government should therefore do more to target the synergistic benefits from an effective governance alignment in the Knowledge Infrastructure. Here again, the role is not unilateral, as it is instead dependent on strategic capacities for partnering, convening, and leveraging a multitude of actors and their niche competencies.

Yet the growing importance of those elements which comprise KI, in particular both intellectual and human capital, is a message that would benefit from being adopted as a key public direction by local political leaders. In particular, the Regional Chair's Office, and its widely encompassing democratic mandate, could serve as an important catalyst in both communicating this message and convening local actors within public forums in order to act collectively.

In terms of Community Culture, P(3), the indications are again mixed. On the one hand, the premise that local government matter seems weak, and more so in Ottawa-Carleton. The challenges of Community Culture have largely eluded local government in this latter case, with the notable exception of OCRI which, itself is an agency with only weak ties to Regional government. This characterization may also be partially misconstrued, however, as the Community Culture of Ottawa-Carleton also fragments local government, thus weakening its capacity to act as well. Both points are thus interdependent - and they point to a similar result which is a lack of unity in addressing both the structural challenges of local governance and the strategic agenda of economic development for Ottawa-Carleton as a whole.

In contrast to Ottawa-Carleton, CTT's existence, and its gradual evolution must be associated with public sector action - and local government's leveraging of this synergistic

component. Yet we have also been critical of this gradualism, and CTT's failure to better utilize this relative strength. In this sense, the justified level of importance accorded to CTT Communitech is partially tempered by its late arrival on the governance scene.

This findings is nonetheless tempered by the evidence in both cases which strongly implies that despite the mixed progress to date, Community Culture will be an increasingly central focus of local government attention. The important relations between local - and (upper-tier) Regional governments on the one hand, and civic entrepreneurs (such as Communitech and OCRI) on the other, constitute a fundamental plank in the construction of a complete and resilient governance system. The emerging importance of both OCRI and Communitech supports this notion.

In brief, the degree of relevance and importance accorded to local government may be characterized as a continuum. On one end, its most indirect involvement is within Market Linkages; while at the other end, the strongest degree of connectivity ties local government, civic entrepreneurs and other actors within Community Culture. The middle case, Knowledge Infrastructure, implies a careful degree of nuance between local government's limited authority in a formal (i.e., jurisdictionally) sense, and its more fluid, and increasingly important opportunity to derive a local will to pursue concerted action.

7.3 The Case for Bettering Local Action

What are the implications and consequences of these findings for our two case studies? Our findings indicate that in Ottawa-Carleton and CTT, local governments have exerted only a limited degree of influence within the new systems of governance emerging there.

The exercise cannot, nonetheless, end with this conclusion alone. There is a need to draw more from our analysis and put forth a set of preliminary propositions, including both direct and indirect policy actions, for local government to begin to lay the groundwork for playing a more forceful role in local economic development and governance in the future.

This component of the results is justified in two respects. First, the exploratory dimension of the thesis project stems from the lack of substantial research examining local government's changing role, and the nature and effectiveness of its response to newly emerging patterns of governance (these points were addressed in Part I). Like policy-makers at the local level, we still struggle with an insufficient understanding of how local government might play a constructive role in the type of environment found in high-technology localities. The Strategic Localism template is only one modest attempt to begin to explain the type of role that might be suitable for local government, and it is therefore necessary that we pursue this logic by suggesting a set of actions that provide the possibility for more positive impacts in the future.

The second point is related. Although the literature has been weak on the specific attributes of local government's changing economic development capacities, it is very clear on the growing importance of a new and strengthening localism - and the importance of multi-sectoral linkages that shape governance. If one couples these findings with the continuing trends of the 1990s toward greater devolution of powers to provincial and municipal governments, it is reasonable to presume that the local level of the public sector will continue to grow in terms of its scope for action and the consequences of how it utilizes an expanding capacity to act.

As a result, it is useful to pursue the usage of the Strategic Localism template in order to offer a better way forward - particularly for public office holders and policy-makers at the local level struggling to adapt to the new realities discussed here. Such an attempt, however imperfect, may provide a basis for better aligning the priorities and resources of the state, particularly at the local level, with the new governance contours captured by the synergistic labels used here. Without the development of these types of cognitive and policy maps, there can be no future opportunities to undertake more specific investigations of how well local government is designing and implementing new economic development approaches.

While both current fiscal spending patterns and historical legacies may favour federal and provincial levels as relatively stronger players, it is equally important to invoke the legitimate advantages which favour local action. They include the greater degree of freedom for organizational and institutional innovation, as well as the proximity-based advantages in realizing meaningful concertation. Despite the limited progress in each case, there is evidence that in both Ottawa-Carleton and CTT these types of advantages are, at the very least, beginning to be recognized within local governance forums as key elements for future economic development strategies.

At the same time, the current political-economic forces which favour subsidiarity as a principle of European governance, and devolution as a strengthening process in North America will continue to shift the patterns of both resources and authority (formal and informal) toward urban and local settings. Corresponding action from governments at these levels will prove both necessary and determinant. The main premise remains, then, that within an environment empowering local forums, CTT and Ottawa-Carleton will continue to serve as laboratories of learning and preparation

for what is a continual shift. Despite the fact that the pace of this devolution may well continue to vary across different jurisdictions, the policy debates of tomorrow will continue to reflect this trend.

The next chapter responds to this argument with a modest set of proposals which could be undertaken in order to better position local government within the SL template, and attempt to shape the synergistic forms of governance emerging in each locality in a positive manner. Building on these specific applications, the subsequent chapter concludes with a more conceptual discussion of local government's evolving capacities and the lessons of this particular investigation.

PART III - RECOMMENDATIONS

The focus of Part III is forward looking. We cannot say categorically that local governments in Ottawa-Carleton and CTT have failed to execute the duties prescribed to them by the Strategic Localism template. The template was created for this investigation to first learn and then hypothesize about how local government might make a difference.

However, the results indicate that local government in both case studies has yet to adequately respond to their new governance environments. While the Strategic Localism approach may be imperfect, it captures the sorts of issues and interactions that are key determinants in local governance today. Unless one is prepared to take the view that local government will continue to represent a modest or inconsequential force in the future, there is a need to offer a better way forward.

Thus, chapter eight puts forth a set of preliminary propositions, including both direct and indirect policy actions for local government to begin to lay a foundation for playing a more forceful role in local economic development and governance, in the future. The rationale for providing this forward-looking prospectus, in light of our findings, is also explained. Finally, chapter nine provides a conclusion which reflects on the main thematic issues of this dissertation, the lessons learned, and the issues and challenges that still need to be addressed.

Chapter 8 - Applying Strategic Localism

Building on what we have learned about both the new patterns of governance emerging within high-technology localities and the limited success of local government's adaptation to them, section one attempts to shift the usage of the Strategic Localism template by offering a set of guiding principles and local actions for moving forward. Section two applies this template to both case studies in a forward-looking manner, and section three provides a final comparison between them.

8.1 Nurturing Local Advantages

The objective is now to articulate a set of both general policy principles and specific recommended actions for local government - addressing the circumstances of the two case studies with the Strategic Localism template. In terms of guiding principles, public sector action must first be mindful of what it can realistically accomplish in attempting to strengthen the three synergistic components driving socio-economic development and local governance - Market Linkages, Knowledge Infrastructure and Community Culture. At the same time, in undertaking specific actions local government must also understand how to properly align itself, and its resources, in a fashion conducive to these new challenges of integrative governance. This point means that public sector agencies must devise strategic actions by leveraging their own competencies (as well as an understanding of what these competencies are), as well as those of private and civic partners.

Offered as a departure point, then, the following guideposts are proposed as the basis for more specific local government actions - in terms of how the public sector organizes itself, the

manner by which it engages with other socio-economic partners, and the underlying priorities in pursuing such engagements.

Socio-economic boundaries - Much like JVSVN and CTT, it is critical to create the basis for governance around socio-economic realities, overcoming more fragmented political boundaries.

Common and shared identities - Closely connected to the preceding point, a shared identity is fundamental for external promotion and recognition, as well as basis to cultivate coordination and collective action internally.

Multiple initiatives and many mechanisms - Synergy-based governance implies (and embraces) a multiplicity of initiatives, coordinated in a non-centralized and networked fashion. Coordination supercedes centralization.

Entrepreneurship is private, public and civic-rooted - The concept transcends sectoral boundaries, suggesting an openness to input and engagement from catalysts across public, private and civic sectors.

Focus locally and leverage abroad - Mindful of the opportunity cost, global marketing should be largely channelled and leveraged through provincial and federal programs (with local action and resources inwardly directed).

The central challenge to local public authorities is first to adapt to a more synergistic-based governance environment (i.e., Strategic Localism), and then facilitate the formation of a multi-sector strategy that builds on these guiding principles.

Market Linkages (competitive Advantage):

From both the conceptual underpinnings of clusters and the evidence in both cases, we know that local government's role here is indirect. Nonetheless, as every cluster model denotes, government's role remains pivotal - in setting the stage for the necessary socio-economic conditions which enable competitive clusters of firms to thrive.

These broadly defined conditions are relevant at the federal, provincial and local levels. Clearly, however, in the latter case, proximity facilitates a greater opportunity for local state actors to overcome potentially negative externalities associated with imperfect information, a lack of trust, inefficient planning and the like. Consequently, local action within Market Linkages should include the following points:

- a) Interacting and engaging sectoral networks - this central premise of Porter, D'Cruz and Rugman, and Saxenian is necessary to foster strong Market Linkages;
- b) Promote (but not necessarily organize) exchange - public agencies can facilitate local networking by engaging private and civic partners in common interests;

- c) Communication - narrowing the knowledge rift between local politicians and officials, and the private sector is key to facilitate cooperative planning and learning;
- d) Information - improving socio-economic data and information sources is crucial to underpinning local decision-making; and
- e) Specialization - the preceding points should be applied to a select group of established and/or emerging clusters with demonstrated potential.

Knowledge Infrastructure (innovative advantage):

The growing importance of human capital and the Knowledge Infrastructure is widely recognized. Despite provincial and federal jurisdictions, this focus will occupy a growing segment of local attention, particularly in those localities well-endowed with centres of research and education.

We can say that if the scope for local action and public policy is indirect, *it is much less indirect* than in the preceding component. The local pool of human skills and ideas is the critical driver within the new economy - and the need for local catalysts to raise awareness, convene actors and facilitate action is acute. Thus, local strategy within Knowledge Infrastructure should be based on the following points:

- a) Connectivity and accessibility - a priority for local agencies must be greater connectivity and accessibility to new knowledge sources and learning technologies;

- b) Civic and private partnership - facilitating the preceding point, local government's convening role and public leadership is key to local partnering;
- c) Entrepreneurial support - public resources can facilitate a socializing of risk and resources for better innovation and commercialization capacities;
- d) Public exhortation and leadership - local officials can mobilize awareness regarding the importance of human capital and *innovative advantage*; and
- e) Provincial partnering - mindful of provincial jurisdictions, municipal officials are critical intermediaries between local actors and provincial decisions.

Community Culture (Collaborative Advantage):

If intellectual capital and the Knowledge Infrastructure are key drivers of the new economy, Community Culture shapes local capacities to foster civic engagement and socio-economic trust (and resulting ties across sectors), key lubricants for enabling dynamic efficiencies. These elements are likely to grow as distinguishing factors in enabling and sustaining local capacities.

With a convergence of proximity and connectivity, local government's relative capacity (compared to provincial and federal levels) to nurture conditions for collaboration is central. Thus, while Community Culture is based on a mix of civic entrepreneurship, private engagement and public action, government's role can be a positive determinant. Cooperation between local government bodies themselves is an important indicator, as is receptivity to civic partners.

Strategies better able to accommodate private, public and civic networking will be required to foster the socio-economic ties necessary to underpin the adaptive capacities of a locality. Collaborative advantage will therefore be rooted in the following elements:

- a) Central and collective projects - prioritizing collective action and collaboration is a key cognitive foundation for synergistic governance;
- b) Common direction and open processes - within a shared direction, local processes aim to both encompass a multitude of initiatives and overcome unfamiliarity;
- c) An investment in civic entrepreneurship - an array of civic mechanisms is required to mobilize private sector participation and leverage public resources;
- d) A Public direction - government alone cannot create a culture of engagement, though its action can heighten recognition, importance and acceptance; and
- e) Trust and connectivity - collaborative capacities require trust which is fostered by open and inclusive local forums with state, market and civic representation.

8.2 Ottawa-Carleton and CTT

The purpose of this section is to apply the preceding suggestions to both case studies. The commentaries are put forth as forward-looking insights and recommendations - based on both strengths and impediments to achieving effective and integrative governance in each locality. They

are offered as a set of local actions designed to build on positive attributes and begin rectifying deficiencies.

i) Ottawa-Carleton:

In this case, the broad parameters of Strategic Localism may be sketched out by reinvoking the guiding principles which underpin more specific action.

With respect to *socio-economic activity and political jurisdictions*, local initiative must be shaped by a vision that encompasses, at a minimum, the boundaries of RMOC. As a result, economic development, as a policy field, should be managed within an area-wide mandate - translating into a set of governance initiatives designed in accordance.

There is therefore a need for *a common and shared identity*. This point is an important barrier for Ottawa-Carleton, given the degree of local fragmentation found in the NCR. Although the lack of a CTT-equivalent symbol impedes this process, the initial efforts to promote a single entity under a more unified image, such as *Metro Ottawa*, are progressive in this regard.

Multiple initiatives and mechanisms are to be both expected and embraced within a diverse socio-economy, meaning that coordination (among many actors) rather than centralization is key. The consequence here is that no single agency can undertake a leading role in every type of local synergy. The Region would thus be advised to refocus OCEDCO as a leaner organization with a core mandate (a point elaborated below).

Entrepreneurship is private, public and civic-rooted - which underscores that in the midst of a dramatic shift from a public to private emphasis, the co-evolving efforts of private, public and civic actors are crucial. Emerging, alternative models of civic entrepreneurship (such as OCRI and its partner initiatives) are important catalysts in strengthening the adaptive governance capacities of the locality.

Focus locally and leverage abroad. The priority of local initiative (and scarce public resources) should be nurturing *advantage* locally (see below) and leveraging external efforts with other governments and sectors. The close proximity between federal and local actors in Ottawa-Carleton is a situation which may also provide some advantages if this proximity facilitates federal-local coordination. Nonetheless, a burden remains for the latter group, which is to negate the limitations of being viewed solely as a political capital.

Market Linkages¹⁴¹:

By virtue of its relatively mature and advanced clusters, Ottawa-Carleton has developed a strong focus on its sectoral strengths. The efforts of OCRI and OCMN (and to some extent, OCEDCO) have re-enforced sectoral interests and voices, the evidence of which is communicated via the rich circuit of events and forums facilitated by these bodies. Economic development officials are therefore well placed to learn more about the dynamics of clustering (although significant challenges remain unaddressed).

¹⁴¹ The main policy actions (summarized) are: i) interaction with sectoral networks rather than firms; ii) catalyze networks and exchanges; iii) communication; iv) information; and v) specialization.

Yet duplication and fragmentation across political structures clearly conflict with information and knowledge flows, more mindful of socio-economic boundaries. Thus, addressing this point should be a goal of any municipal government restructuring in order to facilitate more holistic efforts. Such improvements are prerequisites, for example, for addressing the growing east-west rift in development patterns in a meaningful, and unified fashion.

The tendencies of OCEDCO are toward centralization rather than coordination, limiting the positive externalities from clusters and inter-firm linkages.

An RMOC review of OCEDCO's mandate and structure should narrow the agency's activities and focus on its capacities to interact and collaborate with other governance players, particularly municipalities.

A priority of local public authorities must be to strengthen the representation of OCMN (and other business networks) within planning and consultation processes at a Region-wide level.

Knowledge Infrastructure¹⁴²:

Locally driven public leadership has been lacking in Ottawa-Carleton, resulting in a lack of coordinated effort to utilize and deploy the area's intellectual endowments. There are signs of

¹⁴² The main policy actions are: i) connectivity and accessibility; ii) civic and private partnership; iii) entrepreneurial and transitional assistance; iv) public exhortation and leadership; and v) provincial partnering.

pending progress in this area, including OCRI's growing scope of interest and action (including its amalgamation of OCLF) in issues of human capital, the Regional Chair's pledge to create a virtual research entity, the expanding programs by local universities and colleges, and a widening array of private and community-based initiatives centred on high-technology-specific training and skills development.

A major source of local advantage lies within more effective synergies among all local sectors.

A corresponding strategy for human capital development presents a key opportunity for public leadership.

Initiatives in Silicon Valley and elsewhere suggest that, in the future, this direction will become less of a direct source of advantage *per se*, and more of a strategic necessity for leveraging the innovative capacities of a locality.

A renewed Innovation Forum (i.e., Learning Forum) should be championed by the Regional Chair as a key, and collective initiative for the new millennium.

The process must be based on resources, commitment and project deliverables joining all sectors, in particular the educational sector.

*Community Culture*¹⁴³:

This final synergy component is perhaps the least tangible and most complex element in determining Ottawa-Carleton's future capacity for integrative governance. Even with a sufficient degree of reasoning (from research and cases) to demonstrate the relevance and importance of local culture to systems of governance, many questions remain unanswered in terms of shaping and creating a local culture conducive to collaboration, and what specifically may be done by government.

Ottawa-Carleton is clearly burdened by the added complexity of coordinating many layers of government, a situation which contributes, at least in part, to a crowding out of political engagement locally. The inability of the twelve local area municipalities to overcome their structural fragmentation is a handicap within a key sector. The result is that when actors such as OCRI speak of a high-technology community, there are significant sensitivities to the potential misalignment between socio-economic activities and political boundaries. Thus, the absence of a unifying identity for the locality (such as CTT) is a factor in limiting the opportunities for more effective collaboration - both within government and across sectors

Another important dimension to the divisive shape of Ottawa-Carleton governance is the potential for socio-economic polarization between groups of people, separated according to skills and education. This challenge is perhaps the most serious, in terms of the requirement for attention,

143 The policy actions (summarized) are: i) a central and collective project; ii) a common identity and incremental processes; iii) an investment in civic entrepreneurship; iv) a public direction; and v) trust and connectivity.

and the consequences of neglect. The challenge for Ottawa-Carleton is to respond proactively today, before current trends evolve into what have been described as crisis proportions in Silicon Valley. The rising levels of income polarization in both Silicon Valley and Route 128 are now well documented by local governance initiatives, such as private-public partnerships, which means that responses are beginning to emerge, albeit reactively.

Local government must prioritize inclusiveness, collaboration and the integration of traditionally separate policies (i.e., social and economic development).

These processes require civic entrepreneurs, in particular, to boost and sustain private sector participation, and broaden community-building activism.

Obstacles to more unified local strategies present a potential erosion of local advantage, as there is no mechanism in place to facilitate the necessary integration of economic, political and civic interests. As a case in point, neither OCEDCO nor OCRI embraces specific issues of civic engagement, social exclusion and/or community building that link together traditionally separate constituencies in a fashion that is increasingly visible and evident in the U.S. high-technology localities.

Community Culture is a neglected function within current governance arrangements. OCRI, or a newly created agency should be mandated by RMOC to foster awareness, interest, and ultimately specific action.

Any such process should aim for broader inclusion of sectoral representation within the locality, fostering deeper and better connectivity between the private and social sectors.

A specific initiative must be the creation and tracking of local indices measuring collaborative capacities, civic engagement, and confidence and trust.

ii) CTT:

As with the preceding case, the broad parameters for applying Strategic Localism within CTT begin by reinvoking the guiding principles underpinning more specific actions.

With respect to *socio-economic activity and political jurisdictions*, local initiative and strategy must be shaped and promoted within a vision that encompasses CTT boundaries. This means that economic development, as a policy field should be managed within a corresponding and encompassing mandate - translating into a set of governance initiatives designed for this area.

With the central need for *a common and shared identity* to underpin these efforts, the existence of CTT is an important strategic advantage. Nonetheless, more must be done to promote it, both internally and externally. For example, the crude depiction of CTT on the internet compares unfavourably to Ottawa.

Multiple initiatives and mechanisms - are to be both expected and embraced within a diverse socio-economy; meaning that coordination (among local actors) rather than centralization is key.

The consequence here is that no single agency can assume the leading role in all types of local synergies - an important aspect of more specific recommendations offered below.

Entrepreneurship is private, public and civic-rooted - which underscores, as in the case of Ottawa-Carleton, the need for co-evolving efforts between private, public and civic actors. Emerging models of civic entrepreneurship such as Communitech are important catalysts in strengthening adaptive and integrative governance.

Focus locally and leverage abroad - as the priority of local initiative (and scarce public resources) should be nurturing *advantage* locally. Leveraging external efforts at marketing and promotion may be feasible with other governments and sectors, but it remains secondary. The relative proximity to the provincial government suggests that such leveraging may be more feasible at this level (sensitive to a CTT-GTA balance between autonomy and connectivity).

Market Linkages:

Much like Ottawa-Carleton, this area is an indirect segment of local government's scope. CTT's early stage of high-technology clusters, however, differentiates it from Ottawa-Carleton, and adds pressure on local actors to accelerate growth. While the local CTT network has succeeded in providing a quantitative basis for recognizing specific clusters (i.e., socio-economic profiles of CTT), business networking initiatives are at a fledging stage only.

The launching of CTTAN (the accelerator network aimed at matching SMEs and venture capital) raises doubts which linked to a suspicion that federal program funding merely subsidized

local action already in the works. From a local perspective, where the key priority is accelerating clusters, pursuing such partnerships may be justifiable (and rational) given the potential access to larger resource pools at provincial and federal levels.

This example remains exceptional, as the pursuit of federal support for local undertakings should not be adopted as a key plank of an integrative local strategy (CTT officials acknowledge that CTTAN would likely have been launched - with or without federal assistance). The present challenge is to embed CTTAN within a CTT-laden governance system, locally credible and connected (a need seemingly recognized by its name).

Building on the area's adoption of high-technology as its main priority, local initiative should be aimed at positive information, communication and learning externalities, facilitating the strengthening of firms and clusters.

The growth and development of local firms can be supported through local initiative, leveraging public resources with private sources and (selective) provincial and federal support.

The convening powers of local authorities should be aimed at spurring (OCMN-like) CTT-based networking and re-enforcing and assisting (rather than underwriting or creating) proximity-based, clustering tendencies.

Knowledge Infrastructure:

In contrast to Ottawa-Carleton, CTT's Knowledge Infrastructure is more locally rooted, particularly with The University of Waterloo. In a fashion similar to Ottawa-Carleton, however, this component of local governance has been under utilized from the perspective of local government action. Thus, two points which applied to Ottawa-Carleton are relevant here as well:

A major source of local advantage lies within more effective synergies among all components of local governance. A corresponding strategy for human capital development presents a key opportunity for public leadership.

This important asset could be better exploited by CTT internally. The local network has never been successful in establishing meaningful ties to the area's educational infrastructure (despite the rhetoric, and the important contributions of the latter group to local development).

A central CTT project should be a localized learning & innovation forum, leveraging the Region and Communitech (as direct CTT partners) and more aggressively linking business and education.

Local public officials should focus their convening efforts on the educational sector, supporting CTT's Communitech as the key civic entrepreneur - empowered to mobilize resources and input from the private sector.

Community Culture:

This final synergy component is central to local action in CTT. There would appear to be a stronger basis for building collaboration - and a higher degree of congruency between the values and actions of the civic community and the private sector. In short, CTT's main contribution has been in designing a local initiative which showcases the area's supportive community as an attribute consistent with the historical sense of socio-economic resilience and pride.

Despite the relative fluidity of Community Culture which extends CTT's identity and relevance across member-cities, the political fragmentation of traditional structures, politically and administratively, remains (as CTT is but one modest step in overcoming it). Such divisions threaten to stifle more ambitious CTT undertakings which, in turn, would erode collaborative advantage locally.

The Region will prove pivotal, as its entry into CTT's network is shaped by a choice between centralization (and thus confrontation) and new forms of coordination.

Much like Ottawa-Carleton's growing presence, the Region will become an instrumental player in economic development (and resulting governance). Yet within CTT, it has the opportunity to avoid the present RMOC-OCEDCO quandary by instead establishing itself as a strategic partner, both with other local governments and other sectors.

The Region should insert itself into CTT with flexible mechanisms to coordinate across existing CTT elements (rather than what would be a misguided attempt to centralize all aspects within a Regional department or publicly funded agency).

An important player in CTT's collaborative capacities is Communitech. As with the case of OCRI, new public initiatives should be aimed at partnering with, and leveraging the efforts of civic entrepreneurs.

Despite this important role accorded to the Region, local municipalities remain key. They promote the identity of CTT within their jurisdictions, and they remain the associational fabric of the economic development alliance that drives municipal planning and strategy. Without dispersed support for CTT's evolution, the default option would likely see a newly elected Regional Chair turning gradually toward Regional options. These options, which could become much more centralizing in nature, may potentially cause the same sort of political and administrative tensions permeating Ottawa-Carleton's municipal scene.

Multiple champions are required to forge the necessary consensus for governance at the level of CTT.

The main challenge for CTT is to preserve and utilize its collaborative advantage for two purposes: first, innovating within the public sector in a non-centralized fashion; and second, aligning the local network with the needs of the other synergistic components - particularly Knowledge Infrastructure.

8.3 A Final Comparison

In terms of capacities to act on these recommendations, we may underscore two points. First, in both localities there is evidence to suggest a widening acceptance of the view that local action matters, and that efforts to design and implement effective governance mechanisms will become determinants in the future. Second, within this common template, there are also distinct challenges in each case.

Ottawa-Carleton's significant endowment in high-technology clusters is closely tied to the federal presence. Similarly, the Knowledge Infrastructure is clearly bolstered by these same federal dimensions, and Community Culture is influenced accordingly. In such an environment, the federal-local connectivity, and its consequences for political action, will always be consequential. Although a key challenge for Ottawa-Carleton remains the fostering of more local and inclusive capacities for collaborative governance, its strategy for doing so will always be influenced by the intertwined discourse and policy communities of federal and local actors.

The case of CTT is a stark contrast. CTT's Market Linkages are identifiable, but many key firms are at a more emergent stage. Moreover, these growing clusters are rooted in a Knowledge Infrastructure relatively more local, and the emphasis on a culture of collaboration more exclusively based on local processes.

Yet the bottom-up capacities associated with these collaborative ties are often more implicitly recognized than formally incorporated into formal structure. Their transformation into more solid, albeit flexible, mechanisms for concerted decision-making and action will be the key

determinants in CTT's future growth prospects. These challenges thus become more acute in CTT than in Ottawa-Carleton. In the latter case of Ottawa-Carleton, local capacity-building hinges on effectively sorting out healthy endowments and awkward tensions, and shaping socio-economic development accordingly. In CTT, this same process depends first on being able to foster and realize such endowments in a more autonomous and self-determining fashion.

Chapter 9 - Conclusion

A territorial order that could assure the bases of sound economic and social development in the 21st century must therefore be built simultaneously and synergetically, from the bottom-up, in firms and communities...

{Storper 1997, p. 300}

The intent of this brief chapter is to both reflect on the preceding analysis and comment, by way of a conclusion, on what has been accomplished, as well as those issues that remain unresolved.

9.1 Toward Integrative Governance

Strategic Localism is an attempt to capture the essence of a rapidly changing socio-economy - one in which high-technology localities are important laboratories for understanding the new and interlinked processes of competition, learning, and collaboration. The subsequent objective for all sectors engaged in local development strategies is a form of *integrative governance*. We define integrative governance as an effective alignment of the policy priorities and instruments of each government (level) with the three types of synergistic components - Market Linkages, Knowledge Infrastructure and Community Culture.

At the nucleus of this system is a localized set of socio-economic actors, rooted and connected by territorial proximity and collective determinants. Consequently, local government's action, unlike their provincial and federal counterparts, emerges from within these fluid boundaries. Integrative governance creates a new and very different set of challenges for local government, as

it attempts to maximize the synergistic-based, positive externalities derived from its interventions within a multi-sector setting. In the past, interventions would be taken to be connected to industrial policies, often formulated and delivered via federal actors. Today, new forms of action are required locally.

Traditional approaches to local economic development emphasized a limited set of policy instruments linked largely to planning (internal) and promotion (external). While these elements remain significant in what Best [1990] first described as the new competition, local states must also be viewed as catalysts and strategic agents engaged in new processes with changing, and more complex objectives. To quote Stoker, "governance, with its bringing together in partnership of governmental and non-governmental forces, makes the simple prescriptions of public administration unsustainable" [Stoker 1998, p. 48].

With respect to new processes, then, local government will be increasingly engaged in multi-sectoral forums - the result being a heightened interdependence with industry and civic actors. In this emerging economic development and governance context, a critical dimension of government action is the manner in which it both interacts with other socio-economic sectors, and the degree to which it prioritizes such interactions. These new processes also imply a new division of tasks between local actors, as government turns to networks and partnerships in search of more creative and collaborative arrangements to achieve local objectives.

The case of civic entrepreneurship is illustrative here. These new types of associative mechanisms appear to be much more capable than traditional public sector actors of effectively

engaging business, leveraging private sector resources and commitment, and undertaking collaborative-based projects. In this scenario, the according challenge for the local state is to engage and partner with civic associations in order to ensure that such activities co-evolve within forums sensitive to both market forces and democratic accountabilities. The resulting focus illustrates the converging conditions encompassing local development strategy [Storper 1997], associative democracy [Cohen and Rogers 1995] and distributed governance [Paquet 1997].

These types of strategies require a redefinition, and expansion of economic development as a public sector focus. This point is particularly true locally, where this thesis has demonstrated that despite the growing empowerment of local systems, and potential enabling roles played by proximity, local governments have been slow to respond directly with strategies designed to target synergistic governance and new types of mainly concerted action. A key variable is the mind set of many local politicians and officials for whom economic development often remains associated with traditional processes such as land zoning, official planning, hard infrastructure, and the like. While these elements do not disappear in the new type of economic development emerging from the synergies and interdependencies of more synergistic forms of governance, they are not the source of the sorts of local advantages construed within the SL template.

The emphasis on nurturing advantages in the areas of the Knowledge Infrastructure and Community Culture are particularly relevant in calling for expanding definitions of economic development. Issues that have traditionally been viewed as soft or intangible now matter a good deal more, as does the degree to which the local sense of these issues is translated into a public direction and specific undertakings. These new and different objectives, though more difficult to articulate in

a precise fashion, bring us closer to the specific policy challenges of local governments as they formulate both policies and priorities. The remaining discussion is devoted to building a response from the preceding analysis, although its relevance extends to any local example shaped by socio-economic forces tied to local action and bottom-up solutions¹⁴⁴. The key message is that good local governance [should] provide a capacity for integrative local action [Stoker 1996].

9.2 Local Capacity-Building

The shift from government to governance must be embraced cautiously, and with a nuance. The new governance means reconfiguring the state and public sector action.

Yet local governments often remain rigidly constrained by traditional administrative structures of control and accountability. Some commentators will therefore want to raise legitimate concerns about the capacities of local government to adapt to such dramatic changes [Graham, Phillips and Maslove 1998, p. 236]. There is a clear tension between arguments on the one hand that point to local forums as the most likely setting for experimentation and innovation in both democratic processes and administrative reform, and caution on the other hand, rooted in concerns about municipal capacities being highly limited and provincially (in the Canadian context) administered.

144 This point re-invokes the work and message of Marcel Cote in the 1980s (Part I). For him, *Growing the Next Silicon Valley*, rather than implying that all localities will produce computer electronics and software, makes the point that local entrepreneurship, innovation, and governance are common and necessary challenges to all.

Although the latter point presents legitimate constraints on present action, it should not be viewed as prevalent. This decade, and its bringing to bear of much of the research cited earlier in this document, has revealed the makings of a new policy discourse. The question today is no longer about if municipal-local government should matter, but rather how it is going to cope with a variety of new challenges currently being thrust upon it.

While the political evolution may be slow to keep up, in both case localities reviewed here there are signs of a growing activism on the part of upper-tier Regions, and a corresponding willingness to entertain new avenues for debate and action. Administratively, while not dismissing the real impacts of provincial regimes, the degree to which the interaction between public, private and civic organizations impacts decision-making in the public sector is likely to accelerate faster locally than at other levels. In the Ontario example, outright (and, at times, blatant) provincial control may be increasingly tempered by local-regional reactions on a variety of issues such as taxation, workfare, social housing and health care reform. While these latter reactions pale in comparison to the scale of provincial change, the net result of this process may well be more aggressive municipal responses and reformed structures, with the objective being to realize greater discretion and accountability for an expanded portfolio of local affairs.

In economic development, the preceding research reveals that indeed, this sort of evolution has begun. While provincial (and federal) actions remain key factors in local governance and development, the municipal presence is in position. Many key aspects of the respective governance settings are linked to local initiative - OCEDCO, OCRI, the Innovation Forum in Ottawa Carleton, as well as the very existence of CTT. Notwithstanding differences between the cases already

discussed, the governance processes underpinning economic development are beginning to be more attributable to features of local players and their collective action.

Within a local environment in transition, the most central area for public action may be that of collective capacity-building. Most directly linked to the discussion of Community Culture in the preceding chapter (although its impacts will permeate the other components as well), the main priority for guiding public sector action here is that of choosing coordination before centralization: the corresponding policy issues then focus on the types of associational partnerships and their purpose in undertaking them. The logic here is that the most strategic action of public sector actors locally should be to devise processes and forums that leverage the energies and resources of other sectors in collective mechanisms.

Public resources and public direction are key factors in shaping the complex and multi-sector governance patterns emerging today. The opportunities and constraints of this assertion must be recognized. The prospective opportunity is to develop local capacities that matter: the recommendations to attempt to measure and benchmark performance, even in those areas deemed intangible, are a case in point. At the same time, such capacities must proceed in a manner that respects the premise that local governments can devise ways to be accepting of both interactive and interdependent relations with other sectors - much more so than is the case with both their provincial and federal counterparts.

To become effective capacity-builders, public sector agencies must begin from such a starting point, and look to foster means to strengthen local components of governance where

attention is most warranted. As a key example, our findings point to various elements of Community Culture where the values, identities and forums across different sectors must be joined by both common purpose and collective action. While this cultural notion often remains intangible (like so much of what is valued in the new economy) localities will be increasingly forced to understand these new variables and demonstrate their importance through operational measures or indices. The growing sustainable city movement, across Europe and North America, and similar initiatives closer to home, present a case in point¹⁴⁵.

A complementary perspective comes from broader considerations of what is deemed to be the *quality of life* factor in a locality which emphasizes not only traditional indicators of industrial output, but also a broader discussion and assessment of what it means to achieve and preserve local prosperity. The globalization parameters around this investigation suggest that this type of discussion is increasingly relevant to local governance. Moreover, public sector agents at that level must play instrumental roles in designing discursive forums within which issues of competition, innovation and collaboration are translated into a strategy for local development that wrestles openly with the need for a new mix of market promotion, civic engagement, and public accountability.

145 A variety of local initiatives, like those in Silicon Valley and Route 128 are emerging in cities such as Seattle and Calgary to gauge quality of life and overall collective performance. In Ontario, the Social Planning Network engaged a variety of local partners to produce similar *report cards* on the quality of life of localities across the province. There remains, however, a real distinction between their focus and the efforts to measure distributive trends linked specifically to industry composition, and a technology emphasis in particular. When one is present without the other, obviously the critical next step is to link the two and integrate the result within local development strategies that must be multi-sector.

For example, public direction and support can play a key (but not exclusive) role, as can the leveraging of such support with civic entrepreneurs who, in turn, provide a potentially useful mechanism to foster linkages to business. While statistics and benchmarks and other metrics may well prove rough gauges of what are, at the very least, partially intangible performance features, there is also truth to the managerial mind set that what gets measured - gets managed.

Thus, the purpose of evaluative mechanisms and local scorecards on these fronts is to provide clearer parameters to widen and guide the set of issues under consideration and review. Such forms of local initiative underline the need for empowered civic partnerships, as a basis to create non-governmental mechanisms likely to be more flexible and apt to experimentation, and better connect them with the private sector in collective projects.

In terms of division of tasks, local government might view its role as broadly directive and educational. Civic actors (perhaps assisted at the outset by limited public resources) could then assume delivery functions in a synergistic sense. In the case of Community Culture, this approach would see public leaders prioritizing collaboration and a better understanding of its importance. Accordingly, strategically sponsored civic partners could undertake local programs aimed at inter-sectoral partnerships - leveraging private resources to do so.

There is also a close relationship between the existence of collective capacities and other components of local governance. Despite the lack of jurisdictional control over many planning and budgetary components, the Knowledge Infrastructure is a network inclusive of public, civic and private organizations that both house and produce human capital - a central input to new socio-

economic activity. Again, public resources and direction are key determinants of local performance through the positive externalities produced from synergistic interactions translating into concrete programs and initiatives.

Similarly, despite serving as an indirect player in the more market-based setting of Market Linkages, the extent to which business accepts responsibility, and recognizes self-interest in investing in local governance depends, at least partly on state action. Local government leadership may encourage such behaviour and educate others as to the payoffs of this behaviour (and the dangers of ignorance). Public sector agencies may also leverage civic partners that are more closely tied to the private sector.

A necessary strategy for the public sector is to find progressive ways to design new governance mechanisms that are capable of leveraging private resources and deploying them in activities traditionally deemed to be the public sector domain. Those who invoke the term, *stakeholder* (often interchangeably with our deployment of the term, sector), in order to denote an expanded engagement in governance by all sectors reveal a bias in favour of progressive forms of interdependence between capital and other components in its locality, a key plank of the sound socio-economic development envisioned by Storper's depiction (offered at the outset of this chapter). While such debates remain both contentious and unresolved, our findings lend support to an implicit consensus between Moss Kanter [1995] and Storper [1997] on the need for a new compact, the basis of which is most likely to be realized locally.

9.3 Ongoing Challenges

These findings are not, however, conclusive. The examination of Ottawa-Carleton and CTT has revealed both the relevance and limitation of this discussion. High-technology localities are ripe with tensions in this regard, as business is increasingly structured around simultaneously global and local dimensions. While both localities here are characterized by a relatively strong degree of local ownership and control, the mobility of many companies and events with origins elsewhere (i.e., takeovers or alliances) may ripple with impacts locally.

Yet localities endowed with emerging clusters of technology often exhibit more inward mobility, strengthening synergy-based activities which are the basis of more collaborative governance. In this sense, a strong and continuing emphasis on new business formation and entrepreneurship is a key source of ongoing resilience which serves as an attraction for, connection to, and a buffer from globalizing markets and transnational business models.

A well-crafted role for local government will prove itself to be a positive determinant. Efforts to foster integrative governance, with connectivity between Market Linkages, Knowledge Infrastructure, and Community Culture must be based in forums of democratic, market and civic engagement. Such forums must, in turn, offer the potential for broad participation and support. As these urban and local forums continue to evolve into key venues for choices and debates on all aspects of socio-economic development, local government's role will primarily be to mobilize its own resources and competencies, as well as assist in their alignment with those from other sectors.

This ongoing process can only be effective and continually strengthened through constant attempts to achieve more unified and collaborative strategies of the sort that may be contrived within a shared template, such as *Strategic Localism*.

List of Key Acronyms

Ottawa-Carleton

CITO - Communications and Information Technologies Ontario

OCEDCO - Ottawa-Carleton Economic Development Corporation

OCRI - Ottawa Centre for Research and Innovation

OCLF - Ottawa-Carleton Learning Foundation (part of OCRI, as of January 1998)

OCMN - Ottawa-Carleton Manufacturer's Network

NRC - National Research Council

NCR - National Capital Region

CTT

CIIC - Canadian Industrial Innovation Centre

CTT - Canada's Technology Triangle

CTN - Computer Technology Network

CTTAN - Canada Technology Triangle's Accelerator Network

UW - The University of Waterloo

WLU - Wilfrid Laurier University

Other

EDO - Economic Development Officer

SL - Strategic Localism

ML - Market Linkages

KI - Knowledge Infrastructure

CC- Community Culture

Appendix One - Data Sources

A large number of organizations - and networking forums facilitated the information-gathering and interview process. Unless noted in the text, all interviews were conducted under the promise of confidentiality. In both localities, facilitated by networking forums identified below (i.e., OCMN, OCRI and Communitech), numerous other companies, government, civic and educational officials were consulted. Over 60 interviews have been completed for each of the two cases: a minimum of 20 from each of the private, public and civic sectors (as per the target in the initial thesis proposal). In both cases, however, this minimum is surpassed in the public sector, due to both the relative focus on government and the opportunity to include officials from all levels of government (though approximately 50 per cent of all public sector respondents are from municipally-controlled departments or agencies).

In the private sector, firms identified below are a selected sample comprising organizations where on-sites visits, tours or company presentations were conducted (as well as individual interviews). Their operational focus, in most cases, is in line with those sectors deemed central to the respective technology clusters underlined in this study (telecommunications and computer hardware and software). Interviewees from business were mainly senior managers in mid to large-sized organizations or entrepreneurs engaged in start-ups. Government interviewees included a broad sample of municipal administrators and politicians, as well as more selected interviews with provincial and federal officials. Other interviewees (from society, or civic organizations) were drawn from the research, educational, voluntary and civic communities.

The following list is exclusive of published media sources and internet material (notwithstanding specific citations referenced in the text).

Ottawa-Carleton:

- Bell Canada
- Carleton University
- Cisco Systems
- Communication & Information Technologies of Ontario (CITO)
- Conference Board of Canada
- Corel
- Digital Equipment (now Compaq)
- EDS Canada
- Industry Canada
- Ottawa Board of Trade
- Ottawa-Carleton Manufacturer's Network (OCMN)
- Ottawa Centre for Research and Innovation (OCRI)
- Ottawa Citizen
- Ottawa Economic Development (OED)
- Mitel Corporation
- Newbridge Networks
- Nortel
- National Research Council (NRC)
- Regional Municipality of Ottawa-Carleton (RMOC) and all lower-tier Municipalities
- SHL Systemhouse
- Social Planning Council of Ottawa-Carleton
- University of Ottawa
- Volunteer Centre of Ottawa-Carleton

CTT:

- ATS Automation Tooling Systems
- Aurora International Telecommunications
- Bank of Montreal
- Bell Canada
- C.O.D.A. (Community Opportunities Development Agency)
- COM DEV Ltd.
- Conestoga College
- CTT Accelerator Network (CTTAN)
- CTT Communitel
- Guelph University
- Innovation Centre (of Canada)
- Kitchener-Waterloo Chamber of Commerce
- Kitchener-Waterloo Record
- Open Text Corporation
- Onyx Software Canada
- Regional Municipality of Waterloo and Municipalities of Cambridge, Guelph, Kitchener and Waterloo
- Research in Motion (RIM)
- Social Planning Council of Kitchener-Waterloo
- University of Waterloo
- Wilfrid Laurier University

Silicon Valley, California:

- China - America Exporter's Association
- City of San Jose
- Hewlett Packard
- Joint-Venture Silicon Valley Network
- Nortel
- Stanford University

A. Primary and Secondary Interview Sources

By primary sources, we mean direct interviews, conducted in confidence, which follow a pre-determined plan for questions and dialogue. Indirect sources refer to either comments made in a more public fashion directly by individuals, on behalf of themselves or their organization (i.e., an event, conference, media interview etc.), or the results of research undertaken by others.

In the case of primary interviews, the following questions formed the initial, more structured stage of the interview: i) function and duties performed by interviewee; ii) personal and professional background in the area; iii) characterization of relative strengths and weaknesses of governance in their locality; iv) specific challenges faced by their particular organization; and v) the contributions or roles of local government deemed most essential to the interviewee (and as a follow-up, the extent to which these priorities are being dealt with adequately, in the present tense). The second, more fluid stage of the interviews is based on key issues emerging in the initial stage - particularly across the third, fourth and fifth points. Often more revealing, the purpose here is to profit from the person's insight and their selection of specific tangents or examples on which to elaborate.

The rule of confidentiality is often necessary to reassure individuals and allow them to speak with a reasonable degree of frankness. As a result, they are not reported specifically in the text, though

they underpin much of what is documented in Part II. In contrast, secondary sources are largely cited in the text, or referenced if reports or comments are in published form. Given the topical nature of economic development, such sources are plentiful. Moreover, there is also a quasi-third form of material from interaction, more difficult to define, which is drawn from my own activities, as either a student, researcher or instructor, in both cases (though relatively more so in Ottawa-Carleton - for reasons of both employment and proximity).

B. Primary and Secondary Documents

Primary documents, referenced in the text, focus on the following areas as specific priorities: i) any published sources on both localities, with a particular emphasis on comprehensiveness in the fields of economic development, politics and governance; ii) socio-economic profiles (market, political or social) of both cases, particularly in the time-span of the cases; and iii) unpublished sources provided to me by either graduate students, academics, or local agencies. Secondary coverage of documented sources is more vast and selectively referenced. The vast amount of research examined is partly explained by my own history - and thus familiarity with both cases, and the repetition across many information sources. These sources serve as the cognitive basis on which it becomes possible to undertake the research in the cases via more primary sources.

C. Other Sources of Information

My own engagements in both locales have assisted in the research process. These include: i) teaching in Ottawa-Carleton (where part-time MBAs, in particular, are an important, indirect group of respondents

from both the private and public sectors); ii) less frequent teaching engagements at The University of Waterloo for EDAC professional programs (comprising EDOs from across the country, whose periodic research reports serve as invaluable windows on locales across the country); and iii) various applied research and voluntary engagements with Mitel, OCMN, OCRI, SPC and others.

Furthermore, in order to gain personal insight from the significant amount of published research examining this locality, I completed one research trip to Silicon Valley devoted specifically to interviews tied to thesis-related interests. Finally, the internet has, of course, emerged as an important resource, though somewhat late in the game for the case studies reported here (particularly CTT - a point referred to in the thesis). Nonetheless, the advent of local web sites in each locality (i.e., www.ottawaregion.com) has been useful.

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