Local Social Knowledge Management: Community Actors, Institutions and Multilevel Governance in Regional Foresight Exercises

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1. Introduction

A key question for policymakers at the regional and local level is how to provide the right conditions for generating the growth of more knowledge-intensive forms of economic activity within the context of dynamic innovation systems or learning regions. Regional foresight exercises may provide a useful instrument in helping them chart their economic strategies. A critical issue rests with the impact of path dependency in local and regional economies. The concepts of path dependency and lock-in imply that the technological trajectories of specific regions and localities are historically determined by the research and innovation capabilities developed by individuals and organizations over time. The nature of key institutional elements may affect both the innovative capacity of regional economies and their potential to serve as nodes for cluster development. Similarly, the ability, or inability, of the local or regional economy to develop the underlying conditions of trust and social capital that contribute to the presence of a learning economy may create a condition of lock-in to a specific innovation trajectory.

An equally important question concerns the role of global economic actors in shaping the innovation paths of regions. With frequent claims about the increasingly global nature of corporate production and innovation systems, a key issue for regions is the extent to which they can engage such actors in both local innovation-based interaction and foresight-oriented processes. We do know that the degree to which the innovation-generating activities of global firms are embedded in regional technology trajectories varies dramatically from place to place (Gertler, Wolfe and Garkut, 2000). Clearly, the institutional structure of national and regional innovation systems is crucial in determining whether multinational firms influence local technology paths in constructive or negative ways. Public policies aimed at embedding global firms into local host economies must develop and exploit opportunities to engage such

actors in learning-through-interacting with local firms and research institutions.

The critical issue is whether the conditions that influence the trajectory of growth for a regional or local economy can be altered by direct intervention and, if so, through what mechanism. Regional foresight exercises can clearly play a role in such efforts. Foresight here is defined as "a systematic, participatory, future intelligence gathering and medium-to-long term vision building process aimed at present-day decisions and mobilizing joint actions" (Gavigan et al. 2001, p. 3). Regional foresight involves the implementation of this process at a smaller spatial scale where the factor of proximity takes on enhanced significance. Critical to the success of regional foresight exercises is the ability to involve key agents of change and sources of knowledge who can formulate a strategic vision for the region and generate the intelligence needed to chart a new direction to the future. The engagement of key actors and the recruitment of collaborative and entrepreneurial leaders at the local and regional level is essential for a positive outcome to these exercises.

Recent experience in North America suggests that it is possible for local communities to formulate strategies to alter their economic trajectory and improve their prospects for economic development. What is required is the presence of an 'economic community' – places with strong, responsive relationships between the economy and community that afford both firms and the community a sustained advantage. Here, the scope for individual agents and local politics to influence local and regional outcomes would seem to be considerable, since these relationships are mediated by key people and organizations that play a leadership role in bringing the economic, social and civic interests in the community together to collaborate. However, the source of that leadership may vary. In some regions, it comes from political institutions or industry associations. In others, it originates with an inspirational figure in a university setting or anchor firm that attracts or spins off like-minded individuals in other firms. In the end, their role is to mobilize those in the community with an

interest in altering its development trajectory.

Closely related to this factor is the role played by a strong degree of civic-mindedness in the region. This 'civic culture' is important for building a shared vision and goal for the region and in promoting the kind of networking and interaction that contributes to innovation. In some regions, this tradition is the product of decades of historical development, much of which may have been unplanned and uncoordinated, but worked to create the right environment for innovation. In others, it emerged from conscious efforts by civic and business leaders to chart a new strategy for the locality or region. This civic culture contributes to the growth of social capital in the region that forms the bedrock on which networking and firm interaction can occur in the name of further innovation.

Social capital refers to various features of the social organization of a region, such as the presence of shared norms and values that facilitate coordination and cooperation among individuals, firms, and sectors for their mutual advantage. The use of the term capital indicates that it involves an asset; while the term social connotes that the particular asset is attained through involvement with a community. The existence of social capital depends upon the ability of people to associate with each other, and the extent to which their shared norms and values allow them to align their individual interests with the larger interests of the community. It secures the conditions that enhance the benefits derived from more tangible investments in physical and human capital. Without its supportive functioning, high levels of these more tangible forms of investment may fail to produce the benefits that should potentially flow from them (Putnam 1993, 167-76; Maskell 2000). The networks that constitute social capital in this sense comprise a rich and dense social community in which the business relationships of the local economy are embedded. Social capital tends to be accumulated as an unintended consequence of other activities that people are engaged in; its

presence or absence is linked to the vitality of civil society in that region.

One of the key virtues of an agent-centered approach to understanding the process of cluster development and regional innovation is the emphasis that it places on involving key actors at the local level in thinking about how to design effective innovation strategies. Such factors are critical to the success of technology foresight exercises conducted at the local and regional level. Building trust among economic actors in a local or regional economy is a difficult process that requires a constant dialogue between the relevant parties so that interests and perceptions can be better brought into alignment. Trust is one of those rare commodities that can neither be bought, nor imported; it can only be built up painstakingly through a prolonged process of interaction. A growing number of studies identify the existence of trust relations among a network of regional firms as critical for their competitive success, but the factors that contribute to its presence remain difficult to pinpoint. This underscores the critical role played by 'soft' factors, such as talk, in building trust. Regions and communities interested in stimulating local economic growth may find these practices essential to the use of technology foresight exercises to promote cluster-based development.

However, it is also important to remember that individual agents at the local scale operate within the framework of existing national and regional policies and institutions. The concepts of regional innovation systems and clusters are best viewed as part of an emerging set of nested relationships within a form of multi-level governance. Although cluster development occurs primarily at the local or regional level, the process is embedded within a complex set of economic, social and institutional relationships constituting innovation systems at the regional (RIS), national (NIS) and even supranational level. It is impossible to appreciate fully the process of cluster development in isolation from the interaction that necessarily occurs between these multiple levels of governance. Hence, one key challenge for those designing regional technology foresight exercises is to appreciate how the scope for

local action by individuals and organizations is shaped (often unconsciously) by institutional influences at higher levels of governance.

This paper provides an overview of these issues by reviewing the most important ideas in the recent literature on innovation systems, technological dynamism and local economic development. We pay particular attention to the key role of *learning* since, following Lundvall and Johnson (1994) and others (OECD, 1996; Gertler and Wolfe, 2002), we see learning dynamics as being fundamental to the ability of regional economies to achieve and sustain knowledge-based dynamism over the long-run. Moreover, we regard regional foresight processes to be, at their most fundamental level, *socially organized learning processes* involving learning by individuals, by firms, and by institutions. One of our central concerns is to show how the actions of individuals to shape collective local visioning exercises interact with larger institutional structures to produce local outcomes.

Hence, we address our analysis to four key questions. First, what is the role of local social learning processes – what we might call 'local social knowledge management' – in today's knowledge economy? Second, what characteristics of local social learning exercises (of which regional foresight processes constitute a prime example) are most important in enabling regions to move onto new developmental trajectories? Here, we shall use some recent North American examples to illustrate our main arguments. Third, to what extent do structures and institutions at multiple levels of governance shape and circumscribe the scope for local action and possibilities for generating effective, ongoing social learning processes? This is significant for two reasons: one, because our expectations concerning the achievements of local social learning and knowledge management processes should be informed by our understanding of the institutional influences on the attitudes, behaviour and practices of local economic actors; and two, because our ability to borrow or import successful ('best practice') models from elsewhere may indeed be limited by important (but

unappreciated) differences in the institutional framework of regulatory mechanisms at higher levels of governance. Fourth, what are the prospects for 'embedding' global economic players in the local and regional exercises in social knowledge management and learning processes that constitute regional foresight?

2. Social Knowledge Management, Institutional Learning and Associative Governance

The current period of economic and social change demands a broad conception of social learning – one that focuses on the capacity of institutions to sustain growth and facilitate the adjustment process from declining economic activities to expanding ones in response to new competitive conditions. This particular concept of learning is critical for the kinds of organizational changes associated with the emerging, knowledge-based economy. Increasingly, the organizational issue is how to pool and structure knowledge and intelligence in social ways, rather than to access them only on an individual basis. In this way, the capacity for social learning and increased networking is essential for tapping into the collective intelligence of the individual firm or organization, as well as a collectivity of firms within a given geographic space. This form of shared or networked learning assumes that neither the public sector nor individual private enterprises are the source of all knowledge; rather, the process of innovation and institutional adaptation is an interactive one in which the means for establishing supportive social relations and of communicating insights and knowledge in all its various forms are crucial to the outcomes. The goal, then, is to establish effective systems for *social knowledge management* at the local and regional scale.

This insight suggests a higher order of learning by institutions – one based on a capacity for reflexivity and the ability to apply institutional memory and intelligence to monitor their own progress in adapting to ongoing changes in the environment. Here, the (institutional) self-monitoring of the learning process itself becomes an integral feature of its

structure. Whether the organized intelligence and institutional adaptability of a region, nation or international regime constitutes a progressive force for change in the process of restructuring or an "institutional drag" depends on this self-monitoring, or the ability to shed inefficient norms and practices and replace them with ones that facilitate the process of economic change and social adaptation (Sabel, 1994; Cooke, 1997).

This concept of *institutional reflexivity* has been elaborated by Cooke (1997) who suggests that a capacity for self-monitoring must be viewed as an aspect of the institutionalized intelligence required to cope with the need for constant innovation. This kind of intelligence implies a higher-order level of learning – learning-by-learning. This idea is developed further in Cooke and Morgan (1998), who see reflexivity as a crucial dimension of intelligence that is fundamental for the learning capacity of an organization or a region. They define reflexivity as "the systematic process which combines learning and intelligence such that, in a number of feedback loops, the system receives guidance" (1998, p. 73).

Sabel further develops this notion with his analysis of *learning by monitorin*g. The creation of discursive institutions where economic actors engage in discussion can play a critical role in reconciling the demands of *learning* with the demands of *monitoring*. By learning, he means acquiring the knowledge to make and do things valued in the marketplace; by monitoring, he means the ability of the parties involved to ensure that the respective gains from learning are distributed among them according to standards that they have agreed upon. The activity of discussion is critical for reconciling these two objectives, for "discussion is precisely the process by which parties come to reinterpret themselves and their relation to each other by elaborating a common understanding of the world" (1994, p. 138; see also Helper, MacDuffie and Sabel, 2000).

Storper (2002) places equal emphasis on the importance of fostering public institutions

that encourage concerned parties to commit to the kinds of conventions and relations that support an institutionalized learning economy. He sees talk as an essential process for generating these kinds of conventions and shared understandings. The value of talk arises from the need for communicative interaction that goes beyond the mere transfer of information between parties to build the conditions essential to achieve mutual understanding and acceptance: "Talk refers to communicative interaction, designed not simply to transmit information and relay preferences, but to achieve mutual understanding. In the case of prospective learning, information from other experiences where learning has worked . . . can be valuable as a stimulus" (2002, p. 140). The kind of talk that can build up this level of trust occurs most effectively within the context of public institutions, but the relation between talk and trust is highly circuitous. The inability to engage in the talk that can build trust and mutual understanding often reflects the absence of a tradition that values the presence of these kinds of public institutions. However, talk must be supported by a range of incentives that encourage the parties to maintain their involvement with these institutions. Small, repeated experimental interactions may prove effective as a mechanism for getting the parties to work together in a limited fashion and facilitate institutionalized learning.

Where this process succeeds, these institutions can play an important role in connecting the state to the economy, as well as various economic actors to each other. In institutions that foster learning by monitoring, actors can gauge the benefits they are gaining through their involvement without making themselves overly vulnerable. This allows them to achieve a limited degree of cooperation by defining common goals, yet continuing to scrutinize each other's actions. Sabel suggests that this process may be particularly beneficial in situations of rapid economic change and in the emerging knowledge-based economy, where the production of complex goods requires the coordination of many specialized firms across diverse branches of the industrial and service sectors. Where learning by monitoring

has successfully been institutionalized in this way, it allows actors to assess reflexively where cooperation is advantageous and mutually beneficial, by placing responsibility for the process directly on the actors themselves (Sabel, 1994, p. 159).

The challenge of effecting a transition to a learning economy raises important questions about the appropriate role for the state and public policy. The state, especially at the regional or sub-national level, retains a positive role to play in the transition to a learning economy, but it requires a different conception of the state than that which has traditionally prevailed; for it is not only private institutions that must learn and adapt to the changing realities of a more innovative economy, but public ones as well. The kind of interactive learning described above requires a degree of reflexivity, or the ability to self-monitor and learn from past successes and failures: in other words, to learn how to learn.

The effectiveness with which policies are implemented depends on the capacity of the institutional structures to adapt to this reality. In their classic study on implementation, Majone and Wildavsky (1984) point out that organizational and institutional structures are critical to the way in which policies are implemented and the success of that implementation.

> Public policies and programs, like private activities, are embedded in and carried out by organizations. And in a basic sense, it is the organizations that learn, and adapt. The design of a good policy is, to a considerable extent, the design of an organizational structure capable of learning and of adjusting behaviour in response to what is learned (Majone and Wildavsky, 1984).

This emphasis on the importance of organization design and the need for learning and reflexivity corresponds closely with the concept of the associational state that has emerged recently. In a number of articles, Morgan, among others, outlines a conception of the associational state more suitable to the context of a learning economy. The key factor is not the boundary drawn between the state and private economic actors, but rather a framework for appreciating the effective interaction between the two. One of the key challenges for the state is to create the conditions in which firms, associations, and public agencies engage in a

collective process of interactive learning that is essential to innovation in the knowledge-based economy (Morgan, 1999a; Morgan and Henderson, 2002).

In a similar vein, Amin (1996) suggests the associational model embodies a conception of the reflexive state that includes four key principles. The first is a degree of decision-making pluralism, which involves delegating decision-making authority to the levels and bodies at which policy effectiveness can best be achieved. The second involves the notion that the state provides strategic leadership and the capacity to coordinate. This is not a role that follows from the politics of command and control. Effective leadership requires the combining of authority with a capacity for consensus building in the appropriate arenas. The third point involves the adoption of a process of dialogic rationality. The relevance of dialogic democracy involves a lasting consensus that results from interactive reasoning. The fourth point involves the commitment to transparent and open government in the process of democratic practices.

The appeal of the associative model of governance lies precisely in the fact that it substitutes a mix of public and private roles in place of the exclusive role of the public bureaucracy. It devolves a greater degree of responsibility for the policy outcome onto those organizations that will either enjoy the fruits of the policy success or live with the consequences of its failure. In an associative model, the relevant role for the state is to be one of the institutions of the collective order, working in relationship with other organizations, rather than operating in its more traditional command and control fashion. The state in this model continues to establish the basic rules governing the operation of the economy, but it places much greater emphasis on the devolution of responsibility to a wide range of associative partners through the mechanisms of 'voice' and consultation (Amin 1996, p. 19). The key challenge in the associative model is to achieve the most effective balance between the state's need to provide direction and the desirability of providing greater 'voice' through

the devolution of responsibility.

The associational conception of the state also implies the devolution of power in the state system from remote bureaucratic ministries at the national level to local and regional levels of government better positioned to build lasting and interactive relations with firms and business associations in their regions. In addition, it may involve the delegation of certain tasks like enterprise support services from formal government agencies to accredited business associations because the latter possess relevant assets, such as knowledge of, and credibility with, their members, which the state needs to enlist in order to ensure the effectiveness of its support policies. Devolving power to the lower levels of government creates the opportunity for more meaningful dialogue to take place at the regional level. This is important because dialogue or discussion is central to the process by which parties come to reinterpret themselves and their relationship to other relevant actors within the local economy (Morgan, 1999a).

3. Social Capital and Regional Innovation: Altering Technological and Developmental Trajectories in Learning Regions

Although the geographic basis of proximity is necessary for the constitution of a learning region, it is not sufficient. Learning depends on the presence of two key factors: a certain degree of business intelligence that serves as the demand trigger for new knowledge and the access to, or availability of, that knowledge. But what is crucial to the success of this process is an 'intelligent cell' to trigger the learning process. In most European contexts, the regional government and its development-related agencies play a key role in animating the regional innovation system to stimulate the learning process. Thus regional governments provide the central stimulus to spark the transition to a learning region. This requires a willingness on the part of government agencies to resort less to command and control forms of imperative order and rely more on consensus building and inclusiveness in the policy

process. This shift in governance style is seen as necessary to promote the qualities of institutional thickness and social capital associated with learning regions (Landabaso, Oughton, and Morgan 1999).

The concepts of social capital and trust help explain why certain kinds of economic activity tend to cluster despite the opposing trend towards dispersal brought on by the spread of globalization. Maskell suggests that it may also explain why some regions continue to be 'sticky' in attracting strong concentrations of firms in related activities. The process of globalization transforms what were previously localized inputs into *ubiquities* readily accessed by many firms at a variety of locations around the globe. Firms faced with this shift search for alternative inputs on which to base their competitive advantage. Such inputs must have a high potential value and be difficult to imitate or replicate (Maskell 1999). Social capital represents one such input. It becomes progressively more valuable as the process of globalization continues; it is not equally available in all communities; it cannot be purchased or transferred; and it is difficult to imitate or replicate. Trust, as a component of social capital, helps overcome market failures or reduce the level of market costs for firms in densely related networks, by supporting stable and reciprocal exchange relationships among them. Partners involved in these relationships establish a willingness to exchange information on something more stable and enduring than a 'barter' basis. Both sides of the relationship can benefit from lower costs and improved quality in the knowledge thus attained. As these relations grow and develop, a larger component of the knowledge shared and transmitted becomes tacit, rather than explicit, with a concomitant increase in the level of understanding gained through the exchange. Ultimately, the relationships can be extended to include other partners of the respective firms, further enhancing the extent and the value of the network (Maskell 2000; Lorenz 1993).

It is important to distinguish between two aspects of social capital identified here: one attributable to historical and cultural factors whose roots are buried deep in the region's past, such as that described by Putnam in his account of Italian democracy, and the other built up through the dense interactions of firms engaged in interrelated economic activities that have developed a high level of trust in their mutual dealings. While the two are not mutually exclusive, it is important to note key differences between them. The problem with the first approach is the difficulty of reconciling the analysis of the origins of social capital with the general prescription of the need to build it. If social capital requires centuries to build and its roots are buried deep in the cultural and social history of a region or locality, then how can it be reproduced in regions or localities trying to establish a basis for their own competitiveness in the current globalizing era (Maskell 2000)? Equally problematic is the fact that the historical and communitarian concept of trust overlooks the complex and multi-dimensional aspects of the relational variety. It fails to allow for the kind of experimentation and interactive learning that builds the second kind of trust and social capital (Leadbeater 1999, 149-68).

To those familiar with the economic environment and business culture of North America, this point is highly relevant. Cohen and Fields (1999) have warned that trying to apply European conceptions of trust or social capital, primarily in the historical and cultural sense, to North America is of limited utility. The social capital found in successful North American regional economies is much closer in nature to the relational variety described above. Social capital in Silicon Valley is grounded in the collaborative partnerships that emerge out of the pursuit of economic and institutional objectives related to innovation and competitiveness. It grows out of collaborative networks of interacting firms, driven essentially by their mutual self-interest in maintaining their innovative edge. The trust found in Silicon Valley is based on assumptions about the reliability and reputation of key actors – a

performance-focused trust, grounded in the expectation of how prospective partners will perform in a network relationship.

Brown and Duguid reinforce the point that people are remarkably well informed about what other firms are up to in Silicon Valley – who's good at a particular task, who's not, who can be relied upon, and who can't. The variety of trust found in Silicon Valley is characterized as 'swift trust,' a form that develops through close, interdependent interaction and reciprocity over short, intensive periods of time. "(R)eliable performance (or practice) builds communities and networks, and out of this can come trust. But these are not the familial communities of Northern Italy. They are the workplace communities developed as people work together" (2000, 36).

The networks of social capital in Silicon Valley are based in the productive interactions between a concrete set of social institutions and economic actors. The principle elements comprising these networks include: the core research universities that encourage close relations with outside firms that can adopt or commercialize the outputs of their research programs; US government institutions that funded much of the critical research underlying the Valley's core innovations, and served as the demanding first user for its outputs (Mowery 1997); an unparalleled aggregation of venture capital firms that serve both as an essential source of start-up capital, but also as a repository of technical and managerial expertise to assist high-tech companies; legal firms with specialized knowledge and experience in key services invaluable to the high-tech firms, including the increasingly important specialization of immigration law; business networks that reinforce the patterns of interaction among the firms; a labour market that does not penalize – and even values – a high degree of mobility, thus helping to circulate ideas among the network of firms and ensure that hard-won experience, whether it results in success or failure, is quickly redeployed in the service of other firms; and finally, an industrial structure rooted in the specific characteristics of the

technologies that it is producing (Cohen and Fields 1999, 111-12).

Other regions eager to emulate the success of Silicon Valley must better understand the specific character of social capital and networked relations that underlie its success. To the extent that similar conditions conducive to generating high levels of trust and social capital exist in other regional economies of the United States or Canada, it is likely that they conform to the performance-based variety in Silicon Valley, rather than the more associative and developmental variety evidenced in some European regions. Many regions enjoy the knowledge assets and research infrastructure that are necessary for the development of an innovation-based development strategy, but they differ dramatically in their capacity to mobilize these assets in the pursuit of such a strategy. Similarly, experience suggests that local communities can formulate strategies to alter their economic trajectory and improve their chances of economic development. The successful initiation of this kind of process depends upon the ability to collaborate across boundaries – both geographic and social. The impact of one recent initiative, *Joint Venture: Silicon Valley,* on improving the quality of civic engagement in the Valley has led to the conclusion that even in established clusters, the concentration of a large number of firms is not sufficient to transform a particular locale into a vibrant and dynamic regional economy. It also requires the presence of an 'economic community' – strong, responsive relationships between the economy and community that afford both companies and the community a sustained advantage. These relationships are mediated by key people and organizations that bring the economic, social and civic interests in the community together to collaborate (Henton, Melville, and Walesh 1997).

Based on their experience with community-based initiatives Henton and his colleagues (Henton et al. 1997; Montana et al. 2001) argue that social capital is a critical ingredient in the success of the most dynamic clusters and regional economies. Social capital *can* be created

and the basis for doing so is the establishment of collaborative networks between various elements of the business and civic communities.

> The presence of *collaborative institutions and organizations*, such as cluster organizations, professional networks, research-industry consortia and entrepreneurial support networks, greatly facilitates this environment. These alliances, networks and other relationship-building mechanisms create connections and linkages vital to economic development in a technology-driven world. . . . many regions fortunate enough to have university research assets underuse these knowledge economy resources, precisely because relationships have not been established to connect the university and local industry. . . . Relationships matter (Montana et al. 2001, p. 10).

Collaborative organizations and institutions often embody values and attitudes that are intrinsic to the region. This element of the regional culture is an important, but overlooked, component in the design of regional development strategies. The essential criterion for success is finding the appropriate mechanisms to engage key members of the community in a sustained effort to advance its opportunities. The recruitment of a committed, creative and collaborative leadership is the most essential element for the success of a strategic planning process in regional foresight and regional economic development. These kinds of collaborative leaders invariably share certain characteristics: they can see the opportunities opened by the emergence of the knowledge-based economy; they exhibit an entrepreneurial personality, in both a business and a 'civic' sense; they are willing to cross functional, political and geographic boundaries in pursuit of their strategic goals and they are committed to, and comfortable working in teams (Montana et al. 2001, 31-35)..

The leadership for such a strategic planning exercise needs to create a broad buy-in from all the relevant elements of the regional and local community. The first challenge that the leadership of such an exercise must meet is to recruit an effective team to manage the strategic planning process in foresight and economic development. Having done so, it is crucial to elaborate a sense of how the foresight exercise can contribute to the development of a vision for the region's economic future. For the entire exercise to remain credible in the

eyes of its participants, the vision must be perceived as achievable – something that is grounded in the current reality of the regional or local economy and that could grow and develop logically out of its economic base or knowledge assets. If the vision requires a serious departure from the current trajectory of development, ie. a break with its established path, then it must provide a credible account of how the alteration of this trajectory can be achieved. The process of strategic planning outlined above bears a certain affinity to the RTP/RIS exercises, as well as some of the foresight exercises, undertaken in Europe during the past decade. The RTP/RIS exercises are valuable in pointing the way towards a process that involves all three levels of governance in the European Union in a coordinated effort, while working outside the bounds of a traditional state structure. The program is also predicated on the notion that strategic planning and foresight exercises can be developed using a bottom-up approach within a framework of multi-level governance (Landabaso, Oughton, and Morgan 1999; Morgan and Henderson 2002).

4. The Production of Social Capital: Collaboration Culture and the Institutional Constraints on Inter-Regional Learning

We turn now to the third question posed at the outset of this paper: to what extent do structures and institutions at multiple levels of governance shape and circumscribe the scope for local action and possibilities for generating effective, ongoing social learning processes? We have noted that this issue is significant for two reasons. First, our expectations concerning what might be achieved through local social learning and knowledge management processes should be informed by our understanding of how institutional forces shape and constrain (though they will not necessarily determine) the attitudes, behaviour and practices of local economic actors. Second, our ability to borrow or import 'best practice' models from elsewhere may indeed be limited by important (but unacknowledged) differences in institutional frameworks and regulatory mechanisms at higher levels of governance. Failure to appreciate this could very well undermine well-intentioned efforts at the regional scale to

achieve consensus and co-operation amongst participants in regional foresight exercises.

As noted earlier, much has been written about the region-specific cultures that are said to foster (at least in some regions) trust building, openness, cooperation, information sharing, and inter-firm learning, leading to more successful innovation and production. What is less well appreciated about such cases is the institutional foundations of such business practices. Underpinning these close, interaction-intensive relations (which support learning based on tacit knowledge flow) is a shared macro-regulatory framework that creates a common set of conventions and norms governing inter-firm interaction (see Gertler 2002). This framework is reflected especially in a set of overarching economic institutions regulating capital markets, labour markets, corporate governance and industrial relations that, collectively, help shape a shared set of expectations, practices, attitudes, and norms to facilitate social learning processes.

Hence, it is important to appreciate the role played by supra-regional (largely national) institutions in creating a supportive regulatory context to facilitate extra-market (i.e. untraded) interaction and collaboration. In this sense, the national regulatory framework can be seen as providing the necessary but not sufficient conditions for local inter-firm learning and related practices to thrive – the bedrock upon which social capital is constructed, if you will. The key point here is that each national system produces its own distinctive set of institutions, which in turn makes certain forms of characteristic behaviour more likely, and others less so (Whitley 1999; Hall and Soskice 2001). Several examples serve to illustrate these points more concretely.

First, considering celebrated cases such as Germany, the forms of inter-firm cooperation that are said to abound in regions such as Baden-Württemberg have been enabled

by a sympathetic set of national regulatory features – particularly in the realm of labour markets and industrial relations. These features have the net effect of largely removing from the field of competition such potentially divisive issues as wage determination, working conditions, and worker empowerment, as these are set through a combination of national and regional industry-wide agreements which are frequently extended to cover even non-union employers. As a result, firms resort to competing largely on the basis of product and process technologies and quality.

The impact on inter-firm relations is distinctive and unmistakable. On the one hand, it produces a fierce competitiveness and strong degree of secrecy that discourage direct collaboration with one's competitors. After all, if one's technology is the primary source of competitive advantage, then this will be jealously guarded and firms will go to extraordinary lengths to keep proprietary technical information from their competitors (Cooke and Morgan 1990; Cooke, Morgan, and Price 1993; Gertler 1996). At the same time, in pursuit of technical excellence, firms are encouraged to cooperate vertically with specialized suppliers of key inputs and, because of minimal inter-firm variation in wages, such outsourcing practices do not tempt firms to engage in wage-lowering competition, nor do they undermine the power of unions.

Furthermore, the constellation of nationally legislated labour market institutions facilitates considerable *indirect* cooperation between firms in the same industry, through industry-based employers associations and chambers of commerce in which membership is mandatory. These institutions play a major role in designing and delivering training programs, and in spreading common organizational innovations throughout entire industries. As Wever (1995, p. 11) notes, the larger national structures that give rise to such institutions in Germany "create incentives that support the sharing of information and knowledge and

thus encourage the diffusion of organizational innovation". Furthermore, she sees similar structural conditions operating within the Japanese economy (p. 11): "The shared logic underlying the organization of the German and Japanese political economies is not cultural. It is the logic of institutional and organizational linkages."

On the Japanese economy, widespread inter-firm cooperation, including 'relational contracting' between buyers and suppliers, has received considerable attention in the business press. In assessing the literature on this phenomenon (and especially the role of supplier associations in promoting inter-firm learning and diffusion of 'best practice'), Morgan (1996) has concluded that 'culturalist' interpretations of this set of practices are inadequate. Instead, "trust and reciprocity (i.e. social capital), far from being pre-existing cultural assets, hardly existed prior to the war economy" (p. 4). Drawing on the work of Nishiguchi (1994), he continues:

> In fact such social capital was actively constructed through a combination of corporate necessity (like the fact that large firms had to delegate tasks to suppliers to meet surging post-war demand) and legislation which promoted small firm associations on the one hand and prevented unfair subcontracting practices on the other.

As a result, inter-firm relations in Japan became far less exploitive. With the benefit of new rules governing inter-firm subcontracting, both supplier and buyer came to benefit from a social process of joint problem solving.

How do such institutional features shape the nature of social knowledge management processes in the German system? Morgan (1999b) provides a fascinating case study of the experience of Baden-Württemberg's Future Commission in the early 1990s, with "the regional state as animateur of technological change and regional renewal" (Morgan, 1999b, p. 90). This commission was created to lead a region-wide process of social dialogue and consensus-building to help the region respond to serious competitive threats to its traditional core industries (automotive, machine tools, electronics) and to set the regional economy onto

a new trajectory emphasizing emerging technologies. The process of producing this 'dialogue-oriented market-based industrial policy' was clearly organized and mediated by a set of important state and non-state institutions. Although the recommendations of the Future Commission promoted "a view of the state as the 'innovative enquirer', organizing and guiding a future-oriented dialogue in both the classical industries and the emerging new technology sectors" (Morgan, 1999b, p. 91), other institutional players played a crucial role. Most notable here were the Industrie- und Handelskammer (Chamber of Industry and Commerce), large industrial unions such as IG Metall, and applied research organizations such as the Fraunhofer Institutes and Steinbeis Foundation.

Within the context of the German regulatory environment, this kind of institution-heavy approach makes perfect sense. It seems equally clear, however, that efforts expended by regional agencies in other national systems to replicate such a system in order to promote regional foresight processes based on network-building, brokered co-operation, information-sharing, and the development of trust between individual firms will be largely wasted – at least, so long as the goal of policy is to build German or 'European-style' social capital and co-operative behaviour (Cohen and Fields 1999). It is clearly inadequate to try to convince firms to co-operate with one another simply by telling them to do so. Similarly, preaching to firm managers about the joyous benefits awaiting them once they adopt a new co-operative stance, will lead to little of lasting benefit if the 'best practices' they have been told to emulate arise from within a larger institutional matrix that is very different from their own.

More sophisticated attempts to build a 'collaboration culture' and offer firms opportunities for learning-through-interacting by the promotion of research networks and consortia, sectoral centres for training and/or research, and other tangible elements of a regional innovation system may bring only limited results, if these too tend to ignore the role of the broader, systemic institutional framework in creating (or undermining) incentives to co-

operate. As Wolfe and Gertler (1998; Gertler, Wolfe and Garkut, 1998) have shown, such policy experiments in Ontario during the first half of the 1990s were ultimately frustrated by systemic impediments to co-operation. Hence, so long as labour markets are regulated in a way that discourages investment in training by firms, the resultant poaching of skilled labour and managerial talent will do little to kindle the spirit of co-operation between firms competing for the same skilled labour. So long as capital market structures and mechanisms for industrial finance impose a strongly short-term outlook on firms, they will be understandably reluctant to invest in the creation and maintenance of long-term inter-firm relations.

Of course, this does *not* mean that socially organized learning processes cannot unfold under very different institutional frameworks. In a recent paper, Christopherson (2002) lays out what she considers to be the central features of an American-style "market governance model" (p. 16), which have promoted the emergence of US strengths in a set of 'project-oriented' industries including electronic media and entertainment, advertising, management consulting, public relations, engineering and industrial design, computer services, and research and development related to computing and telecommunications. She describes the organization of production in such sectors in the following terms:

> In strong contrast to the manufacturing model, these industries or segments of industries have short time horizons and are project oriented. Production organization typically involves combinations of different labor inputs and high labor turnover or short-term contracts. ... Production organization is carried out by ensembles rather than teams. ... Personal networks are more significant than a sense of identification with the parent corporation and trust is vested in other individuals in the same position rather than in an employer ... U.S. workers ... have little loyalty to employers and no expectation of continuous employment. ... Rather than being part of a learning organization, they act as individual technology-transfer agents, moving ideas and techniques from firm to firm (pp. 16-17).

Christopherson also comments explicitly on how this system shapes inter-firm cooperation:

> There are few incentives for inter-firm cooperation and many disincentives, such as those built into property-rights law. ... These mechanisms ... work against any meaningful long-term intrasectoral cooperation among firms. ... In short-term 'venture' projects, the firm is a venue for combining specialized inputs around short-term investment goals. It is not a learning organization but a staging organization, a platform for developing profitable activities. Interrelationships with firms are based on the ability to provide specialized inputs (presumably at the lowest cost), not on the ability to provide continuous input regarding the quality of a product. Trust is rooted in experience with an individual, not with a firm, so networks are individual; they may operate independently of the firm's objectives (pp. 10-11).

The essence of Christopherson's argument is that, under a very different set of institutions governing capital and labour markets, and corporate governance, the very concept of the firm itself is transformed. So too are the kinds of social relationships that are likely to develop between economic actors locally. Clearly, there is considerably more emphasis on the role of individual workers as agents of social learning and knowledge management. And institutional mechanisms for coordination are far more decentralized.

Given these characteristics, it should come as no surprise then that the kinds of trust described earlier as proliferating in places like Silicon Valley should be most accurately deemed 'swift' and 'performance-focused', developing through close, intense, project-based interaction over short periods of time. Under such circumstances, it also makes perfect sense that the kinds of social visioning and regional foresight exercises in Silicon Valley and other American cities described above should be *much more centered on individuals operating as civic entrepreneurs*, and far less focussed on formal institutions (state-based and otherwise).

Recent case studies of local reflexive, social learning exercises in some of Canada's leading technology communities (Toronto, Waterloo, and Ottawa) provide further evidence of a characteristic North American regional foresight model emerging as its city-regions seek to reposition themselves on new technological trajectories. In two of the cases, Ottawa and Toronto, recent foresight exercises offer valuable insights into the factors that contribute to, or impede, the success of such undertakings; while the Waterloo case offers a different

perspective on the benefits of effective mobilization at the community level. In both Ottawa and Toronto, major foresight exercises were launched in partnership with the Province of Ontario's Office of Urban Economic Development to chart the competitiveness of the leading clusters in the local economy and their prospects for growth (ICF Consulting, 2000; ICF Consulting et al., 2000). In both instances, the method of analysis used was similar; however, the broader process in which the visioning or foresight exercise was grounded differed dramatically. In the case of Toronto, the study was done by a US consulting firm in partnership with local consultants and under the direction of the Economic Development and Planning Offices of the City of Toronto. There was little in the way of the broader participatory mechanisms to engage key members of the community in the effort, nor did it involve the committed, creative and collaborative leadership described above as essential to the success of such exercises. In part, this approach reflects the absence of a strong cohesive leadership in Toronto committed to the economic success of the entire city-region, as well as the lack of key 'civic entrepreneurs' in either the economic or political sphere. This shortcoming, in turn, stems from the fact that, given Toronto's stature as the financial and industrial centre of the national economy, many of its key business leaders focus their attention at the national or continental scale, rather than the local or regional one. In part, it also arises from the difficulties of coordinating interests across the broad range of economic sectors represented in the local economy and the spatial scale of the city-region. However, the inability to mobilize creative and collaborative business leaders from the economic sphere and the failure of civic entrepreneurs to emerge from other areas of community life has undermined the ability of the region to take full advantage of its foresight or 'visioning' exercise.

The competitive study of Ottawa differed dramatically from the outset. A key factor that differentiates the Ottawa clusters from those in Toronto is the strength of

the local ‘institutions of collaboration’ and the high degree of social capital that they generate (Wolfe, 2002). The linchpin of these institutions is OCRI, the Ottawa Centre for Research and Innovation, a not-for-profit organization dedicated to helping the city’s technology community shape its economic future. Founded in 1983 as a collaborative effort among partners from industry, the regional municipality, the local institutions of higher education and federal laboratories, OCRI currently has about 700 members and a budget of $4.5 million. OCRI recently took over the economic development role of the municipal government that provides it with $2 million annually to fund this aspect of its activities. OCRI sponsors a wide range of corporate programs that involve up to 120 events annually and afford the members of the Ottawa area clusters virtually unlimited networking opportunities. OCRI is also involved in a dense network of partnerships with many of the federal and provincial organizations discussed above aimed at strengthening the region’s innovation capabilities. These partnerships include provincial Centres of Excellence, CITO, MMO and PRO, working relationships with the Ottawa-Carleton Manufacturers Network and the Ottawa Photonics Cluster, and joint ventures with the National Research Council’s Regional Innovation Centre and Vitesse program.

OCRI was closely involved with The Economic Generators Initiative in 1999-2000 that was launched under the auspices of The Ottawa Partnership, a group of public and private leaders committed to advancing the local economy. The mandate of TOP “is to provide leadership and advice at a strategic level, on action required to improve and growth Ottawa’s economy” (ICF Consulting et al., 2000, p. i). TOP was formed in 1999 by an agreement between the City’s key economic development agencies on the need for a board to coordinate and align the various activities underway in the region. The membership of TOP includes the chairs of the region’s business and economic development agencies, and representatives of its

municipal council, the higher education sector, and the business community at large. The TOP leadership decided to undertake a detailed study of the region's 'economic generators' as one of its first priorities and to use the study to prepare a strategic plan for the further development of the key engines driving the local economy. The analytical exercise differed from that undertaken in Toronto in the strong level of interest and participation evidenced by the local business community. One of the consultants involved in the study commented in a local paper that the level of community involvement was higher than in any comparable study he had done in the US or Canada. More than three hundred individuals participated in the work of the various cluster groups that formed part of the visioning exercise and helped formulate a total of thirty three specific goals intended to promote the growth of the seven key clusters identified as the growth generators for the regional economy. The exercise also produced a higher-order set of flagship initiatives designed to work across the individual clusters to benefit the regional economy as a whole. These included a branding and marketing campaign for the region; a Smart Growth initiative to align infrastructure planning more effectively with the needs of the leading clusters; the creation of 'technological listening posts' drawing upon the knowledge resources of the region – the National Research Council's local laboratories and the post-secondary institutions in the region – to identify future technology scouts, strategic planners and research leaders from around the world, to disseminate information to the local clusters on developments in cutting edge research and development, competitive opportunities, and potential threats emerging in the form of new technological challenges; plans to wire the entire region with dark fibre and provide broadband access for all citizens in the region; and a reskilling program to broaden the pool of highly qualified labour available for local firms among others.

The high level of participation in the Economic Generators Initiative engendered great expectations in the region about the results that would follow from the presentation of the

report in June 2000. Unfortunately, the report was issued just as the high tech sector in North America entered a serious downturn sparked by the severe cutback in capital spending in the global telecommunications industry. Two of Ottawa's leading clusters, the telecom equipment and photonics clusters, were acutely impacted by the downturn. While the recession has undermined much of the optimism that marked the regional economy when the report was released, The Ottawa Partnership, in cooperation with local economic development agencies and the municipal council, has forged ahead with planning for many of the cluster and flagship initiatives outlined in the report. Ten of the thirty three cluster initiatives have achieved tangible results. New steps have been taken to strengthen the region's photonics and biotechnology clusters with the formation of the Ottawa Biotechnology Incubation Centre (OBIC) and the Ottawa Photonics Research Alliance (OPRA) respectively. Municipal leaders feel that substantial progress has also been made in advancing a number of the flagship initiatives, including the branding campaign, the Smart Growth effort, preliminary plans to provide broadband access throughout the city and the formation of StartingStartups (a venture capital company) and TalentWorks (a reskilling program). TOP leaders are optimistic these measures are contributing to the region's future as the economic upturn gains strength (Chappell, 2001).

A third key technology community also affords an illustrative example of the benefits of increased associativeness at the community level. The regional government of Waterloo actually includes three separate municipalities who have been working more closely together over the past decade and a half to support the transition in the region's economy from a traditional manufacturing and service (insurance) basis to the emerging high tech industries of software, wireless telecommunications and optics. The first initiative was launched in 1987 when the economic development agencies of the communities, who had previously been competing against each other for inward investment, agreed to form Canada's Technology

Triangle (CTT) as a joint marketing initiative to capitalize on the region's traditional manufacturing base and its emerging high technology strengths. While the record of CTT has been somewhat mixed, its formation signified a growing reflexiveness on the part of the communities' leaders in terms of their awareness of the need to transcend traditional political and organization boundaries. The creation of CTT led a decade later to the creation of Canada's Technology Triangle Acceleration Network (CTTAN) as a new institution designed to help early-stage growth firms become investment-ready and to form a link between startup firms and equity investors. CTTAN is not a venture capital firm itself; rather, it is intended to provide an investment mediating and facilitating service. In the view of one recently concluded study of the region, "CTTAN represents an important landmark in regional institutional development because for the first time . . . private sector actors and government officials became directly involved in the process of partnership formation" (Leibovitz, 2000, p. 68).

Another significant indicator of the growing strength and vitality of the civic leadership in the regional economy came with the formation of its own industry association, Communitech, in June, 1997. Communitech is an industrial association founded by a number of leading companies in Kitchener Waterloo, including Open Text, Research in Motion, Descartes Systems, Mortis Kern Systems, and a number of others. Currently, Communitech has about 240 members, including a large number of service firms in the legal and accounting field. About half of its members are technology firms. Communitech was established because of Tom Jenkins, the CEO of Open Text. He argued that there was a good opportunity in Waterloo to build on the existing strengths of the region, including its talented labour pool, excellent quality of life, strong research base and steady stream of technology coming out of the University of Waterloo. Though Jenkin's leadership, forty people were convinced

to put up money to establish Communitech and retain a full-time president. His point was that success feeds on itself and a strong industry association would help support the further growth of the emerging clusters in the regional economy.

Communitech works in association with the economic development offices in the different communities that make up the regional cluster and in conjunction with the local companies that are gaining a larger profile. Its explicit purpose is to advance the needs of the technology-oriented firms in the region with respect to the different levels of government in the areas of training, marketing and export development and the provision of infrastructure. Communitech runs an array of programs similar to those sponsored by OCRI in Ottawa. It includes Peer to Peer groups, a mentoring program, advocacy activities on behalf of the high tech cluster, seminars and events and the Business Accelerator Program described above which has assisted over 120 entrepreneurs since early in 2000 and helped to raise $65 million in capital. As in the case of OCRI and TOP in Ottawa, the creation of Communitech in Waterloo symbolized an approach to regional governance that transcends traditional jurisdictional boundaries and attempts to establish new policy networks between the community and the provincial and national levels of government. The association has contributed to the creation of a ‘buzz’ about the technology potential of the region and attracted interest from as far afield as Silicon Valley.

The three case studies documented above draw the attention of both scholars and policy makers to the need for national institutions to provide the enabling, accommodative space within which particular regional social learning phenomena may arise. They also demonstrate the capacity for local variability within such national systems, based on the histories and inherited structures of each community and the actions of individuals and

organizations within them. In this sense, then, we can understand the spatial construction of social learning dynamics, including those that socially 'produce' regional foresight exercises, as occurring through the interaction of national and subnational regulatory forces and the agency of individuals. Indeed, our earlier discussion of the recent European experiments with RTP/RIS and related initiatives suggests that supranational levels of governance also have an important role to play.

5. Global Players and Local Foresight Processes: Prospects for Engagement?

As noted at the start of this paper, a key issue for localities and regions is the extent to which they can engage large, global-scale economic actors in both local innovation-based learning-through-interacting and broader regional foresight exercises. Do MNCs embed themselves in locally grounded social learning dynamics (i.e. learning regions) at home, abroad, or both? Do firms seek to embed themselves in such interaction-rich learning regions, no matter where they might be found, or will they keep the bulk of their innovation-generating activity in those 'home' regions whence they originated? The learning region literature is quite indeterminate on this question, although Morgan (1997) is at pains to point out that, while the task of embedding and engaging these actors locally is a difficult one, it is both possible and crucial for the long-run success of regional economies. This is clearly a question of particular importance for regions where levels of foreign ownership in the economy are high. However, this is also a question of more general significance, as there is virtually no regional economy today that remains untouched by the influence of large, globally-organized firms (Dicken 1998). Unfortunately, there is still no strong consensus in the literature on the answers to these questions (Mytelka 2002).

The literature on globalization, innovation and the role of regions can be summarized by distinguishing between several different positions, each of which holds distinct implications from the perspective of individual regions. The 'techno-globalism' perspective

(Ostry and Nelson 1995; Archibugi and Michie 1997; OECD 1998) holds that technology flows freely across borders because the barriers to the international diffusion of technology are small and shrinking, with the mobile multinational firm as the conduit through which such technology diffusion unfolds. Under this scenario, one would expect to find that local branches of multinationals have privileged access to (intra-firm) sources of innovative ideas when compared to domestically owned firms, and that these sources are most likely to be extra-regional in origin. However, the knowledge flows between these branch plants and potential innovation partners in the local host economy remain weak.

A second perspective, that emphasizes the *internationalization of R&D*, argues that large international firms will not continue to retain their primary research activities at the original headquarter location. Instead, they will distribute their R&D activities across a number of countries and regions, in pursuit of those locations that offer the best concentrations of innovative capability and complementary knowledge assets, embodied in skilled scientific and technical labour, specialized research institutes and universities, and world-leading firms (Florida 1997; Cantwell and Janne 1999). In this vision, which might be thought of as describing a 'post-national' innovation system, one would expect differences in R&D intensity and innovativeness between domestic and foreign-owned firms to be small or absent altogether, as foreign-owned firms locate these activities overseas to gain access to and take advantage of locationally specific technological capabilities.

A third position, somewhat intermediate between the first two, is associated with the work of Patel and Pavitt (1991; 1994; Pavitt and Patel 1999) and supported by Doremus et al. (1998). It holds that multinational firms continue to maintain a strong 'home base' where the bulk of their R&D continues to be performed in their country of origin. Under this scenario, the foreign operations of such firms may support innovative activity, but this is more likely to be confined to the customization of existing technologies to suit the tastes or unique

conditions of local markets. Accordingly, one would expect to find a heavy emphasis on marketing, close-to-market development (rather than full-fledged R&D), and the strong local relationships with *customers* rather than suppliers or potential research collaborators. Within the larger corporate hierarchy of the global firm, any innovation-generating activities in the branches would be discounted and devalued by senior managers at head office, even if they were demonstrably successful (Schoenberger 1997). Linkages to science-intensive local/regional universities and public research labs would logically be of less importance for such foreign-owned firms, especially when compared to the practices of domestically based counterparts. For indigenous firms, linkages to local sources of innovative ideas, whether in the innovation-supporting infrastructure of universities and research laboratories, in the capabilities and demands of customer and supplier firms up *and* down the supply chain, or in the complementary knowledge assets of competitors, ought to constitute the very essence of their 'home base'.

The significance of this debate for regional foresight processes is considerable. After all, it stands to reason that the likelihood of successfully engaging global actors in regional foresight activities will depend directly on the extent to which they have already demonstrated a commitment to joint, social learning with technology partners in the regional economy. And yet, wherever such big players are present – and there are increasingly few regional economies where this is not the case – the success of regional foresight activities will depend crucially on their enthusiastic and meaningful participation.

A review of some recent evidence from North America is again instructive here. In the wake of NAFTA, the geographical reorganization of production systems on a continental rather than national scale (Gertler 1999) would seem to have created possibilities for those foreign-owned establishments remaining in Canada to pursue embed themselves in local social learning dynamics with new vigour. What does the recent evidence tell us about the

extent to which such relationships have in fact begun to emerge in Central Canada? Thus far, the consensus view is that foreign-owned manufacturing establishments have *not* overwhelmingly rushed to embrace these new possibilities (Gertler and DiGiovanna 1997; Britton 1999; Gertler, Wolfe and Garkut 2000). To the extent that they have formed collaborative relationships with other entities (whether these be firms or institutions), their partners tend to be found outside Canada. For American-owned firms, these links are strongest with innovation partners in various regions of the United States, following paths that are well established through existing corporate relationships.

Set alongside further evidence documenting the 'hollowing out' of foreign-owned corporations' Canadian headquarter operations (Arthurs 2000), this evidence would suggest that in the post-NAFTA era, foreign capital is no more deeply embedded in Canada's learning regions than it was before. On the other hand, Gertler, Wolfe and Garkut (2000) find that Canadian-owned firms in their sample *have* begun to develop close, collaborative ties with local customers, suppliers, and innovation-supporting institutions (universities, research labs, technology transfer centres) in their home regions. They conclude that, despite the pervasive rhetoric about the global economy, nationality of ownership does still influence the behaviour and practices of private economic actors. Two of the case studies documented in the previous section, those of Ottawa and Waterloo, also document the benefits of enhancing the regional technology base and forms of associative governance as a mechanism for strengthening strategic partners and alliances between foreign and indigenous high technology firms, attracting expatriate entrepreneurs and innovators to return to the local economy and even attracting the attention of foreign venture capitalists to invest in the regional economy (Wolfe, 2002).

If these results are representative of other industrial regions, they suggest that public policies oriented towards embedding foreign-owned plants into host economies are of great

importance, since multinational firms do not appear to be sinking deep roots into host economies of their own accord. On the other hand, their failure to do this suggests that the task ahead for local and regional policymakers will be nothing if not challenging.

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