Learning and Innovation: Implications for Regional Policy. An Introduction.

David Doloreux and Richard Shearmur
INRS-UCS
Montreal, Quebec H2X 2C6, and

Centre interuniversitaire de recherche sur la science et la technologie, CIRST
UQAM, C.P. 8888, Succ. Centre-ville
Montréal, Quebec H3C 3P8

Pierre Filion
School of Planning
University of Waterloo
Waterloo, Ontario, N2L 3G1

Since the late 1990s, learning and innovation have captured the attention of an increasing number of researchers and policymakers: this interest, fuelled in part by the advent of the 'knowledge economy', and the changing ways in which information is disseminated and shared, has led to some pragmatic questions. One of these concerns the policy implications of learning and innovation for regional development. Indeed, from Michigan (CSLR 2001) to South East England (SEEDA 2001) -- via Copenhagen (Maskell and Törnquist 1999) and Finland (LUT 2001) -- there has been a proliferation of policy initiatives aiming to stimulate development through the encouragement of learning and innovation. These concepts -- whilst attractive and unobjectionable -- are neither clear nor readily operational, and their relationship with space is still a matter of debate (Malecki and Oinas 1999; Echeverri-Carroll and Brennan 1999; Sivitanidou 1999). Furthermore, although there is a good deal of high quality descriptive literature which puts forward the characteristics of individual learning regions (for example, Braczyk 1998; Acs et al 2000; Boekema et al 2000) there have so far been fewer publications that attempt to draw out general characteristics and definitions, which alone could justify widespread policy intervention.

In this special edition of the Canadian Journal of Regional Science, we attempt to extend the empirical field and advance reflection on the spatial dimen-

ISSN: 0705-4580 Printed in Canada/Imprimé au Canada

sions of learning and innovation. We have gathered six articles by leading researchers from across Europe and Canada: without pretending to have reached the sought after conceptual clarity, the collection grapples with the link between learning, innovation and regional policy. The principal issues addressed are:

- how does recent thinking on learning and innovation affect regional economies?
- do regions play a role in the learning and innovation process?
- are there any lessons to be learned in terms of regional development policy?

Learning, Innovation and Regional Policy

It is clear from the articles which follow that the link between learning, innovation and regional policy can be interpreted in two distinct ways. On the one hand, Cooke and Lamari et al examine innovation at the firm level, and their articles, from very different perspectives, suggest means whereby policymakers can enhance innovative behaviour in the firm. In this sense, an innovative region is one in which establishments and firms are at the forefront of technique and procedure. On the other hand, Maillat and Kébir and Lajendijk examine innovation at the policy level. For them, an innovative region is one in which innovative policies and institutions emerge in response to the changing national and global environment. These two interpretations are not unconnected: Cooke and Lamari et al suggest new policy responses to encourage innovative behaviour at the firm level, whereas Maillat and Kébir and Lajendijk recognise that a possible aim of innovative regional policy is to enhance firm level innovation. Isaksen and Guillaume both integrate the two approaches and directly consider innovative policy responses that encourage innovative behaviour in firms.

Cooke, in the first article of this volume, provides an introduction to the concept of regional innovation systems. He does so by first describing a variety of territorial policy approaches, drawn from France and Japan, which attempted to stimulate technopoles and science parks in the 1970s and 1980s. In so doing, the variety of physical and institutional arrangements which have been experimented becomes evident: Sophia Antipolis -- which is basically a large business park between Cannes and Nice in France -- is a technopole, as is Sendai, a Japanese city of 800,000 people. The question of the geographic scale at which such regional policies operate is a key one which emerges from Cooke's analysis. The author then turns to policy approaches in Europe which have focussed more directly upon networking: these contrast with the linear approach to technopole or science park policies. However, some similar questions arise regarding the variety of geographic scales and institutional arrangements. In addition, beyond the common focus on networking, Cooke's detailed examples illustrate the unique characteristics of each policy initiative and the fundamental importance of direct involvement (in terms of policy formulation and

implementation) of local actors and institutions. From these examples of policies designed to develop networking at the regional level, Cooke proceeds to a tentative definition of Regional Innovation Systems, a typology of their components and characteristics, and a description of three regions which -- each to a differing extent -- meet the definition. The many examples which serve to structure Cooke's article lead him to conclude that there is "no single model of successful region innovation system" but that a number of key enabling factors -- such as economic and policy autonomy and a consultative policy mentality -- can be identified.

As a counter-point to Cooke's empirical and descriptive approach, Maillat and Kébir propose a conceptual framework within which regional innovation systems, and the growing importance of learning and adaptability at the regional level, can be understood. They introduce the idea of 'framework conditions', by which is meant the institutional framework constituted by national policies and strategies which affect the country's, and its regions' attractiveness. They argue that as the economy globalises, framework conditions which seek to homogenise development within a country (by ensuring similar infrastructure, fiscal policy, exchange rate, types of education and so on) may in fact be detrimental to regions which increasingly need to differentiate themselves from others in order to emphasise their own, unique, competitive and comparative advantages. In this context, a region's capacity to learn and to adapt to the changing world environment is a key factor, and national framework conditions should provide regions with sufficient leeway to develop along their own paths. The authors are careful to point out, however, that national framework conditions remain key to regional competitiveness from a global perspective: a country's political stability, its fiscal and financial policies, and other similar conditions play a pivotal role in the retention and attraction of investment. But, given these preconditions, the region is now called upon to play a growing role in providing local framework conditions more finely tuned to local conditions. In their conclusion, Maillat and Kébir highlight three areas upon which local framework conditions should focus: the development of local comparative advantage linked to specific local resources, the activation of learning processes linked to the local production system, and accessibility -- by way of know-how, but also of telecommunications and transport infrastructure -- of the local production system to external networks (partners, markets, mobile resources).

Whilst the first two articles deal primarily with the 'regional' dimension of regional innovation and learning regions, in the third article Lamari et al turn to the central concepts of innovation and learning themselves. After defining their terms and clearly identifying what is understood by innovation and learning in the context of their study, they seek to determine, by way of a systematic econometric analysis, some determinants of innovation within establishments. Their approach, based upon analysis of a large sample of firms, provides some key pointers regarding the role of networks, establishment size and exports. In addition, the large sample permits results to be decomposed by economic sector

and comparisons to be made between two regions -- urbanised Québec and rural Chaudière-Appalaches: the differences between the two regions, and the basic similarities between most sectors, are findings which, according to the authors, merit further investigation. The contribution by Lamari et al addresses some of the issues raised by Markusen (1999) and Morisson and Staber (2000), who have pointed out that in regional studies in general, and in studies of innovative regions in particular, there is often a lack of rigour and replicability, and an over reliance on case studies. From a policy perspective the results call into question the link between establishment size and innovation, and underline the importance of supporting exports and market contacts as a means to stimulate innovation and growth. In this their econometric conclusions provide support to those of Maillat and Kébir and Cooke.

Lagendijk, in the fourth article of this volume, does not accept the implicit economic determinism, and the essentially reactive character of regional learning and innovation, which is suggested by Maillat and Kébir's article; but, similarly to Maillat and Kébir, Lajendijk focuses upon policy learning (as opposed to other types of learning, such as that involved in innovation at the firm level). He firmly "rejects the image of regions as a 'natural' site for learning". He argues that the region -- in cases where regional policy learning occurs -- is a construct, borne by the interests of political actors. These actors are not necessarily local, and the region should be seen as merely one level at which the learning process can occur; the important questions, according to Lagendijk, are not so much whether and how learning occurs, but for whom and why. The question of scale, which is raised by Cooke, is taken up explicitly by Lagendijk as he tackles the interaction between the regional and the interregional dimensions of policy learning. The author applies these concepts to the case of land-use policy in two regions in the Netherlands. He highlights the role of academics, private consultants, businesses, governments and others, at a variety of spatial scales, in formulating or disseminating general concepts and in learning from local experience. He points out that the choices -- in terms of what to highlight, which discourse to adopt, and which policy to implement -- are governed by each community's interests and understanding, and that the final outcome in terms of regional policy innovation (in this case, land-use policy innovation) is ambiguous in terms of who it serves and for what reason. Rather than take these as given, Lajendijk argues that they are themselves legitimate and important objects of research.

Isaksen's article, the fifth, is concerned with the interplay between globalisation and local economies, with particular attention to the role of transnational corporations (TNCs) and their location decisions. In the first part of the paper he constructs a conceptual framework within which regional innovation systems and learning regions are described in relation to other types of region. Isaksen argues that innovation and learning at the level of the firm can be enhanced by a number of local attributes, revolving around the transmission of non-codified knowledge. However, not all regions share these attributes and Isaksen sets out

a number of problems which may prevent the development of successful local synergies. In the light of this discussion the case of an Ericsson research department is analysed: the department, located in a relatively remote area in Norway, was on the verge of being transferred to Oslo, but Ericsson eventually backed down when employees did not agree to follow. Isaksen argues that this example illustrates both the vulnerability of local areas to strategic decision making by TNCs, but also the resilience of regions where competitive advantage lies in the knowledge base. A knowledgeable workforce is probably not sufficient to ensure that companies such as Ericsson remain in the long term, and Isaksen describes the region's subsequent reaction to the averted crisis: the stimulation of institutions and facilities designed to enhance local interaction among ICT firms, including local TNC units. He concludes by suggesting that these units may act as crucial interfaces between global production networks and regional economies.

The last article, by Regis Guillaume, gathers together a number of strands introduced in the preceding papers, weaving them into a detailed description of one area in southern France, the 'Mecanic Valley'. He briefly describes the collapse of the region's traditional sectors (starting with coal in the 1960s, ending with steel and zinc in 1987) which led to prolonged crisis, job loss and out-migration. Since the mid 1990s, however, a cluster of precision tool and metal working firms has emerged, some of which were sub-contractors to the old steel works. The two largest of these are subsidiaries of national industrial groups; faced with national and international competition, they have turned to local firms not only as subcontractors, but also -- in some cases – as partners in the development of new products. In parallel with this economic restructuring, efforts by the local and national governments to create jobs initially met with little success: but since 1994 a new strategy, linking territorial marketing, technical and marketing assistance to local companies, training, and co-ordination between governmental organisations is bearing fruit. The DATAR (the French regional development agency) is overseeing this process as part of its national strategy for promoting local production systems outside of large metropolitan areas. Guillaume points out that innovation is occurring at a variety of levels: government policy is proving flexible, companies are co-operating, and companies are also branching out into 'high-tech' areas and exploring innovative production processes. Taken individually none of this may be revolutionary, but combined in the same territory -- and in particular in one which has been hit by several waves of de-industrialisation -- the author argues that it amounts to an example of an innovative regional production system. He points out, however that the process is still on-going, and that the system's ultimate dependence on a small number of establishments controlled from the outside makes it fragile. Furthermore, he wonders how policy makers should arbitrate between efficiency and legitimacy, in a context where the 'flexible' economy is being adapted to meet the needs of industrial interests rather than those of workers. These questions remain open, as does the ultimate fate of the

'Mecanic Valley'.

General policy lessons from particular learning regions?

These articles exemplify the variety of approaches to research on learning and innovation, and also the variety of ways in which these concepts can be understood and applied through policy to territorial units. Though the capacity to adapt to a changing environment is a prerequisite for continued development, Guillaume reminds us that the necessity of adaptation goes back at least to the 1960s -- and no doubt to well before that. Although it is difficult to deny that learning and innovation are important for development both at the level of the firm and at an institutional level, it is also difficult to identify what exactly this implies, if anything, in policy terms. Maybe the principal lesson to be learned from research on innovation and learning is that development is a holistic process and that the different elements within a region function as a complex system. Attempts to isolate 'factors' of development may therefore only be able to capture the process in a very partial way.

As a consequence, each region, each local culture and each local set of institutions must adapt development strategies to its own circumstances. The danger of such a conclusion is the rejection of any attempt to generalise: this too must be resisted, for each individual region is subjected to a similar set of national and global forces, as many of the articles below make clear. These forces need to be understood and the general separated from the particular. Policy responses to these forces, which need to be forward looking and context sensitive, may not be amenable to generalisation. Unfortunately this conclusion offers little reassurance to policymakers in that we are suggesting that no general solution exists, even if learning and innovation are fully integrated into the policymaking process.

References

Acs, Z. 2000. *Regional Innovation, Knowledge and Global Change*. London: Pinter.

Boekema F., K. Morgan, S.Bakkers and R.Rutten. 2001. *Knowledge, Innovation and Economic Growth: The Theory and Practice of Learning Regions*. Cheltenham: Edward Elgar.

Braczyk, H-J, P. Cooke and M.Heidenreich. 1998. *Regional Innovation Systems: The Role of Governance in a Globalized World*. London: UCL Press.

CSLR (Centre for Sustained Learning Regions). 2001. http://mtip.net/regions/centerstaff.htm, consulted on 8/5/2001.

Echeverri-Carroll, E. and W.Brennan. 1999. "Are Innovation Networks Bounded by Proximity?", in M. Fischer M, L. Suarez-Villa and M. Steiner (eds.). *Innovation, Networks and Localities*. New York: Springer-Verlag.

Holbrook, A. and D. Wolfe. 2000. *Innovation, Institutions and Territory: Regional Innovation Systems in Canada*. Montreal and Kingston: McGill-Queen's University Press.

LUT (Lappeerannan teknillinen korkeakoulu). 2001. Learning Wood Region, http://developmentcentre.lut.fi/lwr/ lear_wood.htm, consulted 8/5/2001

Malecki, E. and P. Oinas. 1999. *Making Connections: Technological Learning and Regional Economic Change*. Brookfield: Ashgate.

Maskell, A. and G. Törnquist. 1999. *Building a Cross-Border Learning Region*. Copenhagen: Copenhagen School Business Press.

SEEDA. 2001. *Building a World Class Region: an Economic Strategy for the South East of England*. Guildford: South East England Development Agency.

Sivitanidou, R. 1999. "The Location of Knowledge-based Activities: the Case of Computer Software in Innovation, Networks and Localities", in M. Fischer, L. Suarez-Villa and M. Steiner (eds.). New York: Springer-Verlag.