

From Analysis to the Formulation of Policy Options: Lessons from Two Surveys of the Regional Innovation System of the Estrie Region of Quebec

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Introduction:

The growing number of case studies examining local and regional systems of innovation has improved the ability of researchers to conduct future studies. In recent years we have witnessed an impressive array of studies, employing different methodologies (notably quantitative surveys of firm innovation and quantitative evaluations of innovation systems), examining innovation in different regions. This in turn has increased our theoretical understanding of the dynamics of regional innovation (see among others the collections of de la Mothe and Paquet, and Braczyk, Cooke and Heidenreich).

It remains, however, that despite this increase, there are still important issues which must be addressed in analyses of regional innovation systems. These include:

comparability across regions: most studies of regional innovation systems make an assessment of the degree of innovativeness of a region, and attempt to understand the dynamics which either encourage or hinder innovation. Given that many researchers undertake such studies, there is a wide discrepancy in, among other factors, the research methods employed, the weights assigned to variables, and even the subject matter under analysis (including how one defines a region). This necessarily makes it more difficult to compare across regional innovation systems: for example, what one researcher may deem innovative may be deemed not very innovative by others.

methodological bias: there are two main methods for examining regional innovation systems. Quantitative analyses seek to empirically measure the nature and rate of innovation in regions. Such studies have greatly enhanced our understanding of the innovation process. Given that survey methods can be refined, and that such surveys can be conducted over time, a longer-term overview of innovation can be performed (that is, surveys can be conducted periodically), which can, for example, help policymakers determine if certain measures to promote innovation are working or not. However, the standardized format of the survey often does not allow respondents to provide important insights about the innovation process. There are also concerns about the questions included on surveys, which may distort findings. Finally, cost is always an issue in these studies. Qualitative studies allow for the introduction of the historical record into the analysis, and allow for a deeper understanding of the factors which may affect a region's innovative performance through, for example, in-depth interviews. In this case, however, self-selection is an issue (who is interviewed), and the non-standardized responses allow for more personal interpretations of results.

the needs of non-academic partners: the above two factors have major implications for non-academic partners who might wish to use the results of these analyses. This can produce a "culture clash" between researchers, who are keenly aware of the need for intellectual and academic rigor in their work, and non-academic partners (such as government agencies and officials), who are interested in the "usability" of such research findings in order to develop or improve public policy, measure innovation or social capital in useful ways, or develop or transform institutions and programs in manners consistent with public policy. While some may downplay this factor, it is important, given the increasing interaction between the two groups. For example, communication between the two groups (including collaboration, research, development of a research agenda, funding, and dissemination of the results) is a major dimension of the Canadian Innovation Systems Research Network. Thus, this potential gap between the two communities must be bridged if partners are to continue to have a role in the development of research on regional innovation systems. That is to say, we cannot expect this to be a one-way street, where researchers simply place demands on partners: the needs of the partners must also be met. For example, Statistics Canada has certain needs in terms of data collection, measurement and analysis in a manner that is consistent (and therefore comparable) across regions. Policymakers and elected officials concerned with promoting economic development and innovation require tools and research findings which are translatable into public policy formulation and implementation. Thus, as Sabel has noted, while research may demonstrate that

“trust” may be found in a community, it cannot be reproduced elsewhere. This therefore poses certain challenges for researchers and policymakers alike.

This article reports on the experiences of two researchers (Landry and Nimijean) who conducted quantitative and qualitative studies respectively of the innovation system of the Estrie region of Quebec (centred in Sherbrooke) on behalf of *le Groupe d'action pour l'avancement technologique de l'Estrie (GATE)*. In short, actors within the region had concluded that there was a lack of social capital which was not only hindering innovation, but was also making it difficult to instigate transformation efforts in the region. Thus they tapped into a pool of perceived expertise in order to make a more valid and precise diagnosis and provide direction for and stimulate transformation efforts. The outcome of the research provided interesting results, both expected and unexpected, which are informing current initiatives. The story we tell, we believe, is instructive not only for researchers conducting evaluations of regional innovation systems, but also for non-academic partners who might wish to use academic analyses in their development efforts. It provides useful insights about the use and refinement of research tools, and a discussion of the relationship between researchers and non-academic partners, including the translation of research findings into a more sustained mobilization by regional actors in economic transformation efforts.

Identifying the problem:

The story begins in the region. L'Estrie is located in the southeast corner of the province (Sherbrooke is 150 kilometers southeast of Montreal), with a population of nearly 300,000 (4% of the provincial population). Despite significant efforts to promote the economic and technological transformation of the region, many people in government, economic development agencies and the private sector felt that the region was, for lack of a better term, “stuck in a rut.” The region had suffered significant employment losses in the 1990s and, like other regions, had difficulty coping with economic transformation due to a lack of skilled and professional labour (for a description of the region's economic history and transformation efforts, see Nimijean (1998a) and Cao, Davidson and Oudot). This, despite the fact that the region benefitted from significant pools of risk capital and numerous institutions promoting economic and technological development. This included the creation, in 1993, of the GATE. It was designed to promote networking, research and economic collaboration, and assisted in firm startups in four targeted sectors in which it was felt that the region had actual or potential strengths: new materials (particularly plastics and rubber); the biomedical sector; new environmental technologies; and information technologies. However, after an initial flurry of interest and activity, the energy and activities of the group diminished significantly as its funding was exhausted.

Indeed, this situation led several people in the region to conclude that what was lacking in the region was not the energy or initiative of key individuals or groups (there were more than twenty such groups in the region) but an inability of people and groups in the public and private sectors and in NGO's to effectively work together for the benefit of the region. In other words, it was perceived that there was a deficit of social capital in the region which was preventing innovation and transformation. This diagnosis was the reflection of a type of self-fulfilling prophecy, reinforced by the history of the region: the sense that there were many studies of the region, that people always wanted new institutions or programs created, and that they did not achieve desired goals. The presence of groups should create synergy, it was argued, and so forth. In other words, the lack of social capital was seen as the key factor preventing economic transformation.

So how to proceed? For some, there was a sense that the answer might lie outside of the region. There appeared to be a growing body of experts in Canada and beyond who had studied the dynamics of regional innovation. It was felt that such “outside advice” might be able to provide a more valid and more precise diagnosis of the region, which in turn might contribute to efforts to overcome the perceived situation in the region.

Then a happy coincidence occurred: *the Regional Innovation Systems Network Workshop*, sponsored by the Social Sciences and Humanities Research Council of Canada, the Natural Sciences and Engineering Research Council of Canada, and the National Research Council of Canada, held in Toronto in late February, 1998. Diane Lamothe, who is the l'Estrie's regional director for the Quebec government's Ministry of Industry, Commerce, Science and Technology (MICST) (since renamed to the Ministry of Industry and Commerce), as well as volunteer director of the GATE, was in attendance. One of the goals of

this meeting was to promote collaboration between academic participants (who discussed the nature of their work) and non-academic partners. Lamothe, cognizant of the need to undertake an evaluation of l'Estrie's regional innovation system, approached Landry and Nimijean in order to gauge their interest in working in l'Estrie. This was done on the basis of Landry's quantitative evaluation of innovation in Chaudière-Appalaches (Landry and Amara) and Nimijean's qualitative evaluation of the regional innovation system of Saint John, New Brunswick (Nimijean 1998b).

Developing the research agenda:

Shortly after the Toronto conference, Lamothe decided to invite Landry and Nimijean to a meeting in Montreal to explore the possibility of conducting quantitative and qualitative evaluations of the region's innovation system. She organized an eight member steering committee composed of government representatives (provincial, federal and regional), a vice-rector from the Université de Sherbrooke, and the President of Innovatech du Sud-du-Québec (a \$50 million risk capital fund). This meeting outlined the perceived state of affairs in l'Estrie, namely that the regional climate was not very conducive to innovation. The regional actors felt that the region could therefore benefit from such analyses. The researchers outlined the potential benefits of such studies. It was agreed that there was merit to performing such analyses in the region: the quantitative study was to focus on innovation in the region's firms, while the qualitative study was to focus on social capital and regional support for innovation.

From this starting point, two tasks had to be addressed immediately. Funding for the projects had to be arranged. As well, the researchers had to begin to develop their research tools. More meetings were held to confirm the mutual understanding of the issues to include in the systematic diagnosis of the region. In early May, the researchers presented their initial research tools to the steering committee. Landry prepared a survey questionnaire, a refinement of his earlier questionnaires on innovation (and which attempted to address the concerns of the committee). Nimijean presented his themes for the case study, modifying the approach used in his evaluation of Saint John, New Brunswick. Subsequently, minor changes were made to the survey questionnaire, in order to meet the expectations of the committee. As well, it included questions on social capital designed specifically for Nimijean's evaluation. The researchers were contracted to conduct these studies and to also prepare a joint report proposing potential paths of action. It should be noted that this last requirement was largely due to the perception that the state of affairs was not very good in the region which, as we will see below, was not exactly the case.

The research process:

In an effort to increase the visibility of the projects, the GATE organized in late May an "Evenement Innovation," a lunch meeting attended by 80 decision makers in the private and public sectors, academics, and economic development officers. Not only did the two researchers present their research projects: other featured speakers were the Assistant Deputy Minister of MICST, Carl Grenier, who spoke on the provincial government's forthcoming innovation strategy, and Camille Limoges, the President of the Quebec Science Council, who spoke about innovation systems. This event not only raised the profile of the studies: it allowed for extensive media coverage and a "buy-in" with the community.

With the projects now officially launched, it was time to perform the research. In June, a private survey firm was hired to administer the firm survey on innovation (see box).

<i>Highlights of Landry's survey of innovation in firms in l'Estrie</i>
<ul style="list-style-type: none"> • a 12 minute telephone survey of firms in the region (list provided by MICST) • response rate of 73.6% (464 firms) • four determinants of innovation were attempted to be measured: <ol style="list-style-type: none"> 1. <i>Intellectual capital:</i> (R&D indicators, etc.) 2. <i>Technological capital:</i> (use of advanced technologies) 3. <i>Institutional capital:</i> (variety of institutions which support innovation) 4. <i>Social capital:</i> (intensity of relations with institutions which support innovation; levels of confidence; networks)

Nimijean began background research for his study in June, and held interviews with 27 people from all backgrounds in July, August and September. In part, the public profile of the studies increased accessibility to these people, notably the businesspeople. The interview questions (see box) sought to gain the perceptions of these key actors on issues such as how they saw the region developing, the key sectors to be developed, and their evaluation of the actions of key actors and economic development agencies. As well, specific questions were asked about training and the state of the labour force, R&D, and synergy and concertation efforts, in line with the perceived diagnosis of the steering committee.

Thematic questions used in interviews for Nimijean's qualitative study

- general perceptions of the region's economic development; has it improved? Why?
- strengths and weaknesses of the region's economic environment: key interventions? Factors which attract business and encourage innovation? Negative factors?
- important sectors - current and future; how do you see the region in 10 years? 15 years?
- needs of the region in terms of supporting innovation and economic development - what exists and what needs to be done?
- key actors / champions?
- your role - what have you contributed, what can you contribute, and what if anything do you need to help you?
- perspective on synergy and concertation, and evaluation of various economic development agencies in the region
- is there a need for ONE group to lead development efforts? Why? Who?
- what can be done to address the issue of training and the lack of skilled and professional workers in the region? What can you do?
- what if anything can be done to increase R&D in the region?
- other comments, suggestions, observations?

An interesting phenomenon was happening at this stage: either at interviews or meetings, people were asking about the results of the two studies, either to the researchers or to Lamothe and other members of the steering committee. People in the region were very aware of the studies and were keenly anticipating the results. Other activities along these lines were also occurring. For example, the City of Sherbrooke held a very large conference, "Entreprendre notre avenir", on the economic fortunes and future of the city, which was in many ways closely linked to the work we were doing.

Research Outcomes

In August and September, the researchers began analyzing their data and findings and writing their reports. They were asked to include two dimensions to their reports: a diagnostic component and a recommendation component. But before these reports were released, the initiatives of the regional champion again surfaced: the researchers were asked to make presentations to the sponsoring organization (the GATE) to discuss their findings and possible policy options.

At this point, it should be pointed out that the findings of the two studies, taken together, were somewhat unexpected. Nimijean's study, not surprisingly, found a very pessimistic regional innovation climate which reflected the original outlook of many of the members of the steering committee. Interviewees, while clearly attached to the region and interested in its well-being, consistently noted the many weaknesses of the region. The interviews were remarkable for the high degree of consistency of the responses by the various people interviewed, regardless of background. Thus, Nimijean adopted the theme of the region being paradoxical: blessed with many strengths, assets and individuals and groups promoting the well-being of the region, the region still seemed to be marked by an inability to recognize these strengths and difficulty in working together to promote the well-being of the region.

Highlights of Nimijean's study:

- despite the presence of many strengths, the perceptions of people focused on weaknesses, contributing to a rather morose climate for innovation
- lack of leadership in the business community
- difficulty in accessing risk capital despite a significant pool of funds
- lack of qualified and professional workers

- difficulty in retaining workers in the region
- lack of concertation between groups
- high expectations in terms of technology transfer from the university community

The reality of the situation, at least as measured quantitatively by the survey, was quite different. Landry's survey found that firms in the region displayed a high degree of innovative behaviour *despite* the prevailing pessimism of many community leaders.

Highlights of Landry's study:

- 88% of firms had process or product innovations in the last three years
- 70% of firms introduce innovations at least once a year
- 22% of firms undertake R&D activities
- nearly one-third of firms collaborated on R&D projects with other organizations
- the two major barriers to innovation in the region are the lack of a qualified workforce in the region (particularly for firms with more than 100 employees) and the difficulty in accessing capital (particularly for firms with less than 50 employees)
- overall, businesspeople of the region rarely participate in associations or informal meetings of businesspeople (though this rate increases with firm size)

The results were publicly released in early December 1998. The researchers, in a breakfast meeting attended by close to 100 members of the community, outlined the goals of the projects, their respective findings, and general recommendations. They paid careful attention to the intriguing, to say the least, results, namely that despite a poor climate of innovation, firms in l'Estrie were quite innovative. Thus they also issued joint recommendations, for what was most intriguing was that despite the use of different methodologies, and despite the very different diagnoses, suggested policy prescriptions were quite similar.

Suggested paths for action:

- develop a communication strategy which highlights the innovative nature of firms and the region
- stimulate the use of external sources of innovation for both firms (towards clients, suppliers, competitors, conferences, etc.) and public institutions, universities, and research centres (towards firms)
- develop the social capital of the region through increased networking between firms (by sector and location), between large and small firms, and between firms and "interveners" (government and associations)
- improve intellectual capital through networking, developing a strategy to retain graduates in the region, and developing a strategy to attract skilled and professional workers to the region
- improve the use of institutional capital by supporting initiatives of the two universities and improving university-firm and university community relations
- increase the technological capital of the region by supporting initiatives in the four prioritized sectors and developing a strategy to get smaller firms to use advanced technologies

Implications for researchers and policy partners:

The story we have told has several important implications for researchers conducting evaluations of regional innovation systems as well as for non-academic partners who either sponsor or use the research.

Perception of a need for knowledge: the first key in our story, for it does not unfold if there was not the perception on the part of several regional actors that external validation and diagnosis of the innovation climate was needed, and that this could be used to promote transformation efforts. This also required an awareness of the existence of researchers who could perform this work for public policy purposes (a tangible benefit of the creation of the Canadian Innovation Systems Research Network).

Construction of a relationship based on trust - exchange mechanisms: the fact that a number of preliminary meetings were held between the researchers and the regional actors before the studies were tackled seriously increased confidence levels. The regional actors became convinced that the researchers could examine the issues they wanted to explore, and the researchers became convinced that despite the public

policy dimension of the work, they could undertake their studies in an intellectually rigorous scientific manner.

Appropriation of the project (its ideas and tools) by the regional actors - not just the sponsoring organization - a receptive regional community of users : once the project was publicly launched in May, the community took ownership of the project. They were keenly interested in the evaluation of the region, and in what two “outsiders” would find and prescribe. The community had expectations that a useful and usable diagnostic was coming – and that useful and usable results would be forthcoming. The launch of the projects in late May contributed to the ongoing success of the monthly breakfast meetings of the GATE. These meetings, which attract businesspeople, academics, interveners and government representatives, feature discussions on various aspects of innovation and economic development, and thus serve as a critical networking activity.

Appropriation of the diagnostic and formulation of policy options – appropriation of the diagnostic by the regional community of users: this was important both for the researchers and the community. For the researchers it was critical to maintain and uphold academic and intellectual rigor in their work. However, there was a unique opportunity, given the interest in the community, to have an impact on public policy, so care had to be exercised to formulate policy prescriptions in ways which would be well-received by the community. For the partners, the research was an instrument which could validate their concerns and legitimize their course of future action. In this sense, the process became not one of outsiders “telling” a region what to do, but “insiders” using research to advance their policy initiatives. This would hopefully lead to a greater acceptance by the community.

Mobilization of the regional actors: the confrontation of facts and perceptions clearly struck the imagination of regional actors and stimulated a desire for action and concertation. The extensive local media coverage (including an editorial in the newspaper) and the appropriation of the project by the community ensured widespread interest in participating actively in the ongoing transformation of the regional economy. Thus we have further initiatives such as *Entreprendre notre avenir*, which further cemented transformation initiatives and the interest in doing so. Perhaps this is a phenomenon more realizable in smaller regions, for the project itself became a type of networking activity. For example, just before one of the interviews two entrepreneurs who did not know each other discussed strategies for dealing with currency fluctuation, and had a chance to establish a future meeting.

Attention paid by other regions to the Estrie experiment: there was significant interest in this project by the provincial government, both within the MICST and the Quebec Science Council. Other regional directors in the MICST were briefed on this initiative and considered undertaking such a project. In many ways this relates to the unique findings due to the two methodologies employed. The credibility of the project and indeed this type of research was further enhanced when the leading American scholar Richard Florida of Carnegie Mellon University was invited to speak to senior bureaucrats in the MICST. Presentations were made to policy people, the regional directors of the MICST, and the people responsible for the “centres de veilles” which oversee sectoral initiatives outlined in Quebec’s industrial strategy. While further studies have not yet begun in other regions, if they were they would have benefits not only for the regions but also for the researchers. Both researchers felt that they improved their research tools from previous studies. As well, they would address the issue of comparability across regions. Most importantly, if such research can be demonstrated to be useful and applicable, then there will be future opportunities to work with partners. This will have the benefit of both improving our research tools and applying in a positive manner research outcomes.

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