



**TERRITORIAL PROXIMITY AND INNOVATION:
A SURVEY OF THE MONTREAL REGION**

by

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Abstract

The effect of proximity on development has fostered much interest over recent years and Storper has put forward the hypothesis of a winning configuration for the 3rd millennium, that is, one based on innovation, organizations and territory. Our research was conducted with firms in three high-tech sectors in Montreal (biopharmaceuticals, telecommunications and aeronautics) and aimed at identifying the effects of proximity on innovation and local development; the methodology was based on interviews and data collection. We conclude that while geographical proximity is not a determining factor, institutional proximity does play a role.

Introduction

Since the 1980s, there has been increasing interest in proximity and its potential effects on innovation as well as on the development and structuring of economic space. Authors such as Brusco (1994), Becattini (1991), Garofoli (1985) have emphasized the importance of geographical proximity in the success and development of spaces characterized as Marshallian industrial districts. Various authors, including Piore and Sabel (1984) or Benko and Lipietz (1992), have also drawn on these theories, viewing districts and proximity as the source of innovation and the foundation of the development of winning regions.

However, the effect of proximity on development has been called into question in recent years. Several authors have certainly identified the importance of unformalized compromises between actors (Salais and Storper, 1993), institutional density (Amin and Thrift, 1995) and the university-firms link (Grossetti and Bès, 2001) in the differentiated trajectories of local milieux within a largely globalized economy. Storper (1997) even advanced the hypothesis of a new winning configuration for the third millennium -- a configuration based on innovation, organizations and territory. Must we therefore, conclude that the simple concentration of actors coupled with physical proximity should be the principal bases for strategic action at the local level? Nothing could be less certain, according to Markusen (2000) who, like the previous authors, suggests that while relations between actors (firms, decision makers, technology producers) are important, they are not the result of simply being closer together. In other words, the mere fact of cohabiting in the same territory is not a sufficient condition for actors to have relations with each other. Moreover, actors develop proximity relations without cohabiting in the same territory. This finding raises the question of the scale of the local. To what scale does the local as defined by actors to characterize the network of their proximity relations correspond?

The concept of proximity is a key indicator for determining what socio-economic actors mean by "local space." Thus, it is necessary to examine the precise meaning of this notion, which we will do in Part 1 of this article based on a rapid review of the literature on the notion of proximity. Part 2 will present the results of a study we have just completed. This study focused on the way directors of firms perceive proximity and the link between proximity and their capacity to innovate. Is proximity a determining condition in innovation activities of Montreal firms? The study was conducted with firms selected from three main industries of Montreal's new economy -- biopharmaceuticals, aeronautics and telecommunications -- recognized as the spearhead of economic and industrial reconversion of the Montreal region (Klein, Tremblay, Fontan, 2003).

As will be demonstrated, the results of the survey are revealing in many respects. While physical proximity does not appear to have an influence on a firm's capacity to innovate,



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access to information networks and personal interactions are key factors when a firm decides to develop innovations. The survey also reveals that the key factors of innovation as identified by the respondents pertain to the quality of the resources found at the local level. In other words, although the fact of cohabiting with other firms is of little importance, the quality of the local work force, interpersonal relations and the ability to communicate have an influence on a firm's capacity to innovate. The social, cognitive and communicational aspects of a territory are considered by entrepreneurs to be vital in explaining the innovation taking place within firms of their sector. When the same respondents were asked what obstacles hamper innovation, they identified these same factors.

Territory is perceived firstly as a neutral geographical space. Firms are located next to each other but their proximity by itself has little influence on their capacity to innovate. On the other hand, territory is perceived as a determining geographical environment when it is invested with resources –for example, a work force and a communicational climate– that can have a positive bearing on the development of their firm. The geographical environment is what the population, organizations and institutions which occupy it have made of it. Distance in quantitative terms is supplanted by the “proximal” quality of resources that are made available to the entrepreneur.

1. Firm, Proximity and Innovation

The increasing importance of the notion of proximity in the recent literature on the interaction between firms and on innovations leads some authors to refer to a “proximity economy” (Bellet, 1992). This notion – which from a Marshallian perspective (Marshall, 1889), used again in the 1980s by various authors (Piore and Sabel, 1989; Becattini, 1991; Benko and Lipietz, 1992; Courlet, 1994; Brusco, 1994), initially referred to the concentration of firms in a limited space – has become polysemic (Kirat and Lung, 1995; Vant, 1988). The analysis of the links between proximity and innovation has given rise to several approaches. Therefore, it is necessary to examine these diverse approaches in order to bring out the factors that are appropriate to the analysis of the attitude of firms towards innovation. What type of proximity are we referring to in relation to innovation? Are all forms of proximity determining factors in the localization of firms and their decision to innovate? The hypothesis put forward here, strongly inferred from the results of the survey we conducted, does not dissociate the different types of proximity but rather considers them as a whole.

1.1 From physical proximity to institutional proximity

Physical proximity is the simplest form of proximity. It refers to the localization of firms and institutions of higher learning (e.g., research centres and universities) in a given space. The principal measure of this proximity is the distance that separates actors from each other. Spatial proximity refers to the hypothesis that the greater the number of local firms, the more opportunities for co-operation in problem solving, and the denser the local exchange relations, the more they speed up the research process of individual firms and the accumulation of technological and other knowledge (Haas, 1995). Proximity among actors thus becomes a guarantee of accessibility to scarce information (Planque and Py, 1986), a spatial insurance (Veltz, 1996). While physical proximity is clearly not a sufficient condition for establishing collective dynamics, it establishes a potentiality that makes social contact possible (Colletis and Winterhalter, 1991; Kirat, 1993).



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The second form of proximity is organizational proximity, which is a notch more complex than simple physical proximity. It implies that firms and organizations, in their collective dimension, either share or do not share the same schema of thought, production, communication and innovation. The existence of organizational proximity means that groups of agents, *a priori* independent, set up co-ordination procedures in order to achieve goals that were agreed on. Organizational proximity appears inside organizations (firms, establishments, etc.) and, where applicable, between organizations linked by a relationship of economic or financial dependency or interdependency (between companies which are members of an industrial or financial group, within a network, etc.).

Organizational proximity is characterized by a dual dimension. The first dimension refers to a proximity of similarity or of common references (Pecqueur, 1989) while the second dimension refers to the frequency and the quality of interactions among separate organizations (external co-ordination between organizations). These dimensions are reflected in the building of common knowledge which facilitates the collective learning process, leading to, for example, the construction of new resources or the development of opportunities (Amendola and Gaffard, 1988). Thus, this is how the notion of learning by doing can emerge, on which the mechanisms which lead to the construction of a collective memory are based.¹ This concept can also be based on the writings of evolutionary authors, such as Lundvall (1988), on the interactions between users and producers.

Organizational proximity is immaterial and non marketable; it is supported by multiple relations outside the market. In addition, it can be independent of all spatial dimensions. The conditions for the appearance of organizational proximity can be favoured by spatial proximity, but can also be penalized by the latter, as is the case of multimedia firms, which jealously protect their technologies and do not necessarily exchange a great deal of information, even when they are geographically concentrated (Tremblay, Klein, Fontan, Bordeleau, 2002).

A third level of proximity is technological proximity which is in line with a logic similar to that of organizational proximity. It corresponds to a specific conception of technology, that of evolutionary authors, which reviews the micro-economic bases of innovation (Nelson and Winter, 1982; Dosi, 1988). According to evolutionary theory, innovation is endogenous, taking the form of continuous and gradual changes in an incremental process, such as a set of routines² and selections built up through trial and error processes. Based on this approach, production organizations have the specific knowledge and know-how which give the notion of technology a dimension of collective knowledge that is shared within the organization but cannot be immediately appropriated by the environment.

Technological proximity can thus constitute one of the bases of inter-firm co-operation and it is on this basis that collective learning can appear between firms participating in a production system (Dupuy and Gilly, 1996; Kirat, 1993). Just like organizational proximity, technological proximity can be favoured by geographical proximity since, besides reducing transaction costs (Scott, 1999), it facilitates co-operative relations.

1 When Marshall talked about the presence of quasi-organizational rent, he was referring to this level (Lecoq, 1993).

2 Routines are interaction models which constitute effective solutions to specific problems. These interaction models are specific to group behaviour although some inferior routines might be specific to individual behaviour (Dosi, Teece and Winter, 1990).



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The fourth and most complex form of proximity is cultural or institutional proximity. It implies that entrepreneurs share the same representations, rules of action and values. This form of proximity is closely linked to interactions between firms and agents, through a collective learning process. This collective learning process may involve physical proximity between agents, insofar as this proximity is a condition for forming long-lasting relationships, a vehicle for exchanging non-codifiable knowledge (habits, routines, conventions) that is, knowledge that cannot be transferred in space by technical supports.

1.2 Territorial effect of proximity

The different forms of proximity described above define the many scales of action of firms, thus circumscribing their innovation territory. Based on our conception, a firm's innovation territory results from and is defined by the superimposing of the different forms of proximity, thus forming a territorial innovation system. In this way, the territorial mechanisms of co-ordination and interrelation between firms are established, through processes that include partnership, sharing of social networks, collective sanctions, concentration of information, informal codes that enable expectations, frequency of contacts and construction of relations of trust.

This is what Marshall was referring to when he suggested that the relationship between the firm and its immediate environment structures the processes of learning and industrial co-operation leading to the creation of new resources. But today, this immediate environment is different from that observed by Marshall. It has become more complex and, especially, is organized into a spatial hierarchy (from the local to the global). While being geographical, its scale is associated with cognitive information structures or variable practices which cannot be easily codified or routinized.

This is where the link between proximity and innovation comes into play, because the process of knowledge acquisition is a process of conceptual construction based on elements of experience. Learning thus becomes a process which arbitrarily combines existing experiences leading to the creation of new concepts that are more effective in terms of solving a particular problem (Dupuy and Gilly, 1996). Individuals do not simply collect information but also transform their representations when formulating hypotheses or making conjectures about their environment. Learning is an emergent process, that is, a process whose overall effectiveness is greater than that which results from the simple aggregation of specific information. "Knowing does not merely involve storing information. It also means being able to mobilize it, use it in our inferences, because having information does not give us the means to interpret it or to know it" (Julien and Marchesnay, 1996) (translation).

Proximity in all its complexity thus becomes actors' "spatial intelligibility" (Pecqueur, 1996). Actors who are looking for solutions proceed by trial and error. These trial and error processes are all the more likely to produce solutions as they are conducted in a spatial reference with variable structuration. The principal vehicle of this learning becomes the so-called local physical proximity, which allows multiple contacts (Colletis and Pecqueur, 1993) while being combined with other forms of proximity. The territory is thus structured in a reticular way between the different physical units of expression of proximity, as a scene of the social link between production firms and organizations. This link can only be strengthened in a local framework (Tremblay and Fontan, 1994). However, what does the word local mean in a context of reticular networks; networks which are, moreover, located in places as far as Toronto, Boston or Toulouse. To view proximity in this way is to pose the question of the local scale in a very different manner which helps us to understand the



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tension revealed in our survey between the qualitative and quantitative factors of measurement of proximity with an innovating scope.

2. Proximity and Innovation in Montreal High-Tech Firms

To contribute to answering questions about the links between proximity, innovation and firms, we conducted a study on the economic reconversion of the Montreal region. It should be noted that, like several former industrial metropolii in northeastern North America, the Montreal agglomeration is undergoing a major phase of economic reconversion. This reconversion is largely due to the importance acquired by the high-tech sectors. In the Montreal Metropolitan Region, the growth of exports of high-tech products was 15% per year between 1991 and 2000, which is four times greater than the increase in GDP for the same period. Moreover, in 2000, the various new economy sectors provided 155,000 jobs in the region, accounting for 9% of total employment.³

Our study involved a survey questionnaire of 80 firms selected from the biopharmaceutical, aeronautics and telecommunications industries, three industries that are leaders of Montreal's new economy.⁴ When the survey began in 2000, the telecommunications firms were in first place in terms of the value of exports of high-tech products in Montreal.

We first compiled a list which allowed us to identify 524 establishments listed under one of the headings of these industries and located in the entire Montreal region. The firms identified represent 15.3% of all establishments compiled. The industrial establishments were chosen to reflect the reality of all firms, without aspiring to a perfect statistical representativeness.⁵ The sample of firms to be contacted was constructed so as to reflect a degree of diversity in terms of the people giving orders and those carrying out the orders, the size of firms (large, medium and small), and their geographical distribution over the territory of the metropolitan region.

The firms selected were first contacted by telephone in order to obtain the directors' consent. Of course, some refused, which explains some discrepancies between the sample of respondents and the universe of the study. These discrepancies are nevertheless not great and we were able to ensure that the distribution of respondents was quite similar to

³ These figures come from a statistical file based on a synthesis of several databases (Institut de la statistique du Québec, E&B Data, Observatoire des nouvelles technologies, ministère de l'Éducation du Québec) produced by Montréal TechnoVision for 2001.

⁴ We deliberately removed the multimedia sector from our survey because the localization of these firms in Montreal is largely influenced by the Government of Québec's strategic will, which created the Cité du multimédia. In our view, their situation could not be easily compared with that of the other firms in the sector such as those in telecommunications, which were given priority. Moreover, the multimedia sector has been the subject of a similar study headed by Diane-Gabrielle Tremblay, as part of a SSHRC research project – Collaborative Research Initiatives, under the direction of David Wolfe. A general overview of the study, which continues until 2005, is presented in Tremblay et al.(2002 and 2004).

⁵ To achieve such representativeness, due to the subclasses and the geographical distribution of this universe, the sample should have been much larger. However, this would have exceeded our objectives (and our means). Moreover, unlike Statistics Canada, we could not impose the obligation to answer on firms. Nevertheless, we were able to conduct interesting statistical analyses, as will be shown later.



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the distribution of all the firms compiled. Interviews lasting on average one hour were conducted between May 2000 and August 2001,⁶ using a questionnaire made up of structured and semi-structured questions administered directly.

Of the 80 firms studied, 41.3% are in the pharmaceutical sector, 36.3% in the aeronautics sector and 22.5% in the telecommunications sector. As regards the localization of firms, the region was divided into six units, delimited before the merger of all the municipalities of the Island of Montreal, a merger which led to the creation of the new City of Montreal in 2001. These units correspond to the following territories of: (1) the former City of Montreal, (2) the former Ville Saint-Laurent, (3) the former municipalities of the West Island, (4) the former municipalities of Montreal East, (5) the suburban fringe of Montreal North, and (6) the suburban fringe in the south of the island. Ville Saint-Laurent is slightly overrepresented whereas the western suburbs and the northern fringe are underrepresented. Among the firms studied, 22.5% have more than 200 employees, 37.5% between 50 and 199 employees, and 40% less than 50 employees.

3. Proximity of Montreal Firms and Their Attitude Towards Innovation

Innovations in firms may relate to products, production processes or the organization of production and work. The most common type of innovation is in new products and product improvements (Table 1). According to our sample, 76.3% of firms innovate in the manufacturing of new products or product improvement. In the telecommunications sector in particular, up to 94.4% of firms innovate in this area. For their part, 75.8% of pharmaceutical firms and 65.5% of aeronautical firms innovate in new products or product improvements.

Moreover, 53.6% of firms innovate at the organizational level. In the pharmaceutical sector, only 39.4% of firms have made this type of innovation, whereas the proportion is 62.1% in the aeronautics sector and 70.6% in the telecommunications sector.

Lastly, 43.8% of the firms studied innovate in manufacturing processes. It is mainly the aeronautical firms which invest the most in this area (65.5% of firms in this sector). In the telecommunications sector, 38.9% of firms innovate in processes and this proportion drops to 27.3% in the pharmaceutical sector.

Table 1
Innovations Carried Out in Montreal High-Tech Firms, by Industry

| Industries | Product | Organization | Processes |
|-----------------|---------|--------------|-----------|
| | % | % | % |
| Pharmaceuticals | 75.8 | 39.4 | 27.3 |
| Aeronautics | 65.5 | 62.1 | 65.5 |
| Telecomms | 94.4 | 70.6 | 38.9 |
| Total | 76.3 | 53.6 | 43.8 |

Interview survey: 2000-2001

⁶ That is, before the height of the crisis in the telecommunications industry and before the events of September 11, 2001 in the United States, events that have had repercussions on all economic sectors, in particular the aeronautics industry.



3.1 Partners of innovation

We wanted to identify the firms' main partners in innovation as well as the reasons for these partnerships. Thus, interviewees from innovative firms were asked why their firms call upon these partners -- mainly research institutions and firms -- in their innovative practices. Of the 46 firms which responded to this question (Table 2), most (30/46) have special links with educational institutions, in particular with universities, and an almost identical number (29/46) with private firms. It should be underlined that only 11 out of 46 firms stated that they had a partnership with government organizations. It goes without saying that several of the firms under study are involved in more than one partnership.

The search for specific expertise was the reason most often given for establishing partnerships (38.8%). The following reasons were also mentioned: market requirement (21.3%), performance (17.5%), rationalization within the firm (11.3%), lack of resources (8.8%) and financial reasons (5%). These reasons are certainly interrelated since very often expertise is sought outside the firm because the latter lacks the financial resources to hire a person with these specific skills. Moreover, this occurs within a context where firms must adapt to a rapidly changing market.

This is clearly illustrated by an interviewee's answer to the question about the reasons for his choice of partners: "To find resources that we could never afford. To be able to use resources for a while and, in a few years, when the resources will no longer be needed, we can get rid of them without laying off anyone" (2000-2001 Survey).

Table 2
Reasons for Partnerships in Innovative Practices

| Reasons | Number of respondents | Percentage |
|--------------------|-----------------------|------------|
| Expertise | 31 | 38.8 |
| Market requirement | 17 | 21.3 |
| Performance | 14 | 17.5 |
| Rationalization | 9 | 11.3 |
| Resources | 7 | 8.8 |
| Financial motives | 4 | 5 |

Source: 2000-2001 Survey

3.2 Factors facilitating innovation

As regards the facilitation of innovation, we asked the respondents what factors, in their view, most fostered innovation in their organization (Table 3). Work force (72.5%) ranks first among the factors of innovation in general and appears to be important for organizations in the three sectors. It is interesting to note that this reason is followed immediately by personal interactions (63.8%) and information networks (58.8%). While some theories maintain that professional or business associations can play a role, this did not figure among the main factors indicated by our respondents. In fact, the positive response rates were low for regional organizations (27.5%), local associations (18.8%) as well as local services (16.3%). As regards the physical proximity of related firms, contrary to what was initially thought, this factor was only of average importance to our respondents (31.3%).



Table 3
Factors Facilitating Innovation

| Factors | Number of respondents | Percentage |
|----------------------------|------------------------------|-------------------|
| Work force | 58 | 72.5 |
| Personal interactions | 51 | 63.8 |
| Information networks | 47 | 58.8 |
| Proximity of related firms | 25 | 31.3 |
| Regional organizations | 22 | 27.5 |
| Business associations | 18 | 22.5 |
| Local associations | 15 | 18.8 |
| Local services | 13 | 16.3 |

Source: 2000-2001 Survey

3.3 Influence of the local on innovative practices

The little importance accorded by our respondents to factors that are linked to the local level and physical proximity was confirmed when a direct question on the influence of the local environment on the innovative practices was asked. Less than half of the interviewees who answered this question considered that local organizations have any influence on their capacity to innovate (38.5%). Answers to this question from respondents in the biopharmaceutical sector were slightly more mixed, with 50.0% recognizing the influence of the local environment, whereas markedly fewer respondents in the aeronautics sector (34.8%) and the telecommunications sector (23.5%) recognized this influence.

However, it must be pointed out that not all respondents understand “local environment” in the same way. For some, the “advantages” of the local environment are associated with tax credits from the provincial government and R&D grant programs. For firms which are located in a technopark, the local environment is often “automatically” associated with the latter and the services that it provides to firms. However, it can be said that, on the whole, the local environment is associated with the municipality in which the firm is located and is interpreted as the place, site, location of the firm, without taking account of the resources and the links with other firms. Among respondents who believed that the local environment has an influence, 40% stated that the local environment exerts an influence on the development of innovation in the firm through the expertise of its actors. The other reasons mentioned are: networking, funding, infrastructures, assistance received during implementation of innovation, services and moral support (Table 4).



Table 4
Influence of the local environment on innovative practices

| Aspects of local environment | Number of respondents | Percentage |
|------------------------------|-----------------------|------------|
| Expertise | 12 | 40.0 |
| Networking | 11 | 36.7 |
| Funding | 7 | 23.3 |
| Infrastructures | 5 | 16.6 |
| Implementation | 4 | 13.3 |
| Services provided | 2 | 6.7 |
| Moral support | 2 | 6.7 |

Source: 2000-2001 Survey

3.4 Obstacles to innovation

A great majority of firms in the three sectors consider that there are many obstacles to innovation. In total, 87.5% of these firms see obstacles, and for 44.3%, these obstacles mainly relate to work force (Table 5).

Each industrial sector has problems recruiting and, in some cases, retaining the work force. In the pharmaceutical sector, several researchers decided to go and work in the United States because salaries are higher and taxes are lower. Large American companies sometimes come to Canadian university campuses to attract people to their firms. According to our interviewees, the difficulty in recruiting the most qualified work force has increased in recent years. "Human resources and skilled personnel were not a problem until now. But this problem arises because the larger the companies get, the more they need highly specialized personnel" (Interviews, 2000-2001) (translation). The work force problem thus pits small and medium-sized firms against large firms. Engineers in small firms are sought after and attracted by large firms.

Funding is the second obstacle in order of importance. This reason was mentioned particularly by firms in the biopharmaceutical sector, where the lack of funding is coupled with problems related to the type of investors. As one interviewee put it, "they have money but do not always know science." (translation) (Survey, 2000-2001).

Table 5
Type of Obstacle to Innovation

| Obstacles | Number of respondents | Percentage |
|-----------------------|-----------------------|------------|
| Work force | 31 | 44.3 |
| Investors | 25 | 35.7 |
| Technological | 19 | 27.1 |
| Internal organization | 17 | 24.3 |
| Market | 17 | 24.3 |
| Regulation | 9 | 12.9 |
| Competition | 5 | 7.1 |

Source: 2000-2001 Survey



4. So then, what form of proximity is needed for innovation?

Based on the first theories on proximity mentioned above, our hypothesis was that the physical proximity of firms fosters innovation. A measure of “isolation” of the firm was needed to test this hypothesis. This indicator allows us to target firms that are in a place relatively far from the others and to compare the “isolated” firms with those that are “clustered.” This measure can be a distance (e.g.: how far is the closest firm), a density (e.g.: how many firms are there within 5 km) or something similar. In the pre-tests, respondents had difficulty answering this type of question. Therefore, we had to restrict ourselves to the subjective and perceptive opinions of respondents by asking the following question: *Does the proximity of related firms have an influence on your firm’s capacity to innovate?* It was found that approximately two out of three firms consider that the proximity of related firms does not have an influence on their capacity to innovate (Table 6).

Table 6
Importance of Proximity of Related Firms

| Answer | Frequency | Percentage |
|---------------|------------------|-------------------|
| Yes | 25 | 32.1 |
| No | 53 | 67.9 |
| Total | 78 | 100.0 |

Source: 2000-2001 Survey

A correlation analysis was conducted to identify other answers which are significantly linked to the previous answer and which can thus attest to the links between proximity and other factors. The variables correlated with the belief that the proximity of related firms fostered innovation are presented in Table 7. Thus, it was found that those who consider that proximity to other firms fosters innovation also tend to believe that personal interactions foster innovation and the information network influences the capacity to innovate. In fact, Table 7 shows that these three aspects are strongly correlated.⁷ However, the market and clientele seem to have some effect although the correlation between these two variables is less significant than in the case of the first two variables. These factors are interesting since they provide us with an indication of the type of proximity which may influence innovation, namely relational proximity, based on personal interactions and the information network.

⁷ It is generally agreed that a 0.3 correlation is interesting; as our volume of respondents is small (80), it is obviously more difficult to observe significant correlations, as compared to a large sample, where a great number of significant correlations is found because N is large. However, although these statistical links exist in the large samples, they are not always important. In this case, with a small number of respondents, the two correlations observed are both interesting and significant.



Table 7
Correlations Between Importance of Proximity and Selected Variables

| Variables | Proximity of related firms (Pearson correlation) | Sig. (2tailed) |
|----------------------------|-------------------------------------------------------------|-----------------------|
| Personal interactions | .528** | .000 |
| Information network | .310** | .006 |
| Relocation near the market | .290* | .010 |
| Near the clientele | .246* | .031 |

** correlation significant at 0.05 level.

*correlation significant at 0.01 level.

Source: 2000-2001 Survey

Conclusion

As stated in the Introduction, proximity fosters much interest in terms of its potential effects on innovation as well as on the structuring of economic space. Some authors maintain that physical proximity is important while others have recently called into question the importance of this type of proximity. The precise meaning of this notion of proximity was first examined and it was found not to be limited to the physical aspect only. The relative importance of the different types of proximity as a factor fostering innovation was then considered.

We thus conducted a survey of 80 firms selected from three industries that are leaders in Montreal's new economy. The most important finding appears to be the fact that while two out of three firms consider that physical proximity does not have an influence on their capacity to innovate, firms which believe that the proximity of related firms is important also believe that access to information networks and personal interactions are factors of innovation. This means that the one form of proximity which is considered to be important for innovation is relational or organizational proximity rather than geographical or physical proximity. Moreover, it is interesting to note that many more firms in the biopharmaceutical sector consider that personal interactions and information networks are important, compared to other sectors, in particular aeronautics, where this opinion is markedly less widespread. It is reasonable to think that size of organization partly accounts for this view, since aeronautical firms are often larger.

The analysis of the main high-tech concentrations in the United States confirms this view of physical proximity and its relative importance. In fact, some studies, including those by Saxenian (2000) indicate that industrial dynamism occurs within the production systems where local actors manage to create networks which are not limited to the local space and the immediate environment. Moreover, an analysis of "magnet localities" conducted by Markusen (2000) shows that the most attractive regions are made up of an amalgamation of clusters of firms on a larger than local scale -- the regional scale—which are connected to the global production environment. In this case, the local dimension of immediate geographical proximity is not a determining factor. As Markusen (2000, 118) stated: "It is certainly more profitable for some localities to improve co-operative relations and establish networks which extend beyond the regional framework than to concentrate on their local firms" (translation).



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As regards the question related to the local scale, our study addresses the notion of proximity from a new perspective. The latter is made up of a set of dimensions that relate to the physical sphere (cohabiting the same territory), the cultural sphere (because it can rely on the presence in this territory of a social, cognitive or communicational capital that is social, organizational or institutional in nature). The industrial atmosphere mentioned by Marshall to characterize the first studies on industrial districts gave the local level relational and cultural attributes associated with physical proximity.

The survey we conducted revealed the presence of a Marshallian industrial atmosphere among Montreal respondents in describing the success of their firm. However, the industrial atmosphere they described is fragmented within a particular type of “the local.” Certainly, physical proximity and its local dimension linked to the fact of cohabiting the same territory do not seem to be a determining factor. However, we also detect the great importance of institutional proximity in their answers. The latter is described as being or not being able to find in their milieu (Greater Montreal) the resources that are necessary or conducive to their development.

The globalized economy is more than the simple generalization or globalization of economic activities. It is also the reshaping of the firms’ relationship with their territory. This relationship is rebuilt not by abandoning the local level but based on a dual logic of proximity and connectivity. To innovate, firms invest in local territories which are in “harmony” with the proximities that they seek. Consequently, aboriginal firms invest in their local proximity (training, research centre, formal associational life and informal groups) as long as these communities demonstrate their capacity to make the choice of localization profitable in the long term. Similarly, the local communities react by offering aboriginal and foreign business communities a portfolio of “socio-territorial capital” which makes the localization of these firms in their territory essential.

The advantage of our working hypothesis is that it unifies the different meanings given to the concept of proximity. Thus, the significance of our respondents’ answers to the very definition of the local was discovered. The latter is no longer the local space as a basic cell of the national space. The local space is everything that revolves around the zone of physical, technological or cultural proximity of a firm.

The process of denationalizing the local space is an integral part of the new reality of development, which occurs less in a protected homogenous space (the nation) and more within transnational reticular networks. Subnational communities (regional, metropolitan and local) are increasingly aware of the repercussions of this new reality on their future. Thus, they demand that the state grant them more autonomy and resources so as to better display their socio-territorial capital and to be in a better position to connect to proximity networks.



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