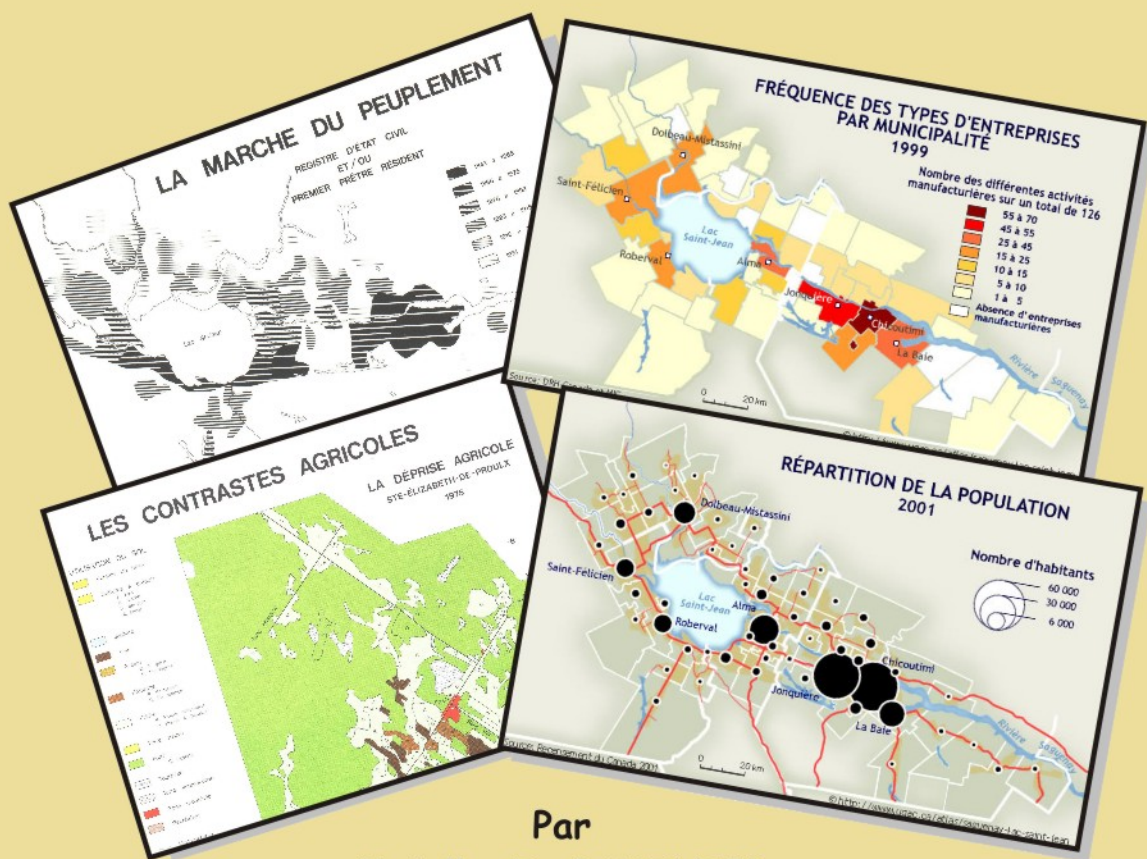


# DO REGIONAL ATLASES AGE WELL?

## THE CASE OF THE ATLAS DU SAGUENAY-LAC-SAINT-JEAN (Quebec, Canada)



Par  
**Majella-J. GAUTHIER**

Laboratoire d'expertise et de recherche  
en télédétection et en géomatique

Département des sciences humaines  
2008



Université du Québec à Chicoutimi

# **Do Regional Atlases Age Well?**

## **The Case of the Saguenay-Lac-Saint-Jean**

**Majella-J. GAUTHIER**  
Geographer and Professor Emeritus

Laboratoire d'expertise et de recherche en télédétection et géomatique  
Groupe de recherche en études et intervention régionales  
Département des sciences humaines

Université du Québec à Chicoutimi,  
Chicoutimi, Québec, Canada, G7H 2B1,  
e-mail: [mgauthier@uqac.ca](mailto:mgauthier@uqac.ca).

March 2008

## Abstract

*The production of regional atlases is relatively new in the history of geography, that is to say since–World War II. These last years, the developments, in particular as regards technology, allowed the proliferation of cartographic experiments centered on various areas. It is the case, for example, of the Saguenay–Lac-Saint-Jean region in Quebec (Canada), for which an electronic atlas is in progress. Moreover, this area had been, 30 years before, the object of a thorough printed cartographic analysis. One can therefore wonder if the features that characterize this space have changed over that period<sup>1</sup>.*

## Introduction

One must ask oneself, after 40 years of analysing regional geography, to what extent the research interests, methods, tools, scientific achievements, and products have changed in this field. Particularly, it would be interesting, even useful, to see what has been done and is currently being done with regional atlases. There are many ways of looking at this question: In this paper, let us examine how atlases age, in other words, to see if what they found and described still persists today, and if what they anticipated have had repercussions on the decades that followed (Gauthier 2004).

---

<sup>1</sup> Il est possible de consulter un article en français sur le sujet: Majella-J. GAUTHIER, 'Les atlas régionaux et l'usure du temps: réflexions à partir des expériences de la région ( Saguenay-Lac-Saint-Jean)', *Saguenayensia*, vol. 47, n° 1, 2004, p. 64-68. This text comes from a presentation done in Ottawa in 2006: Majella-J. GAUTHIER, 'Do Regional Atlases Age Well?', Ottawa, GeoTec Event 2006, *Canadian Cartographic Association Conference*, Proceedings, [FTP://ftp.aip.com](http://ftp.aip.com), Login: ftpguest0. Password: m2media360. Location: Geo.

## 1. Regional atlases

Let us recall, first of all, that the production of the first atlases, made up of a series of thematic maps of a single region, is recent. In France for example, *Atlas de la France de l'Est* and *Atlas de Normandie* were respectively published in 1963 and 1965 (*Association pour l'Atlas de la France de l'Est* and *Association pour l'Atlas de Normandie*). They were university projects aiming to locate and understand the major geographical dimensions that made up their respective territories. Maps showing distributions, structures, systems, evolutions, and spatial patterns were elaborated.

### 1.1 The case of the Saguenay–Lac-Saint-Jean region

It is with the same idea in mind that, in 1981, researchers at the University of Quebec in Chicoutimi (UQAC) produced the *Atlas régional du Saguenay-Lac-Saint-Jean*; a printed and bound volume comprising 98 plates (Gauthier and Bouchard)<sup>2</sup>. By comparing with the compiled information for the *Atlas électronique du Saguenay-Lac-Saint-Jean*, one can see if the observations made on the 1970s are still valid 30 years later. Are we looking at the same dispersion modes, concentrations, and social-economic and spatial disparities (LRETG)? Moreover, were the development schemes proposed therein considered and applied?

Of course, there were changes in numbers and proportions, companies were established or vanished, there was construction of houses, roads, etc. But, there is still that deeply anchored structure that persists, differences that prevail. One could say that ‘the more things change, the more they remain the same’.

#### 1.1.1 Examples of structures that do not seem to change

Let us take a look from high altitude, a sort of balloon ride several kilometres above the territory, and compare the 1971 situation to that of 2001. There are obvious similarities, like the permanence of the spatial pattern, which consists of a central region (urban and industrial), surrounded by concentric rings, the content of which varies according to their distance from the central regions and their relation to activities based on the exploitation of natural resources. Thus, a first ring called peri-urban, an intermediary zone generally agricultural, and a peripheral zone often axed on forestry are combined to the central region.

Let us then compare 1971 and 2001:

---

<sup>2</sup> For your information, the Saguenay–Lac-Saint-Jean region is one of the 17 administrative regions of the province of Quebec (Canada). It has been termed a region of natural resources and described as a *temperate Nordic oasis*. In 2001, 278 279 inhabitants mainly made a living from natural resources like forestry, aluminium metallurgy, agriculture, and the tertiary sector. The City of Saguenay is the major urban centre (made up principally of the former municipalities of Chicoutimi, Jonquière, and La Baie), and its residents make up more than half of the regional population.

- 1) the distribution of the population still shows a concentration in the three Upper Saguenay urban centres (Chicoutimi, Jonquière, and La Baie, to which Alma could be added) and a progressive reduction of municipal sizes as distance from this urban grouping increases (Figs.1 and 2);

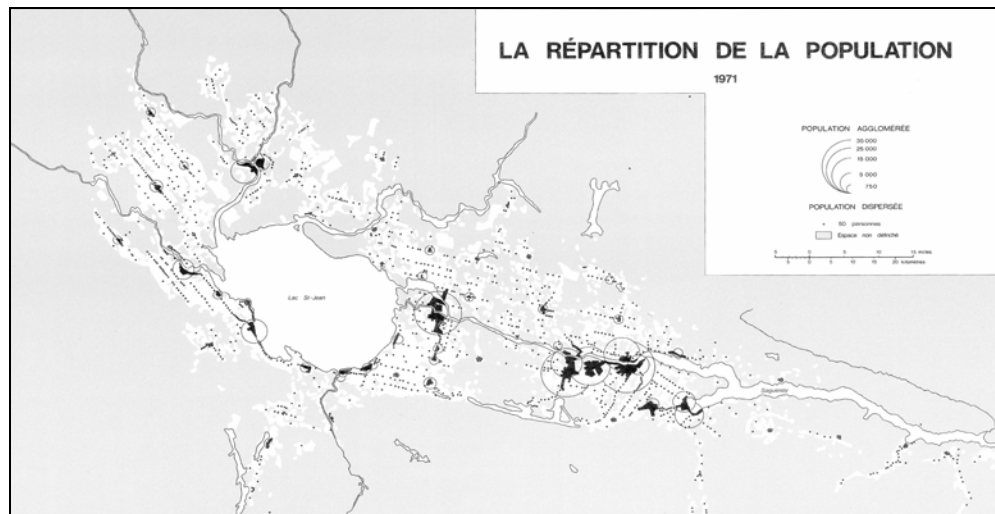


Figure 1

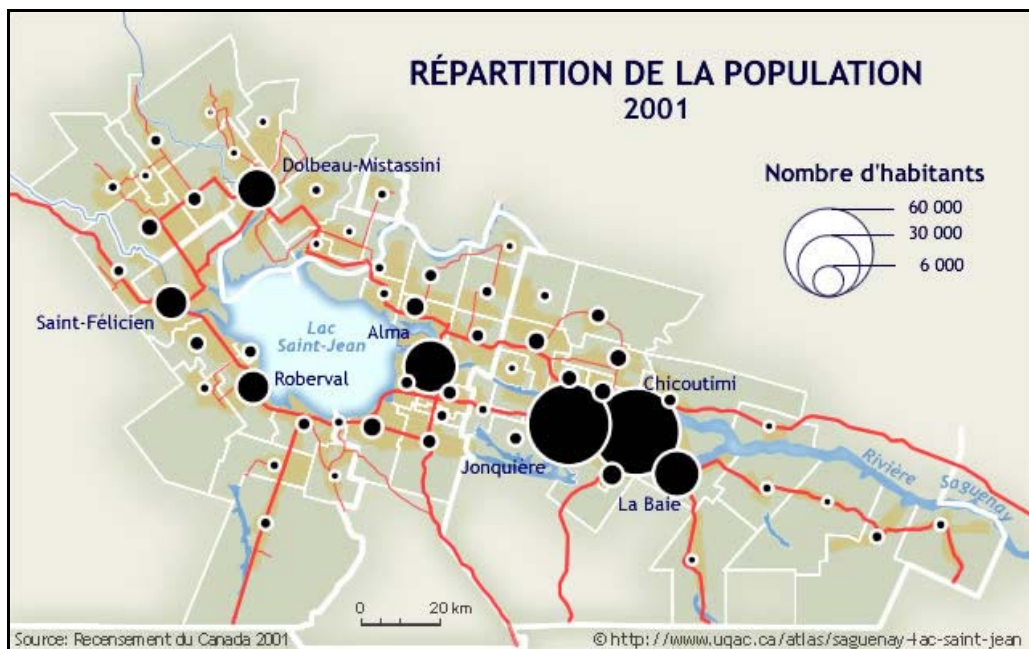


Figure 2

- 2) the same is true for population density (calculated according to cleared ecumene), which is higher in the urban areas and in the peripheral territories;
- 3) the unemployment and idleness rates still follow the same distributions;
- 4) the models showing the characteristics of age and gender of the population still reveal that young women stay in the urban centres and that the ratio of men is clearly higher in peripheral areas;
- 5) the average family income, even though it has increased in terms of dollars, keeps the same distribution tendency over space;
- 6) territorial dependence on the primary industry remains the same;
- 7) the occupational structure of the population did not change a lot and the gap between men and women still remains.

And these are a few examples among so many possibilities.

### **1.1.2 Some means of detecting change**

Everyone will agree that during those two or three decades, there must have been some changes that the actual observation scale cannot reveal. That is why certain means have to be deployed to detect the subtleties, similarities, differences, and changes until now unnoticed.

Let us concentrate on the question of population numbers and suppose that we want to compare changes in population numbers in Saguenay–Lac-Saint-Jean municipalities from 1951 to 2001. To do so, it is necessary to keep the same spatial units (for example, push back the 2001 limits for each five-year census). An original and simple way to compare changes is to calculate the spread that separates each territory from the regional tendency for all territories. Simple regression makes it possible to trace a straight line through the cloud of dots, which yields the general tendency. Then, it is possible to measure the distance (spread) that separates each point (each territory) from this straight line, which yields a series of positive and negative values that express to what extent the 2001 data is distant from the general line. This reveals whether the territory in question has been above, equal to, or below the general tendency.

Figure 3 shows the regression line going through a cloud of dots representing each of the 48 territories analysed. Moreover, it is possible to map these spreads (called residue in technical dialect) and to see the spatial distribution of variations. On the map (Fig. 4), it can be observed that the evolution of the population numbers over 50 years takes on varied values and a known spatial pattern, but also yields surprising information. It is not abnormal that urban centres should have positive numbers and be, like Chicoutimi and Alma, ahead of the others, but it is striking that Jonquière, the second largest urban centre in terms of population, should have lost 10,585 inhabitants.



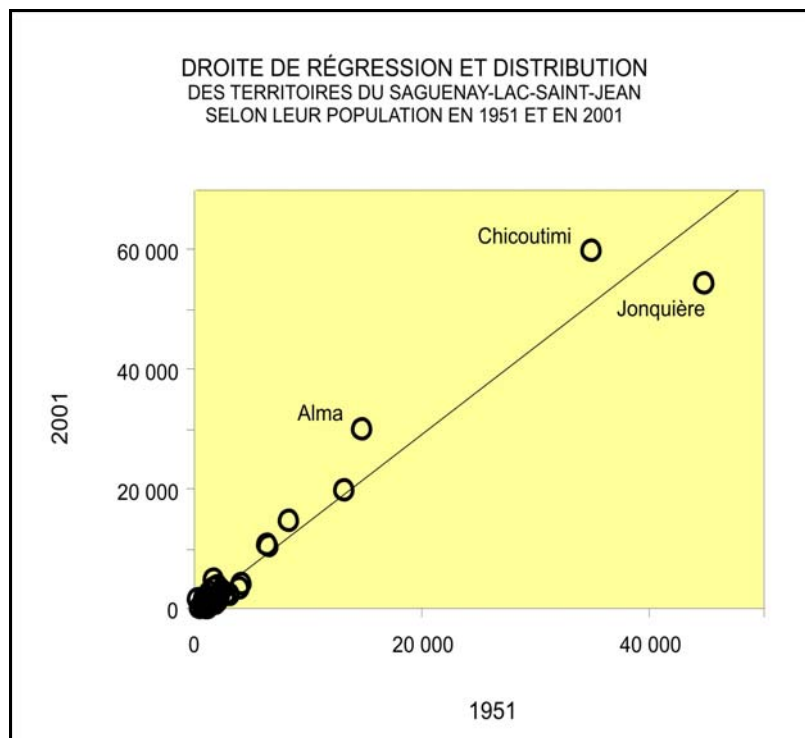


Figure 3

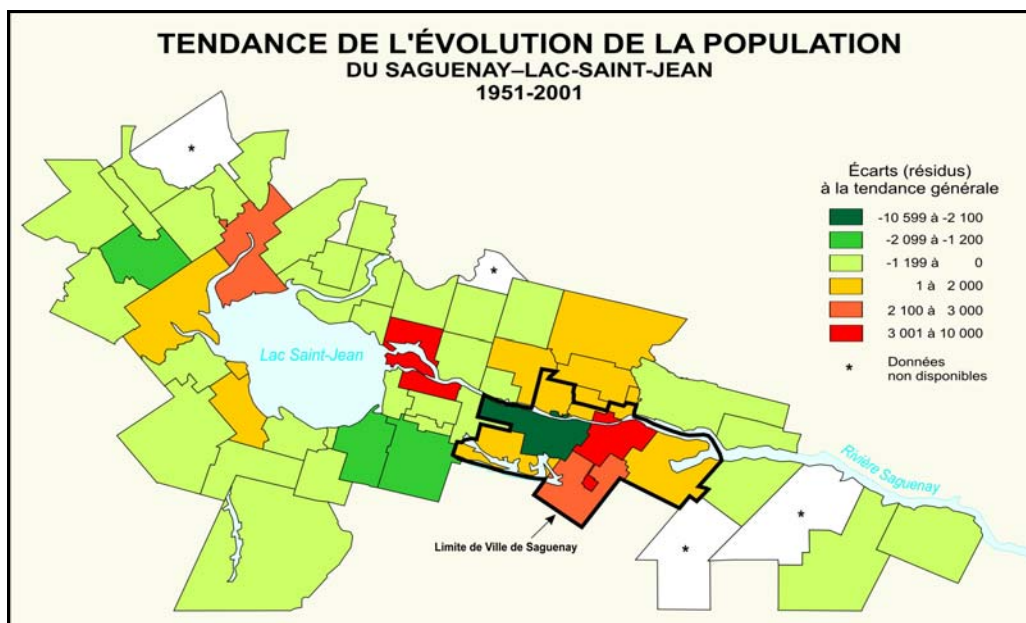


Figure 4

Moreover, the territories that have had a tendency to grow are located along the urban-industrial axis. In other areas, especially in Lac-Saint-Jean, the numbers are negative, and it is interesting to note that localities where agriculture has always been prosperous are well below the general tendency; it is the farming heart that is touched!

Another, surely more efficient way to describe and analyse demographic change is to take a look at the modulated variations of territorial population numbers. This was done recently for the Saguenay–Lac-Saint-Jean region, by comparing the evolutionary diagrams of the number of resident over 50 years (based on the five-year census results from 1951 to 2001). The study revealed a very informative typology for the entire region (Gauthier, Tremblay and Brisson 2004) (Fig. 5).

### 1.1.3 Predictions

Traditionally, regional atlases paid little attention to predictive issues or the follow-up of tendencies through time and space. It is only recently, as we are faced with demographic problems, exhaustion of natural resources, environmental issues, and quality of living that maps have become a more elaborate tool.

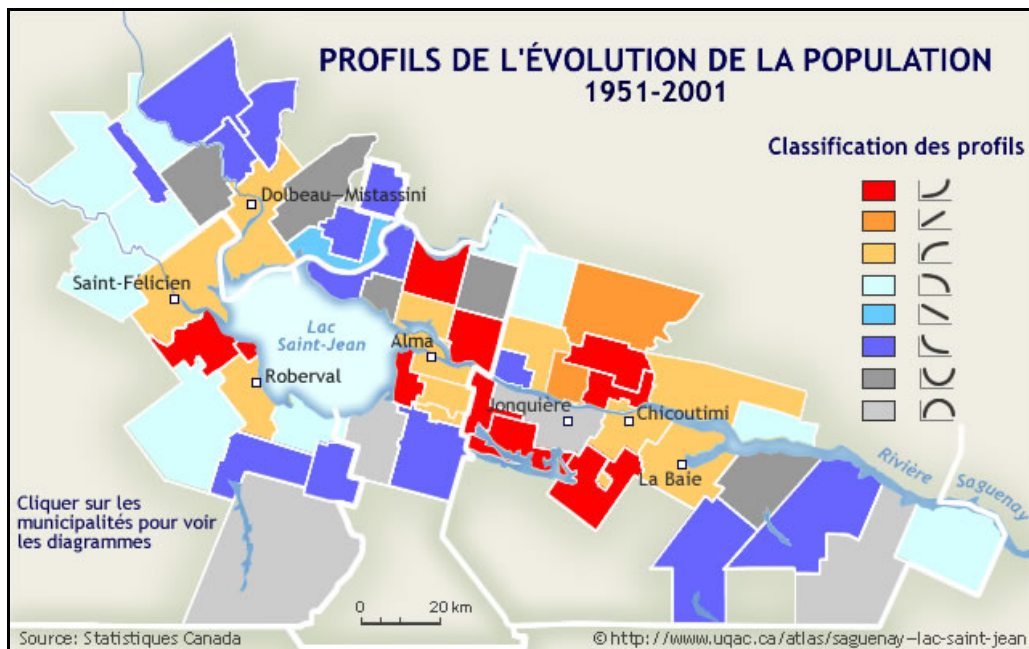


Figure 5

Nevertheless, for the Saguenay–Lac-Saint-Jean region, an effort to look to the future was made in the 1981 regional atlas. Thus, in the body of the volume, only the government predictions in terms of road traffic were presented. However, in the section on development perspectives, where



recommendations for the future were made; do we know today if the proposed axes of development (1979-1984) were followed? The question merits a bit of attention.

Let us begin with natural resources. The 1981 atlas used the results of 1977 and 1978 studies by the OPDQ (Quebec Planning and Development Office) to draw up a picture of the main orientations for development. It was mentioned that the major objective was to find a more rational way to exploit resources, to aim for a better balance between industry and biophysical potential. Consequently, for traditional fields of activity, the idea was to make optimal use of resources through consolidation and better productivity.

As concerns the agricultural sector, the territory was divided into three production zones: vegetable and animal, agro-forestry and animal production, and forestry (Fig. 6). On the one hand, this “agro-forestry plan”, as it was called, was largely followed, which led to the spatial concentration of milk farms on the best grazing lands. On the other hand, this practice was not eliminated from isolated areas like the lower Saguenay; it also accentuated a population drop in rural municipalities. The potato culture was also consolidated, as well as that of the blueberry, which led to a secondary processing industry for both products.

Despite the reduction in land for cultivation, there was an increase in the size of farms, as well as that of herds and milk production. The control of urbanisation was helped out by a law on agricultural zoning. However, everything did not go perfectly. For example, a recent study by Boivin (2004), on the city of Saguenay, showed how fast urban functions spread from 1997 to 2001; waste land and vacant lots increased by 31.4 km<sup>2</sup> (+38%) and 5.4 km<sup>2</sup> (+9.4%), respectively.

As regards forestry, a lot of efforts were made to improve forest roads; to the point where annual wood harvest increased by 50% over the past 20 years, to 8,240,000 m<sup>3</sup> in 2000. It goes without saying that the warnings about over-cutting that have hit the media over the past few years are also valid for the Saguenay–Lac-Saint-Jean region. As concerns the extraction of minerals, the known silica deposits were mined, but not those of tantalum. Finally, peat harvesting saw some form of development.

The orientation of development in the secondary and tertiary sectors was presented in three stages: current tendencies, elaboration of means to sway tendencies with a voluntarist paradigm, and the profile expected (Fig. 7). It is not our intention here to review each item of this section, however, it can be easily confirmed that the diagnostics are clear, the means to be put in place are very optimistic, and the prospective essay is sprinkled with good wishes. Some of the punctual projects fared well, others not so well, and others had no success whatsoever. The following are some examples.

The Plan aiming to increase the number of jobs in the region went rather well as the totals climbed from 93,200 to 105,000 and 114,600 for the years 1976, 1986 and 2001, respectively.

In the manufacturing sector, the pulp and paper mills were modernised (except for one which has been shut down definitely). The creation of a zone dedicated to heavy industry is still in the

works in La Baie where, in fact, the port installations have been greatly improved (including Port Saguenay).

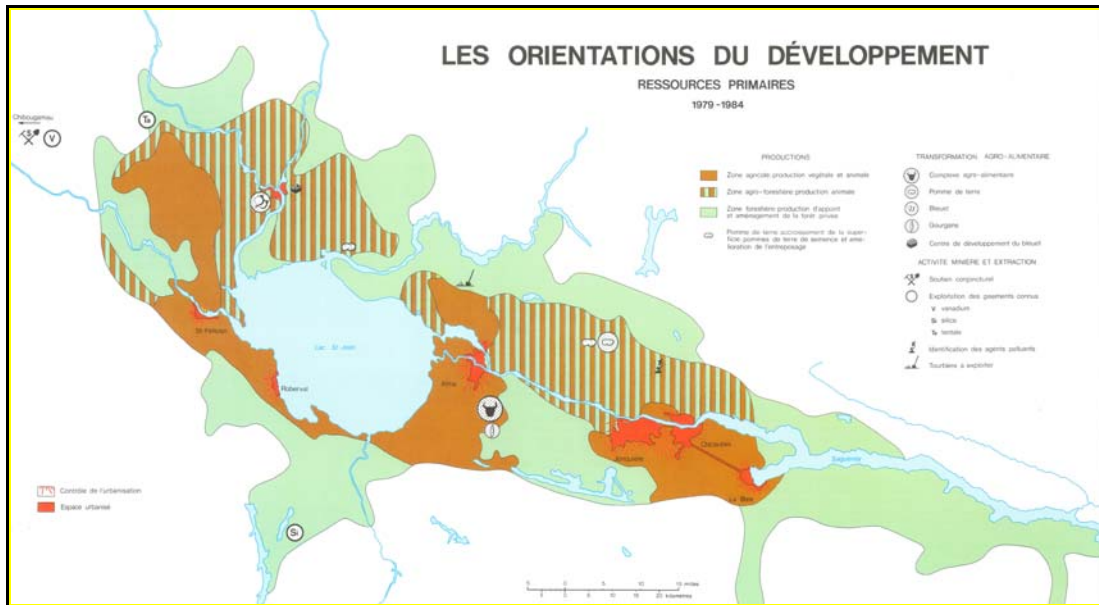


Figure 6



Figure 7

Regional infrastructures have had an ambivalent lot. There has been improvement of the roads with numbering and a four-lane highway between Alma and La Baie. Otherwise, the will to shorten the time of travel from Chicoutimi to Montreal by train have failed, to the point where Chicoutimi lost both its station and the rails leading to it. The expansion of the private bus network into rural areas is still a problem (lack of interest by companies and difficulty in getting adults to board school buses). Finally, the creation of a sub-regional airport in Upper Lac-Saint-Jean never took off.

On the tourist and recreational levels, development followed its planned course as the results were foreseeable on the short term. The existing sites were developed (alpine skiing, conservation areas like Pointe-Taillon, Saguenay, and Monts Valin parks), information or promotional centres on the various aspects of the region were put in place or further developed, and the establishment of outfitters on public lands of the Canadian Shield was encouraged.

Education increased considerably, especially due to the consolidation of the University of Quebec in Chicoutimi and the four colleges (CEGEPs). Remarkable efforts were also made to revamp the Chicoutimi and Jonquière downtown areas.

Finally, as regards the environment, it should be noted that the issues of concern were dealt with: the wood drive was stopped, the sand quarries were reconditioned, and measures were taken to better control industrial emissions.

Overall, the 1981 regional atlas team made concerted efforts to write-in some foreseeable results in terms of economic and social development, in an attempt to target potential improvements and sway tendencies. As with most plans, there are short-term successes on foreseeable results, but it is more difficult to alter deeply entrenched structures.

## **2. Comments**

The Saguenay–Lac-Saint-Jean Regional Atlas aged relatively well. Comparing with the new contents of the Electronic Atlas reveals that the data have changed but many spatial patterns remain, especially concerning population features; what was in the past high or low remains in the same position some decades later.

The atlas, printed in 1981, often describes static situations that drew up useful pictures that had never been made before. It presents interesting views of systems (ecology, farming, urban centres and tourism). It also attaches some importance to short-term evolution and changes.

A relatively small number of plates deal with forecasting. Sometimes the actions mentioned were in progress when the atlas was published; some had success because it was easy to imagine their achievement through available government programs. Others can be qualified as desirable outcomes, like wishes, but never had the chance to get started even though we had planned to accomplish them between 1979 and 1984.

Over the past two decades, the use of personal computers, analysis systems and the Internet to produce and disseminate 'geocartographic' information among the population has become current (Chapuis and De Golbery 2000). It is now easier to make maps, execute complex research, show the evolution of topics and the dynamism of the organisation of the space, often with motion and interactivity (Peterson 2003, Cartwright 2003).

Today, an electronic atlas on a specific region can include, more and better than in the past, models predicting the future, because tools to find trends are included in GIS or in connected systems. These refined systems can now be used to develop many scenarios, and the forecast can be rectified over time.

## **Conclusion**

We realise that this paper is focused on one atlas only, but we think that it is a good example of the success obtained by the experience of 30 years ago. We are also convinced that it gave us the energy and skills to begin, these last years, a new cartography project to carry on with what we had started.

On the one hand, the first atlas to be produced for the region definitely laid the groundwork for knowledge of the territory and its inhabitants; it recorded, grouped, and integrated the data. It had the advantage of being the first scientific document to bring out the strengths and weaknesses of a given territory, systems and structures, dynamics and tendencies, and could even yield a view on the future. Many phenomena are deeply anchored in a territory; land characteristics and history play an important role in its determination. On the other hand, structural and system changes, and consequently their effects on social, economic, and spatial patterns, could go unnoticed if summarily analysed. Only a refined analysis over time can reveal how the parts behave and modulate, and how they modify the whole.

For their part, printed thematic atlases did their job. Despite the wealth of information they contained, they were static, cumbersome, and expensive, and they took a long time to produce. In the age of multimedia, electronic atlases are taking over; they evolve faster, offer improved graphical possibilities, and make maps and information readily available. Nevertheless, they need to stay in tune with current spatial problems and to be fed information constantly for planning and decision making.

## **Acknowledgements**

We wish to thank our partners and team members.

## References

- Association pour l'Atlas de la France de l'Est, 1963, *Atlas de la France de l'Est*, Strasbourg, Istra.
- Association pour l'Atlas de Normandie, 1965, *Atlas de Normandie*, Université de Caen, Institut de géographie.
- BOIVIN, R., 2004, *Évolution de l'utilisation du territoire de la ville de Saguenay de 1977 à 2001*, Québec, Université Laval, Département de géographie, Mémoire d'activité de synthèse, 133 p.
- CARTWRIGHT, W., 2003, 'Maps on the Web', in *Maps and the Internet*, Edited by M P Peterson, (Amsterdam, Elsevier), International Cartographic Association, p. 35-56,
- CHAPUIS, A. and L. DE GOLBÉRY, 2000, 'Aux cartes, citoyens: la démocratie par les cartes', *Cybergeog*, Rubrique 150, 27 p..
- GAUTHIER , M.J. and L.M. BOUCHARD, 1981, (Editors) *Atlas régional du Saguenay-Lac-Saint-Jean*, (Chicoutimi, Gaétan Morin), 98 plates.
- GAUTHIER, M.J., 2004, 'Les atlas régionaux et l'usure du temps: réflexions à partir des expériences de la région (du Saguenay-Lac-Saint-Jean)', *Saguenayensia*, vol. 47, n° 1, p. 64-68.
- GAUTHIER, M.J., É. TREMBLAY. and C. BRISSON, 2004, 'Profils territoriaux de l'évolution de la population du Saguenay-Lac-Saint-Jean', *Organisation et territoires*, 13 (2), p. 15-21.
- GAUTHIER, M.J., M. DION, C. BRISSON, C.CHAMBERLAND. and A. ROCH, 2003, 'Impacts of the Realization of an Electronic Atlas in Regions: the Case of the Saguenay-Lac-Saint-Jean in Quebec', *Cybergeog*, Rubrique 233, 12 p.
- LRETG (Laboratoire de recherche et d'expertise en télédétection et en géomatique), *Atlas électronique du Saguenay-Lac-Saint-Jean*, Université du Québec à Chicoutimi: [www.uqac.ca/atlas](http://www.uqac.ca/atlas). The site has more than 500 thematic maps.
- PETERSON, M..P., 2003, 'Maps and the Internet: An Introduction', in *Maps and the Internet*, Edited by M. P. Peterson, (Amsterdam, Elsevier), International Cartographic Association, p. 1-16.