La Représentation Fractionnaire :
Méthode de scrutin efficace, équitable et à moindre coût pour le Québec.

Un mémoire présenté à la Commission spéciale sur la Loi électorale

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Le gouvernement libéral a proposé que le système électoral québécois soit ajusté afin que l'élection des membres de l'assemblée nationale soit plus équitable. Il existe deux anomalies dans le présent système. D'abord, il y a un manque de représentation proportionnelle au niveau du parti - ainsi durant les élections de 2003, l'ADQ a reçu 19% des votes et n'a obtenu que 3% des sièges. Et deuxièmement, il y a une inégalité dans la taille de la circonscription électorale - les circonscriptions avec une plus grande population que la moyenne sont sous-représentées et réciproquement.

Alors qu'il existe un grand nombre de modèles qui laissent un certain degré de représentation proportionnelle, ils ont tous tendance a diminuer la représentation familière entre une circonscription et le membre élu de l'assemblée nationale. Le modèle Massicotte, qui est celui proposé présentement, envisage de réduire le nombre (tout en augmentant la taille) des circonscriptions a 75, ajoutant ainsi 50 nouvelles circonscriptions régionales compensatoires; celles-ci seraient utilisées pour élire les 2e et 3e places pour compléter la représentation requise pour chaque parti. Cette méthodologie permet un niveau plus élevé de représentation proportionnelle que se produit actuellement, mais qui ne résout pas le problème des circonscriptions de taille électorale inégale.

Etant donné le grand mécontentement résultant de la perte de la représentation locale a la suite du projet de loi 170, la perte des circonscriptions établies ne serait pas une mesure politique prudente. De même, la réaction initiale à un changement proposé de la carte électorale de Montréal pour l'élection 2005 était la colère. En outre les frais additionnels afin de redéfinir la carte électorale entière et d'installer la nouvelle infrastructure électorale pour les 50 circonscriptions compensatoires va a l'encontre du mandat du gouvernement Charest de réduire le coût des services gouvernementaux.

Le concept du scrutin fractionnaire proposé dans cet article permet la rétention des circonscriptions existantes mais en même temps assure la représentation proportionnelle au niveau du parti, et une juste représentation au niveau des circonscriptions. En outre le coût des son implémentation est négligeable. Ce genre de scrutin déjà existe et est utilisé par la Banque Mondiale, le Fonds Monétaire International, et par des compagnies publiques aux fins du vote par procuration. Et il existe déjà un précédent sur l'usage du scrutin fractionnaire au Québec; les votes des

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membres des conseils d'agglomération sont assignés une taille proportionnelle à la population de chaque municipalité.

Sous le système fractionnaire de scrutin, les 125 circonscriptions continueraient à opérer dans les mêmes frontières géographiques comme cela se fait présentement. Chaque circonscription enverrait à l'assemblée nationale le membre qui a reçu le plus grand nombre de votes dans cette circonscription. Le seul changement est que chaque membre élu est assigné un poids fractionnaire qui reflète le pourcentage du vote reçu par le parti du membre, et la taille de la population de la circonscription que représente le membre. La somme des poids de tous les membres de l'assemblée nationale reste 125. Quand le scrutin se produit dans l'assemblée nationale, chaque membre de l'assemblée nationale est assigné son poids fractionnaire. Etant était donné que le mécanisme du scrutin est déjà informatisé, ajouter le poids à chaque membre est une tâche facile à programmer. Aussi, dans l'intérêt de justice opérationnelle, plutôt que recevoir la même allocation pour chaque membre celui-ci recevra une allocation proportionnelle à son poids fractionnaire.

Une feuille de calcul Excel qui illustre cette méthodologie ainsi que dérive les poids fractionnaires des élections provinciales de 2003 est disponible à www.econotron.com/pub/electoral.xls

Fractional Representation :
An Effective, Fair and Cost Effective Voting Methodology for Québec

Brief submitted to the Select Committee on the Election Act.

Jon Breslaw[1]

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Executive Summary

The Liberal Government has proposed that the Québec electoral system be adjusted in order to make the election of members to the National Assembly in some sense fairer. The two deficiencies of the present system are the lack of proportional representation at the party level – in the 2003 election, the ADQ received 19% of the vote, yet only 3% of the seats – and the unequal electoral size of ridings, whereby ridings with electoral populations larger than the average are under-represented, and conversely.

While there are a large number of models which permit some degree of proportional representation, they all tend to lessen the familiar one-to-one representation between a riding and its elected MNA. The model currently being proposed for Québec - the Massicotte model - envisages reducing the number (and increasing the size) of the ridings to 75, and implementing 50 new *compensatory* regional ridings which would be used to elect candidates in 2nd or 3rd place to make up the required proportional representation of each party. This methodology permits a higher level of proportional representation than currently occurs, but does not address the problem of ridings with unequal electoral size.

Given the considerable discontent resulting from the loss of local representation following Bill 170, the loss of established ridings would not appear to be a prudent political measure. Similarly, the initial response to a proposed change in the Montreal electoral map for the 2005 election was outrage.[2] As well, the additional expense of redefining the entire electoral map and setting up the new electoral infrastructure for the 50 compensatory ridings is at odds with the mandate of the Charest government to reduce the cost of governmental services.

The concept of fractional voting power proposed in this paper permits the retention of existing ridings, while at the same time ensuring both proportional representation at the party level, and fair representation at the riding level. It also entails a negligible cost to implement. Fractional voting is used at the World Bank, the IMF, and for proxy voting by public companies. There already exists a precedent for the use

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[2] Gazette, January 26, 2005. p A6

of fractional voting in Québec – the votes of members of the regional agglomeration councils are assigned weights proportional to the population of each municipality.

Under a fractional voting system, the 125 ridings would continue to operate as at present, with the same geographic boundaries. Each riding would send to the National Assembly the member who received the largest number of votes in that riding. The only change is that each elected member is assigned a fractional weight, which reflects both the percentage share of the vote received by the member's party, and the population size of the riding that the member represents. The sum of the weights for all the MNAs is 125. When voting occurs in the National Assembly, each MNA is assigned his/her fractional weight. Since the voting mechanism is already computerized, adding weights for each MNA is a trivial programming task. As well, in the interests of operational fairness, rather than each member receiving the same parliamentary expense allowance, each member receives an allowance proportional to his or her fractional weight.

An Excel spreadsheet which illustrates this methodology and derives the fractional weights for the 2003 Provincial election is available at www.econotron.com/pub/electoral.xls

Introduction

The Liberal Government has proposed that the Québec electoral system be adjusted in order to make the election of members to the National Assembly fairer. The present system has two main deficiencies:

- The lack of proportional representation at the party level. In the 2003 election, the ADQ received 19% of the vote, yet only 3% of the seats. A system in which the proportion of party members in the National Assembly is the same as the proportion of the electorate that voted for that party is defined as exhibiting *proportional representation*.

- The lack of fair representation at the riding level, whereby given the unequal electoral size of ridings, those ridings with electoral populations larger than the average are under-represented, and conversely. A system in which the voting power of each electorate is the same, regardless of the size of the riding, is defined as exhibiting *fair representation*.

The government plans to introduce and pass such legislation during this session. This paper, then, is a response to a request for informed opinion made by Jacques Dupuis, former Minister for the Reform of Democratic Institutions.

Current System

Québec, like most jurisdictions in North America, currently uses the "first by the post" voting principle, whereby the individual with the largest number of votes in a riding is elected. The "first by the post" method has the following attributes:

Advantages:

- Is simple, and well understood.
- Provides a one-to-one relationship between a riding and its elected representative.

Disadvantages

- Does not allow for proportional representation in terms of political parties.
- Creates unfairness because of unequal riding populations.
- Requires continuous redefining of boundaries in order to maintain a (relatively) constant population per elected representative ratio.

Alternative Systems

There are, both in the literature and operationally, a large number of voting models available that generate some level of proportional representation. In each of these methods, a list is used to allocate members, such that the number of elected members of a party as a percentage of the number of seats reflects the overall vote for that party. The need to overhaul the electoral system in Québec is not new - La Commission de la Représentation Électoral submitted a study in 1984 – "Pour un mode de scrutiny équitable". This study proposed that the number of ridings in Québec be reduced to 20 territories, with electors casting ballots for both a party and/or a candidate from a list. Non-elected candidates would then be used to make up the required number to ensure proportional representation.

The current method under discussion has been proposed by Louise Massicotte, professor of political science at the Université de Montréal, and is based on the German model. The plan envisages dividing the province into 75 new remapped ridings, and 50 new compensatory ridings at the regional level. These 50 compensatory seats would be filled to satisfy proportional representation from among defeated riding candidates. This would require an increase in the size of the ridings if the total number of seats (125) is to remain fixed.

The rationale for changing the electoral system ultimately rests on a basic concept - the most important element of any democracy is its electoral system. Thus a change in the electoral system by the government in power has to be seen by the electorate as a positive step. While the concept of introducing proportional representation is well recognized, and receives broad based support, the concept of radically changing the electoral system, and especially of increasing the size of ridings, is probably as unwelcome news to the electorate at large as was the Parti Quebecois proposal to merge municipalities. Whether or not there were efficiencies to be had from mega cities, the loss of social structures built up over generations produced anger and an ensuing political response that was responsible, in part, for the PQ loss in the 2003 elections. Similarly, large-scale changes in the geographical definition of ridings and the creation of "mega ridings" at the regional level is probably not a wise thing for a government to implement at the best of times; to do so at this juncture would be, at best, imprudent.

This paper proposes a methodology that is simple to implement, and that satisfies all the requirements of both proportional representation and fair representation, without the need for changes in the size of ridings or the method of voting.

Fractional Representation

The underlying idea of Fractional Representation is to create a system that allows an MNA to represent a riding, while accounting for both the parties' share of the popular vote, and the fact that ridings differ in size. The template for this model is the World Bank. Decisions made by member countries of the World Bank are voted on by each member nation. However, the voting power of each member is directly correlated with

that member's financial contribution. Typically, the weight of the US vote is about 15% of the total, while Afghanistan's is about .02% - these figures matching the respective financial contribution. A similar method is used by the IMF. Fractional Representation also occurs in every public company - when voting on a proxy, each shareholder gets a vote that is weighted proportionally to the number of shares owned. So the concept of fractional voting is totally familiar.

In Québec, Bill 9 (Article 110) legislated Fractional Representation for the members of the regional agglomeration councils. The preamble of Bill 9 outlines the idea:

> "...an urban agglomeration council made up of representatives of all the related municipalities, each of which shall have a say in the council's decision-making process proportional to the relative size of its population".

Thus, in the Longueuil Agglomeration Council, each Longueuil councilor would have 10.1% of the votes, while for the four suburbs, the percentage would range from 5.6% for St. Lambert to 17.6% for Brossard.

The idea, then, is to allow for both representative voting and riding size by assigning to each MNA a weight which would be used in voting at the National Assembly. Since the voting mechanism is already computerized, adding weights for each MNA is a trivial programming task.

Methodology

The methodology is straightforward. The 125 ridings continue to operate as at present, with the same geographic boundaries. Each riding sends to the National Assembly the member who received the largest number of votes in that riding. The only change is that each elected member is assigned a weight, which reflects both the percentage share of the vote received by the member's party, and the population size of the riding that the member represents. The sum of the weights for all the MNAs is 125 And to make things totally fair, rather than each member receiving the same parliamentary expense allowance, each member receives an allowance proportional to his or her weight. The mathematical details are provided in Appendix 1. Implementation of this methodology is illustrated in Appendix 2 using the results from the 2003 provincial election.

The methodology has a number of significant advantages:

- Is simple, and well understood, since no change is required from the existing system.
- Provides a one-to-one relationship between a riding and its elected representative.
- Provides exact proportional representation at the party level.

- Provides fair representation at the riding level.
- Does not require constant redefinition of riding boundaries as population changes.
- Does not require any new administrative structures – thus it is by far the most cost-effective method of implementing proportional representation.
- Is familiar, since the same model is effectively used in proxy voting for every public company.
- Does not constitute a precedent, since the method is already legislated for use in the Québec agglomeration councils.

It is perhaps the ability to both provide proportional representation at the party level and fair representation at the riding level that is the most attractive characteristic of this methodology. The existing system of voting requires that the Directeur Général des Élection du Québec divides Québec into electoral divisions in such a way as to ensure that the principle of effective representation of electors is respected [Election Act, Ch II, Sec 14]. Traditionally, this has been interpreted in such a way as to result in the under-representation of urban areas, and the over representation of rural areas. There is considerable political pressure to maintain this situation. As an illustration, in 2000, the attempt to reduce the number of ridings from four to three in the Gaspé Peninsula was met with such resistance that the Commission bowed to the political pressure and attributed exceptional status to the four ridings, even though each deviated by more than 25% from the mean elector/representative ratio.

Thus, given the present levels of over-representation at the rural level, the implementation of new larger ridings under the Massicotte model would have a far greater impact at the rural level than at the urban level. It would seem to be pointless to institute a system that established proportional representation at the party level, and yet continued to allow for over-representation (and under-representation) at the riding level. Under the Fractional Representation model, the number of elected members from rural ridings could continue at the current level, while their voting power is diminished through their lower fractional weight. This compromise, by maintaining the same number (and distribution) of ridings while achieving proportional and fair representation through fractional voting, combines both the requirement of a fair electoral system while also maintaining the "effective representation" required by the Election Act.

In any analysis of competing methodologies for achieving a particular objective, there are always two criteria that need to be assessed – the efficacy of the proposed measure and the cost of implementing the change. Reducing the size and cost of government was one of the central mandates of the Charest government. In 2004, Monique Jérôme, chairperson of the Treasury Board, introduced a three year plan to modernize the Québec government. This plan documented how Québec spent 42% more per capita than Ontario on its government services. It also stressed that it was essential for Québec to reduce this figure, not only so as to reduce taxes so that Québec could compete with the other provinces, but also to reduce non essential spending in order to provide resources to meet the needs of an aging population.[3]

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[3] Don Macpherson, "Charest government takes baby steps on restructuring", Gazette, May 26, 2005.

Thus, compared to the Massicotte model, Fractional Representation is simpler to implement, allows for both proportional and fair representation, and can be implemented in a fraction of the time and at almost no cost. Fractional Representation is not only better, it's also much, much cheaper.

Illustratration

Table 1 - Voting power

	Lib		PQ		ADQ	
	Votes	Weight	Votes	Weight	Votes	Weight
Actual	76.00	1.00	45.00	1.00	4.00	1.00
Fair	78.58	1.03	42.96	0.95	3.46	0.87
Proportional	58.95	0.78	42.63	0.95	23.42	5.86

In the 2003 election, the Liberal, PQ and ADQ received respectively 47%, 34% and 19% of the vote, while gaining respectively 61%, 36% and 3% of the seats. In terms of fairness (each electorate has the same voting power, ignoring the party issue), representation is not bad; the Liberals are slightly under-represented, while the PQ and ADQ are somewhat over-represented, reflecting the Liberal support in urban, under-represented ridings, and the PQ support in rural, over-represented ridings.

In terms of proportional representation, it is clear that the ADQ is strongly under-represented, having gained 3.2% of the seats, and 19% of the vote. Thus under any system of proportional representation, the ADQ has to gain a significant increase in voting power, at the expense of the Liberals and PQ. Under the Massicotte model, this would be achieved by giving the ADQ between 19 and 23 of the 50 compensatory ridings. Under Fractional Representation, each MNA for the current 125 ridings would be returned, but each would have, on average, a voting weight shown in the last row of Table 1. Thus, on average, each Liberal member would be assigned a weight of 0.78, while on average an ADQ member would be assigned a weight of 5.86.

Implementation

The current timetable for the implementation of a proportional representational system is the election after the next election. While that would seem to be a reasonable deadline for implementing a system that required the complete redrawing of the electoral map, that is not the case for the Fractional Representation system suggested in this paper. Rather, Fractional Representation could be introduced as early as the next election, since the only change necessary (beyond legislative) is the implementation of fractional counting in the National Assembly. Given this ease of implementation, an attractive policy might be to introduce the system initially as a pilot project in the next session, to see how well it works in practice. Large changes to established systems are always

7

painful, and typically produce unexpected results. In contrast, the implementation of a relatively small change to an existing system, while achieving the required objectives, is a very attractive prospect.

Conclusion

The Liberal Government has a mandate to change the current electoral system to make it fairer. This will be implemented in the context of popular discontent with the formation of megacities and the reduction in local autonomy and representation. Thus the usual models of proportional representation, which typically result in larger ridings, and the resulting dissociation between a riding's electorate and its elected representative, might well be politically imprudent at this time. The proposed method of Fractional Representation allows for the maintenance of the current ridings and present voting requirements. The only change envisioned is that each elected representative is assigned a fractional weight, which is derived from both the relative size of the representative's riding, and the proportional vote received by the representative's party. These weights are used when voting in the National Assembly, and in the allocation of Parliamentary expenses. Thus this is similar to the fractional weights used by members in the agglomeration councils. These fractional weights ensure that each party has an effective (weighted) vote equal to its proportional representation, and that each voter has the same voting power, irrespective as to the size of the riding. In addition, the need to redraw riding boundaries on a regular basis as the relative size of the population in each riding changes over time is reduced.

References

Pour un Mode de Scrutin Équitable: La Proportionnele Territoriale. (1984) Rapport de la Commission de la Représentation électorale.

Election Act: Election Regulations (2001). Le Directeur Général des élections du Québec.

Québec's Electoral Map, 2001. (2001) Commission de la Representation Électorale du Québec.

Andrew Gelman, J.N. Katz and J. Bafumi (2003). "Standard Voting Power Indexes don't work: An empirical Analysis", No 1133 in Working Papers from <u>California Institute of Technology, Division of the Humanities and Social Sciences</u>

Appendix 1 - Details

- The current ridings are maintained, and voting occurs as in the past.

- A threshold is established – only parties who have at least one elected representative are considered.

- A first weight is established to ensure proportional representation based on votes for each of the eligible parties:

$$wt1_i = votes_i / \sum_i votes_i$$

where $votes_i$ are the total votes for party i.

- A second weight is established to ensure fairness between ridings with different size populations:

$$wt2_j = 125 * pop_j / \sum_j pop_j$$

where pop_j is the electoral size of riding j. Note that the average riding has an electoral ratio of $1/125$, resulting in an average value of $wt2_j = 1$. Define $wt2_{i,j}$ as the ridings size weight associated with elected party i in riding j.

- Combining both these weights generates the fractional voting power for each elected MNA:

$$wt3_{i,j} = 125 * wt1_i * wt2_{i,j} / \sum_j wt2_{i,j}$$

Note that the sum of the fractional voting power over all ridings j for party i is $\sum_j wt3_{i,j} = 125 * wt_i$ - that is the proportional representation of party i.

Since it is not possible to have two criteria – proportional representation and fair representation – both achieved globally at the same time, this methodology uses proportional representation as the primary criteria, and fair representation is achieved as a secondary criteria on a party by party basis.

Appendix 2 - Example

This example uses the results from the 2003 Provincial Election.

First, consider using only $wt1$ – the weights necessary for proportional representation. The Liberal, PQ and ADQ received respectively 47.2%, 34.1% and 18.7% of the vote. To ensure proportional representation, each individual MNA must have a weighting such that the combined weight for a particular party is the same as the above figures. The Liberals won 76 of the 125 seats (60.8%), while only receiving 47.2% of the vote. Thus, under proportional representation, they would only receive only 58.95 (.472*125) fractional votes. Each Liberal member is assigned a weight of .7757 (76/125 * .7757 = .472). Similarly, the PQ and ADQ receive 42.63 and 23.42 fractional votes respectively. The sum (58.95+42.63+23.42) = 125.

Next, consider using just $wt2$ – the weights necessary for fair representation, where the weights are based on size of the electorate in each riding. The Liberals increased their voting power from 76 to 78.58, while the PQ is reduced from 45 to 42.96. This reflects the effect that the Liberals tend to win in larger ridings. For example, looking at the individual weights, the Liberal win in riding 78 (Mille-Îles) has an associated weighted value of 1.2047, which reflects the above average population of Mille-Îles (52919). In comparison, the Liberal win in riding 74 (Matane) has an associated weighted value of .6325, reflecting the below average population of that riding (27781).

Combining these two ideas ensures both proportional representation and allows for the disparity in riding size (fair representation). These results are evaluated using $wt3$. This combined concept also ensures exact proportional representation - the total fractional weight for each party sums to the same value as $wt1$, and the sum of the fractional votes for all MNAs is 125.

10

Appendix 3 – Detailed Results by Riding

The Excel spreadsheet which generated this data using the 2003 Provincial election results is available at www.econotron.com/pub/electoral.xls

	RIDING	Liberal			PQ			ADQ			MNA
		WT_1	WT_2	WT_3	WT_1	WT_2	WT_3	WT_1	WT_2	WT_3	WT_3
1	Abitib_e	0.776	0.734	0.551	0.000	0.000	0.000	0.000	0.000	0.000	0.551
2	Abitib_w	0.000	0.000	0.000	0.947	0.737	0.731	0.000	0.000	0.000	0.731
3	Acadie	0.776	1.154	0.866	0.000	0.000	0.000	0.000	0.000	0.000	0.866
4	Anjou	0.776	1.032	0.775	0.000	0.000	0.000	0.000	0.000	0.000	0.775
5	Argenteu	0.776	0.822	0.617	0.000	0.000	0.000	0.000	0.000	0.000	0.617
6	Arthabas	0.776	1.074	0.806	0.000	0.000	0.000	0.000	0.000	0.000	0.806
7	Beauce_N	0.000	0.000	0.000	0.000	0.000	0.000	5.855	0.874	5.918	5.918
8	Beauce_S	0.776	1.027	0.771	0.000	0.000	0.000	0.000	0.000	0.000	0.771
9	Beauharn	0.000	0.000	0.000	0.947	0.968	0.960	0.000	0.000	0.000	0.960
10	Bellecha	0.776	0.776	0.582	0.000	0.000	0.000	0.000	0.000	0.000	0.582
11	Berthier	0.000	0.000	0.000	0.947	1.153	1.144	0.000	0.000	0.000	1.144
12	Bertrand	0.000	0.000	0.000	0.947	1.109	1.101	0.000	0.000	0.000	1.101
13	Blainvil	0.000	0.000	0.000	0.947	1.108	1.100	0.000	0.000	0.000	1.100
14	Bonavent	0.776	0.651	0.489	0.000	0.000	0.000	0.000	0.000	0.000	0.489
15	Borduas	0.000	0.000	0.000	0.947	0.878	0.871	0.000	0.000	0.000	0.871
16	Bourassa	0.776	1.191	0.894	0.000	0.000	0.000	0.000	0.000	0.000	0.894
17	Bourget	0.000	0.000	0.000	0.947	1.077	1.069	0.000	0.000	0.000	1.069
18	Brome_Mi	0.776	1.092	0.819	0.000	0.000	0.000	0.000	0.000	0.000	0.819
19	Chambly	0.776	1.241	0.931	0.000	0.000	0.000	0.000	0.000	0.000	0.931
20	Champlai	0.000	0.000	0.000	0.947	1.040	1.032	0.000	0.000	0.000	1.032
21	Chapleau	0.776	1.178	0.884	0.000	0.000	0.000	0.000	0.000	0.000	0.884
22	Charlesb	0.776	1.121	0.841	0.000	0.000	0.000	0.000	0.000	0.000	0.841
23	Charlevo	0.000	0.000	0.000	0.947	0.746	0.740	0.000	0.000	0.000	0.740
24	Châteaug	0.776	1.225	0.919	0.000	0.000	0.000	0.000	0.000	0.000	0.919
25	Chauveau	0.776	1.104	0.828	0.000	0.000	0.000	0.000	0.000	0.000	0.828
26	Chicouti	0.000	0.000	0.000	0.947	1.058	1.050	0.000	0.000	0.000	1.050
27	Chomedey	0.776	1.228	0.921	0.000	0.000	0.000	0.000	0.000	0.000	0.921
28	Chutes_d	0.000	0.000	0.000	0.000	0.000	0.000	5.855	1.087	7.360	7.360
29	Crémazie	0.776	1.101	0.826	0.000	0.000	0.000	0.000	0.000	0.000	0.826
30	D'Arcy_M	0.776	0.976	0.732	0.000	0.000	0.000	0.000	0.000	0.000	0.732
31	Deux_Mon	0.000	0.000	0.000	0.947	0.992	0.984	0.000	0.000	0.000	0.984
32	Drummond	0.000	0.000	0.000	0.947	1.218	1.209	0.000	0.000	0.000	1.209
33	Dubuc	0.000	0.000	0.000	0.947	0.849	0.843	0.000	0.000	0.000	0.843
34	Duplessi	0.000	0.000	0.000	0.947	0.829	0.822	0.000	0.000	0.000	0.822
35	Fabre	0.776	1.220	0.915	0.000	0.000	0.000	0.000	0.000	0.000	0.915
36	Frontena	0.776	0.763	0.572	0.000	0.000	0.000	0.000	0.000	0.000	0.572
37	Gaspé	0.000	0.000	0.000	0.947	0.637	0.632	0.000	0.000	0.000	0.632
38	Gatineau	0.776	1.031	0.774	0.000	0.000	0.000	0.000	0.000	0.000	0.774
39	Gouin	0.000	0.000	0.000	0.947	1.013	1.005	0.000	0.000	0.000	1.005
40	Groulx	0.776	1.092	0.819	0.000	0.000	0.000	0.000	0.000	0.000	0.819
41	Hochelag	0.000	0.000	0.000	0.947	0.907	0.900	0.000	0.000	0.000	0.900

11

42	Hull	0.776	1.115	0.837	0.000	0.000	0.000	0.000	0.000	0.000	0.837
43	Huntingd	0.776	0.942	0.707	0.000	0.000	0.000	0.000	0.000	0.000	0.707·
44	Ibervill	0.776	0.969	0.727	0.000	0.000	0.000	0.000	0.000	0.000	0.727
45	Îles_de	0.000	0.000	0.000	0.947	0.233	0.231	0.000	0.000	0.000	0.231
46	JacquesC	0.776	1.127	0.845	0.000	0.000	0.000	0.000	0.000	0.000	0.845
47	Jean_Les	0.776	1.120	0.840	0.000	0.000	0.000	0.000	0.000	0.000	0.840
48	Jeanne_M	0.776	1.140	0.855	0.000	0.000	0.000	0.000	0.000	0.000	0.855
49	Jean_Tal	0.776	0.967	0.725	0.000	0.000	0.000	0.000	0.000	0.000	0.725
50	Johnson	0.000	0.000	0.000	0.947	0.956	0.948	0.000	0.000	0.000	0.948
51	Joliette	0.000	0.000	0.000	0.947	1.078	1.070	0.000	0.000	0.000	1.070
52	Jonquièr	0.776	1.013	0.760	0.000	0.000	0.000	0.000	0.000	0.000	0.760
53	Kamouras	0.776	0.798	0.599	0.000	0.000	0.000	0.000	0.000	0.000	0.599
54	Labelle	0.000	0.000	0.000	0.947	0.973	0.966	0.000	0.000	0.000	0.966
55	Lac_St_J	0.000	0.000	0.000	0.947	0.938	0.931	0.000	0.000	0.000	0.931
56	LaFontai	0.776	0.851	0.638	0.000	0.000	0.000	0.000	0.000	0.000	0.638
57	La_Peltr	0.776	1.154	0.866	0.000	0.000	0.000	0.000	0.000	0.000	0.866
58	La_Piniè	0.776	1.148	0.861	0.000	0.000	0.000	0.000	0.000	0.000	0.861
59	Laporte	0.776	1.087	0.815	0.000	0.000	0.000	0.000	0.000	0.000	0.815
60	La_Prair	0.776	1.154	0.866	0.000	0.000	0.000	0.000	0.000	0.000	0.866
61	L'Assomp	0.000	0.000	0.000	0.947	1.201	1.191	0.000	0.000	0.000	1.191
62	Laurier	0.776	1.086	0.815	0.000	0.000	0.000	0.000	0.000	0.000	0.815
63	Laval_de	0.776	1.121	0.841	0.000	0.000	0.000	0.000	0.000	0.000	0.841
64	Laviolet	0.776	0.777	0.583	0.000	0.000	0.000	0.000	0.000	0.000	0.583
65	Lévis	0.776	1.088	0.816	0.000	0.000	0.000	0.000	0.000	0.000	0.816
66	Lotbinie	0.000	0.000	0.000	0.000	0.000	0.000	5.855	0.755	5.112	5.112
67	Louis_Hé	0.776	1.139	0.854	0.000	0.000	0.000	0.000	0.000	0.000	0.854
68	Margue_B	0.776	1.094	0.821	0.000	0.000	0.000	0.000	0.000	0.000	0.821
69	Margue_Y	0.776	1.113	0.835	0.000	0.000	0.000	0.000	0.000	0.000	0.835
70	Marie_Vi	0.000	0.000	0.000	0.947	0.969	0.962	0.000	0.000	0.000	0.962
71	Marquett	0.776	1.139	0.855	0.000	0.000	0.000	0.000	0.000	0.000	0.855
72	Maskinon	0.776	1.076	0.807	0.000	0.000	0.000	0.000	0.000	0.000	0.807
73	Masson	0.000	0.000	0.000	0.947	1.133	1.124	0.000	0.000	0.000	1.124
74	Matane	0.776	0.632	0.474	0.000	0.000	0.000	0.000	0.000	0.000	0.474
75	Matapédi	0.000	0.000	0.000	0.947	0.676	0.671	0.000	0.000	0.000	0.671
76	Mégantic	0.776	0.752	0.564	0.000	0.000	0.000	0.000	0.000	0.000	0.564
77	Mercier	0.000	0.000	0.000	0.947	0.974	0.967	0.000	0.000	0.000	0.967
78	Mille_Îl	0.776	1.205	0.904	0.000	0.000	0.000	0.000	0.000	0.000	0.904
79	Mirabel	0.000	0.000	0.000	0.947	0.889	0.883	0.000	0.000	0.000	0.883
80	Montmagn	0.776	0.736	0.552	0.000	0.000	0.000	0.000	0.000	0.000	0.552
81	Montmore	0.776	1.112	0.834	0.000	0.000	0.000	0.000	0.000	0.000	0.834
82	Mont_Roy	0.776	1.007	0.755	0.000	0.000	0.000	0.000	0.000	0.000	0.755
83	Nelligan	0.776	1.185	0.889	0.000	0.000	0.000	0.000	0.000	0.000	0.889
84	Nicolet	0.000	0.000	0.000	0.947	0.777	0.771	0.000	0.000	0.000	0.771
85	Notre_Da	0.776	0.939	0.705	0.000	0.000	0.000	0.000	0.000	0.000	0.705
86	Orford	0.776	1.128	0.846	0.000	0.000	0.000	0.000	0.000	0.000	0.846
87	Outremon	0.776	0.971	0.728	0.000	0.000	0.000	0.000	0.000	0.000	0.728
88	Papineau	0.776	1.166	0.874	0.000	0.000	0.000	0.000	0.000	0.000	0.874
89	Pointe_a	0.000	0.000	0.000	0.947	0.910	0.903	0.000	0.000	0.000	0.903
90	Pontiac	0.776	0.969	0.727	0.000	0.000	0.000	0.000	0.000	0.000	0.727

91	Portneuf	0.776	0.965	0.724	0.000	0.000	0.000	0.000	0.000	0.000	0.724
92	Prévost	0.000	0.000	0.000	0.947	1.195	1.186	0.000	0.000	0.000	1.186
93	René_Lév	0.000	0.000	0.000	0.947	0.802	0.795	0.000	0.000	0.000	0.795
94	Richelie	0.000	0.000	0.000	0.947	0.910	0.903	0.000	0.000	0.000	0.903
95	Richmond	0.776	0.810	0.607	0.000	0.000	0.000	0.000	0.000	0.000	0.607
96	Rimouski	0.000	0.000	0.000	0.947	0.963	0.956	0.000	0.000	0.000	0.956
97	Rivière	0.000	0.000	0.000	0.000	0.000	0.000	5.855	0.743	5.030	5.030
98	Robert_B	0.776	1.182	0.887	0.000	0.000	0.000	0.000	0.000	0.000	0.887
99	Roberval	0.776	1.023	0.768	0.000	0.000	0.000	0.000	0.000	0.000	0.768
100	Rosemont	0.000	0.000	0.000	0.947	1.194	1.185	0.000	0.000	0.000	1.185
101	Rousseau	0.000	0.000	0.000	0.947	1.050	1.042	0.000	0.000	0.000	1.042
102	Rouyn_No	0.776	0.971	0.728	0.000	0.000	0.000	0.000	0.000	0.000	0.728
103	St_Franc	0.776	1.016	0.762	0.000	0.000	0.000	0.000	0.000	0.000	0.762
104	St_Henri	0.776	1.145	0.859	0.000	0.000	0.000	0.000	0.000	0.000	0.859
105	St_Hyanc	0.000	0.000	0.000	0.947	1.096	1.087	0.000	0.000	0.000	1.087
106	St-Jean	0.776	1.157	0.868	0.000	0.000	0.000	0.000	0.000	0.000	0.868
107	St-Laure	0.776	1.153	0.865	0.000	0.000	0.000	0.000	0.000	0.000	0.865
108	St_Marie	0.000	0.000	0.000	0.947	0.984	0.976	0.000	0.000	0.000	0.976
109	St_Mauri	0.000	0.000	0.000	0.947	0.815	0.809	0.000	0.000	0.000	0.809
110	Shefford	0.776	1.170	0.877	0.000	0.000	0.000	0.000	0.000	0.000	0.877
111	Sherbroo	0.776	1.094	0.821	0.000	0.000	0.000	0.000	0.000	0.000	0.821
112	Soulange	0.776	0.822	0.616	0.000	0.000	0.000	0.000	0.000	0.000	0.616
113	Taillon	0.000	0.000	0.000	0.947	1.249	1.240	0.000	0.000	0.000	1.240
114	Taschere	0.000	0.000	0.000	0.947	1.105	1.096	0.000	0.000	0.000	1.096
115	Terrebon	0.000	0.000	0.000	0.947	1.125	1.116	0.000	0.000	0.000	1.116
116	Trois_Ri	0.776	0.860	0.645	0.000	0.000	0.000	0.000	0.000	0.000	0.645
117	Ungava	0.000	0.000	0.000	0.947	0.525	0.521	0.000	0.000	0.000	0.521
118	Vachon	0.000	0.000	0.000	0.947	1.002	0.994	0.000	0.000	0.000	0.994
119	Vanier	0.776	1.133	0.850	0.000	0.000	0.000	0.000	0.000	0.000	0.850
120	Vaudreui	0.776	0.998	0.749	0.000	0.000	0.000	0.000	0.000	0.000	0.749
121	Verchère	0.000	0.000	0.000	0.947	0.920	0.913	0.000	0.000	0.000	0.913
122	Verdun	0.776	1.059	0.794	0.000	0.000	0.000	0.000	0.000	0.000	0.794
123	Viau	0.776	1.004	0.753	0.000	0.000	0.000	0.000	0.000	0.000	0.753
124	Vimont	0.776	1.171	0.878	0.000	0.000	0.000	0.000	0.000	0.000	0.878
125	Westmount	0.776	0.990	0.743	0.000	0.000	0.000	0.000	0.000	0.000	0.743
	Totals	**58.95**	**78.58**	**58.95**	**42.63**	**42.96**	**42.63**	**23.42**	**3.46**	**23.42**	**125.00**

13

Fractional Representation

Brief submitted to the Select Committee on the Election Act.
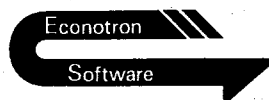
Jon Breslaw

February 27, 2006

Definition of an MNA

One member is elected to the National Assembly of Québec in each provincial electoral division in Québec. MNAs represent the views of their constituents in the National Assembly of Québec, and take part in committees and debates on provincial legislation.

Proposal: Fractional Representation

Under a fractional voting system, the 125 ridings would continue to operate as at present, with the same geographic boundaries. Each riding would send to the National Assembly the member who received the largest number of votes in that riding.

The only change is that each elected member is assigned a fractional weight, which reflects the percentage share of the vote received by the member's party.

Econotron
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Example

Simple example: 2 parties

The Liberal party receives 50% of the vote and wins 50 ridings, which corresponds to 40% (50/125) of the seats in the National Assembly. The PQ receives 50% of the vote and wins 75 ridings, which corresponds to 60% (75/125) to the seats in the National Assembly.

Assign a fractional voting weight
= Proportion of vote / Proportion of seats

Liberal Weight = 50 ÷ 40 = 1.25
Liberal Power = 50 x 1.25 = 62.5

PQ Weight = 50 ÷ 60 = 0.833
PQ Power = 75 x 0.833 = 62.5

Precedent

Québec Agglomeration Councils:

"...an urban agglomeration council made up of representatives of all the related municipalities, each of which shall have a say in the council's decision-making process proportional to the relative size of its population".

Preamble, Bill 9

- Agglomeration Council of Longueuil

	Weight
Each Longueuil councilor:	10.1%
St. Lambert councilor:	5.6%
Brossard councilor:	17.6%

- World Bank and IMF – weight proportional to each member's financial contribution.
- Public companies – each shareholder has a weight proportional to the number of shares owned.

Advantages

- Is well understood, since no change is required from the existing system.
- Is familiar, since proxy voting occurs for every public company.
- Provides one-to-one relationship between a riding and its elected representative.
- Provides exact proportional representation at the party level.
- Does not require any new administrative structures.
- Does not constitute a precedent, since the method is already legislated for use in the Québec agglomeration councils.
- Can be extended to allow for fair representation at the riding level.
- Does not require constant redefinition of riding boundaries as population changes.
- Is by far the most cost-effective method of implementing proportional representation.

Massicotte Model

- 50 MNA's will no longer effectively function, since they no longer represent anyone.
- The remaining MNA's now have a larger region to serve, and so are less effective.
- Destroys an existing framework which, with the exception of proportional representation, works well.
- Can often not work - if you have 4 parties, with 40%, 20% 20 % 20 % of the vote, and the first party gains most of the seats, you will need 60% of 125 seats = 75 compensatory seats - with only 50 available.
- The system does not take into account different size ridings.
- It is far more expensive to implement, and has **no** advantage over the fractional representation method.

Bottom Line

- We have had one major reorganization - the municipal merger fiasco, and now the Government is suggesting another.
- We have a voting process that works, and that can easily be fixed without spending a whole lot of money.
- Taxpayers in Québec are sick and tired of belonging to the most highly taxed region in North America.
- This government was elected on the promise to reduce the cost of governmental services.

Thus, spending millions of dollars on redefining electoral boundaries and creating MNA's with no representation to provide for proportional representation, when a cheaper and far more efficient process is available, is in direct contradiction to the mandate of this government.

Recommendation

The Massicotte model can not be implemented in time for the next election, while the fractional representation model can easily be implemented, and at negligible cost.

Thus, a fiscally prudent approach would be to implement the fractional representation method at the next election. If it proves itself to be effective, then we have proportional representation without all the expense. If not, then an alternative model can be implemented for the subsequent election in 2013.

Fractional Representation

The white paper:

Fractional Representation: An equitable, fair and cost effective voting methodology for Québec

is available in the file:
Fractional_Representation.doc
on the web at:
http://ww.econotron.com/pub

The paper includes executive summaries in both official languages