REGIONALISM, MAJORITY GOVERNMENT AND THE ELECTORAL
SYSTEM IN CANADA: THE CASE FOR TWO-SEAT CONSTITUENCIES

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ABSTRACT

A continual problem in Canadian politics is regional conflict. There are several reasons why the major issues in Canadian politics are regionally-defined. Some of the socio-economic variables include ethnicity and economic bases, which are reinforced by geography. Some of the political variables include the division of powers between the central and provincial governments, and the regional concentration of party representation in the central government legislature.

At the level of the electorate, Canada's national political parties actually receive multi-regional support. Thus, introducing an electoral system that translates votes into seats more proportionately than the present system should increase the multiregional representation of Canada's political parties at the level of seats in the legislature.

However, introducing a more proportional electoral system would probably decrease the likelihood of a party forming a majority government. Consequently, if Canada's legislators felt that executive stability through majority government was a more important normative criterion (along with whatever vested interests they might have) than a government with multiregional representation, then proposals for a more proportional electoral system will remain an academic exercise.

The objective of this study was to find an alternative electoral system which satisfies both the criteria of majority government and multiregional representation.

Based on the premise that the most significant independent variables affecting majority government and multiregional representation are district magnitude and geographical distribution of partisan support, it was hypothesized that increasing the district magnitude from one to two, or from one to three, would maintain the bias in favour of and increase the multiregional representation of a large, diffuse party.

The results of the study show that a district magnitude of two would provide a large diffuse party with a majority of seats for the same voter support as the present system does. In addition, DM2 rewards this large diffuse party with the seats necessary to form a minority government at a much lower voter support level than does the existing system. Thus, DM2 solves the problem of underrepresentation of regions in the government party, and is at the same time even more advantageous to a large diffuse party than is the present electoral system.

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CHAPTER 1

INTRODUCTION

The Problem

What structural changes can be made to the Canadian political
system, so that regional concerns can be more effectively articulated, and
regional conflicts more easily resolved by accommodation? Various
conflict-resolution mechanisms are possible. However, only those that do
not threaten the self-interest of the beneficiaries of the existing system
have a realistic chance of being implemented. The lower chamber would
have nothing to gain, and probably much to lose, if there were an elected
second chamber. And replacing the existing electoral system with a more
proportional electoral system may do more than just increase
multi-regional representation within the national political party
caucuses; it may also decrease the likelihood that any one of them can
form a one-party government.

Is it possible, then, to alter the Canadian electoral system in
such a way as to increase the multi-regional representation of the largest
party without substantially decreasing its total number of seats in the
legislature? This hypothetical and practical question provides the focus
of the thesis. It will be argued that regional alienation in Canada is at
least partially the result of underrepresentation of different regions in
the central government; so that increased representation of a region in

the party forming the national government would decrease that region's sense of alienation. It will also be argued that the existing First-Past-the-Post (FPP) electoral system distorts the translation of votes into seats, especially at the regional level. Consequently, if an electoral system that is more proportional than FPP causes less distortion of votes into seats at the regional level, it should decrease regional alienation.

The first question, whether a more proportional electoral system would decrease the degree of underrepresentation of various parties in various regions, is therefore more or less taken for granted to be in the affirmative. The more interesting question, and the question whose answer is more difficult to predict, is whether the largest party - and thus the government party - will have its loss of seats in regions where it is overrepresented more than compensated for or less than compensated for by its gain of seats in regions where it is underrepresented, under a more proportional electoral system. If the largest party's loss of seats in one region is in fact at least compensated for by its gain of seats in another region, under a more proportional electoral system, then we will have found an electoral system that may increase the multi-regional representation of the largest party's caucus, without decreasing its chances of forming a one-party government.

A major problem in Canadian politics, then, is regional conflict. This problem is further intensified by a division of powers between levels of government, by the absence of a division of powers within the central government - in particular, the absence of an elected second chamber based

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on representation by region - and by the FPP electoral system that distorts the regional support of national political parties when translated from the level of the electorate to the level of legislative seats. Hence, our focus is on a real-life problematic situation, and the questions that focus our investigation are whether a more proportional electoral system would increase the multiregional representation of the national political parties, and whether such an electoral system would be in the best interests of the major beneficiaries of the existing system.

Methodology

We want to collect data of a quantifiable variable that appears to significantly affect the relationship between representation, regionalism, and federalism. We must also take into consideration the availability of data. The FPP electoral system provides a link between representation and regionalism; and the translation of votes into seats is strictly quantitative. Also, the number of votes cast for each candidate in each constituency is published by the government. The election results of 1953 to 1965 national elections have been chosen because the constituency boundaries remained unchanged during this six-election period, thereby providing us with a relatively large sample size, and because the smaller parties did not undergo any historical decline in total vote support during most of this period.

The proposed methodology is as follows. After collecting election results from the 1953 to the 1965 national elections, hypothetical

constituencies of two, three, and six seats, as well as "regional" constituencies based on various definitions of "region" will be created. This approach permits an examination of regionalism in Canada from the perspective of regional representation in the executive (in the government party, and therefore in the cabinet) and regional representation in the legislature. In order to create these hypothetical constituencies, the number of valid votes cast in one constituency will be added to those of contiguous constituencies, which are originally ordered alphabetically. However, because constituencies are not the same size or shape, they cannot be added contiguously ad infinitum. Some attention must also be paid to regional urban centers, and differentiation made between urban and rural areas.

With each increase in district magnitude (the size of the constituencies, in terms of seats), two trends will be noted: first, the increase or decrease in regional representation of each national political party will be recorded; second, the increase or decrease in the number of seats held by each party in the legislature will be recorded. Because of the small sample size - number of elections, n, = 5, - it will be difficult to formulate a linear relationship between the number of seats per constituency (district magnitude) and the proportionality of votes translated into seats. However, these results can be transposed on to a graph showing the relationship between votes and seats for elections between 1937 and 1984. Such a transposition will allow us to observe whether increased district magnitudes will increase or decrease the bias (the amount by which a large party's seat share exceeds its vote share) in favour of either or both large parties.

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Besides variation in size and shape of contiguous constituencies, there are other methodological difficulties. First, the 1958 election, when the Conservative party won a majority of the seats in the province of Quebec, represents an anomaly in our data set, and will therefore be omitted. Second, not every political party contested every seat in every election. This problem will be dealt with by treating all instances where a party ran a candidate in one constituency, but not in the constituency contiguous to it, as single-seat constituencies.

Also, time and strategic voting must be treated as ceteris paribus. There is much evidence to support the argument that the spectre of the 'wasted vote' in an FPP electoral system decreases the electoral support of smaller parties, and that this effect is self-reinforcing over time; consequently, the introduction of a more proportional electoral system could in theory increase the electoral support for smaller parties. For our study to attempt to take into account such factors as alternative forms of strategic voting would be pure speculation - even with hindsight - and so we must assume that the wasted vote factor had a minimal impact during the 1953-1965 period. Finally, if we are to assume that this study has present-day relevance, then we must also assume that the national political parties still have the same regional strongholds of partisan support, and that Canada still has the same sources of regional conflict. Both of these assumptions are admittedly in doubt at the moment. It will, however, be argued that we are presently in a period of political uncertainty; so that similar patterns of regional support and sources of conflict may re-emerge in the future.

CHAPTER 2

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THE VARIABLES

The Electoral System, Federalism, and Regionalism

The First-Past-the-Post (FPP) electoral system used in Canada to
elect members of the lower chamber is a significant determinant of several
aspects of the Canadian political system. For example, it has a greater
tendency to produce one-party majority governments than do more
proportional electoral systems. Also, FPP has a greater tendency than
Proportional Representation (PR) electoral systems to produce two dominant
parties at the constituency level. However, between constituencies it is
not always the same two parties that dominate; consequently, at the
national level there may be more than two large parties.

Having more than two large parties decreases the likelihood of
one-party majority government; and in a political system with a tradition
of one-party government, a one-party minority government is more probable
than a coalition government. Having more than two large parties competing
in an FPP system also increases the likelihood that each party will have
their strongest bases of support amongst geographically-concentrated
sectional interests. Thus, there is a high probability that an FPP
electoral system will produce a one-party majority or minority government
with little or no representation of one or more regions in its caucus.

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The preceding hypothesis assumes that there is a fusion of the executive and legislative branches, and that the legislature is in effect unicameral. If the legislature was bicameral, with members of the second chamber elected on some basis other than population, that is, representation by region, then at least one source of regional conflict - highly-populated regions out-voting lesser populated regions - would be alleviated. A second elected legislative chamber based on representation by region would also mean a formal forum for expressing regional interests at the central government level. However, where no second elected legislative chamber exists, some alternative means of articulating regional concerns must be found.

In a unitary, effectively unicameral, FPP system, such as Britain, regional aspirations and frustrations may be expressed through 'nationalist' movements running and electing candidates in central government elections. However, the influence of these nationalist parties is a function of their parliamentary strength, which is inconsistent over time. In contrast, where a federal system dividing powers between a central government and local governments has been transplanted on to a system where the executive and legislature are fused, and the legislature is effectively unicameral and elected using the FPP system, the local governments can be expected to take on the role of constant defenders of regional interests. However, the experiences of the Canadian political system have shown that provincial government articulation of regional concerns is just as likely to exacerbate as to resolve regional conflicts.

The Electoral System, Majority Government, and Stability

The seminal article relating regional conflict in Canada to the party system, and the party system to the FPP electoral system, was written by Alan Cairns in 1968[1]. In this and later papers[2], Cairns begins by comparing the normative values of FPP and more proportional electoral systems.

Cairns lists the distortion of votes when translated into seats as the principal fault of the FPP system, from the point of view of democratic theory[3]. However, it is unlikely that the advocates of FPP would deny that as a mechanical device for translating votes into seats FPP is inaccurate and inefficient. Rather, FPP advocates argue that stability is a more important normative criterion than the procedural niceties of fairness and consistency. They then go on to link stability with single-party majority government, and note that single-party majority government occurs more frequently where FPP is used.

Edmond Morgan argues that all governments rest on opinion, and the opinions they rest on are generally "fictions"; that is, propositions widely accepted even though known to be contrary to fact[4]. Cairns bypasses the argument between advocates of FPP and advocates of more proportional electoral systems over the primacy of different normative criteria. Instead, he accepts, for the sake of argument, the FPP advocates' criterion of stability. As we shall see, he then proceeds to argue that the occurrence of majority government where FPP is used is less frequent than it is often generalized to be, and that the link between

executive stability and the overall stability of a political system is generally a fiction.

First, regarding the tendency of FPP to manufacture an artificial majority of seats for the party with the most, but less than half, of the votes. Cairns points out that in Canadian national elections from 1921 to 1965, FPP helped to transform a minority of votes into a majority of seats only six out of twelve times - a 50 percent success rate[5]. In his 1979 paper, Cairns also notes the "perverse capacity" of FPP to sometimes award the party with the most votes with the second largest amount of seats; thus denying the largest party, in terms of votes, of having the opportunity to even form a single-party minority government[6]. Hence, in our quest to find a more appealing electoral system than FPP, we do not need to find one with a 100% success rate at awarding the party with the most votes with a majority of the seats. In fact, for the five elections we will be looking at, only the 1953 election produced a majority government; while two others, the 1957 and 1962 elections, awarded the Conservative party more seats than the Liberals even though they received a lower percent of the popular vote[7].

Regarding the link between single-party majority government and overall stability, there are two factors that have to be taken into account. One is whether or not empirical evidence substantiates the link. The other is the assumption that majority government is the most or only significant variable affecting stability. As Cairns argues, the link is empirically invalid, and the assumption is false[8].

Until the 1960's, the most common generalization when comparing FPP to systems of proportional representation was that political systems that used FPP were stable, while systems that used PR were politically unstable. The most commonly cited examples of political instability associated with PR electoral systems were the German Weimar Republic and the French Fourth Republic. This generalization ignored the historical, cultural, economic and other factors that affected politics in Germany and France during these periods. It also ignored counter-examples of relative stability in Scandinavian countries, the Benelux countries, and the Alpine countries of Europe, all of which use PR electoral systems. It further ignored several examples of political instability occurring in countries which use the FPP electoral system.

The Electoral System, Regionalism, and Instability

The point is that there are other factors that are much more important to maintaining the stability of a political system than whether a single-party majority government is formed, or a minority or coalition government must be sustained. In Canada, the most important factor affecting the stability of the political system is regional conflict. Deductive reasoning therefore leads us to argue that it is essential to have a structural mechanism within the central government apparatus for resolving regional conflict. And observation leads us to conclude that the existing Canadian national government lacks such a mechanism.

It was argued in the introduction that a second chamber elected on the basis of representation by region was politically inexpedient from the point of view of the largest party, which governs by means of its control of the lower chamber. Yet if the lower chamber is to fulfill a regional conflict resolution function, it will have to be elected using an electoral system other than FPP; which manufactures a government party artificially underrepresented in one or more regions just as frequently as it manufactures a government party with an artificial majority.

In order for the central government to be viewed as a neutral arbiter of regional conflict, it must be able to present itself to the citizens of every province as a spokesman for regional interests equal in legitimacy to that of the provincial governments. It hardly seems likely that the citizens of a province would perceive a central government with few or no representatives from that province in its party caucus or in the cabinet, as a defender of the province's interests in situations where they run contrary to the interests of provinces in another region with substantial representation within the central government party's caucus. Of course the central government may well be acting in the underrepresented province or region's best interests; but their perception of biased decision-making may still persist. Furthermore, it is in the provincial politicians' self-interest to exploit any opportunity to appear as the legitimate defender of provincial interests. Consequently, it is to the provincial politician's maximum political advantage to make the central government appear to be a hostile foreign power; and nothing gives him more ammunition than to be seated across the negotiating table from a central government lacking in representation from that province.

If the above assumptions are correct, then increasing the power of provincial governments cannot be expected to alleviate regional conflict. Rather, the stability of the Canadian political system depends upon the central government being perceived as a neutral arbiter of conflicting regional interests. It can only do this if the government party has multi-regional representation.

The Two Criteria that an Alternative Electoral System Must Meet

In Canada, then, there is indeed a link between stability and the electoral system; but this link has less to do with stability associated with one-party majority government, than with stability associated with central government legitimacy as a resolver of regional conflict. Thus, to satisfy the normative criterion of stability in the Canadian political system, the electoral system must achieve two goals, single-party majority government and multi-regional representation within the government party. These two goals may or may not be realizable under a single electoral formula.

It has already been noted that the FPP system has had a 50 percent success rate at producing majority governments in Canada; and that all of Canada's national political parties, including the largest party, have had their strongest bases of support amongst geographically concentrated sectional interests. We must therefore inquire into the abilities of alternative electoral systems to produce a bias in favour of the largest

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party, comparable to that produced by FPP, and at the same time, to provide a greater incentive for large parties to broaden the geographical base of their support, than does FPP.

Proportional Representation Electoral Systems

There are literally dozens of different electoral systems presently in use in various countries around the world. However, with the exception of Britain, all the countries of Western Europe use what are commonly referred to as Proportional Representation (PR) electoral systems.

There are three properties that all PR systems share, which are all related to district magnitude. First, as the name suggests, the translation of votes into seats is likely to be more proportional under PR systems; and, more specifically, there should be a positive relationship between proportionality and district magnitude. According to Douglas Rae, this relationship is curvilinear and asymptotic: "as district magnitude increases, the proportionality of outcome increases at a decreasing rate....When district magnitudes are raised substantially beyond twenty, a "plateau" effect seems to take place."[9] Figure 2.1 illustrates this relationship. A logical extension of this is that since FPP is biased in favour of the largest party or two largest parties, as district magnitude increases, the bias in favour of the largest party decreases. Finally, as district magnitude increases, the parties' shares of all the votes are less affected by how geographically concentrated or diffuse their voter support is.

The Largest Remainder Formula

Amongst PR systems, some of the most commonly used are referred to as "largest remainder" systems. In its simplest form, the largest remainder formula works as follows: each voter uses one vote to elect more than one representative per constituency. Votes are then translated into seats using a "quota", which is calculated by dividing the number of valid votes in a constituency by the number of seats in the constituency; or, in terms of percentages, a quota is equivalent to (1/# of seats) * 100 percent.

To see how the largest remainder formula works in theory, consider an example where there is a ten-seat constituency (from now on the number of seats in a constituency will be referred to as the "district magnitude") and four parties are competing. The quota is therefore (1/10) * 100 = 10 percent. Each party is then awarded its share of the seats by dividing its share of the votes by the quota. So if party A received 40 percent of the votes, party B received 30 percent of the votes, party C received 20 percent, and party D 10 percent, then party A would be awarded 40 percent/10 percent = 4 seats, party B 30/10 = 3 seats, party C 20/10 = 2 seats, and party D 10/10 = 1 seat. Compare this to FPP, with the hypothetical ten-seat constituency broken up into ten one-seat constituencies, and with the distribution of party support amongst voters constant across the ten constituencies. In such a scenario, party A, with forty percent of the votes, would be awarded all ten seats.

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In the above example, all the seats in the constituency were conveniently allocated by use of the quota. But what if instead of whole integers, the four parties had a few less votes or more votes than necessary for a quota? What if party A received 42 percent of the votes, party B 28 percent, party C 24 percent, and party D 6 percent? Under this scenario, only eight of the ten seats could be allocated by use of the quota. The largest remainder formula solves this problem by awarding the parties with the "largest remainders" of votes with the remaining two seats. In our example, the remaining seats would be awarded to party B, with a remainder of 8 percent, and party D, with a remainder of 6 percent.

Because of its relative simplicity, the largest remainder formula will be used in the analysis of our data; except that instead of a quota base on # of votes/# of seats, the "Droop quota", # of votes/(# of seats + 1), will be used. For example, for a two-seat constituency, instead of the quota being (1/2) * 100 = 50 percent, the Droop quota would be (1/3 * 100 = 33.4 percent. Using the Droop quota allows us to allocate more seats on the basis of quotas than on the basis of largest remainders, for constituencies with district magnitudes of 2 or 3. It is presumed that this will make our calculations much simpler.

The Highest Average Formula

Along with largest remainder, the most commonly used PR formulas are referred to as "highest average". The simplest form of the highest

FIGURE 2.1   **PROPORTIONALITY OF VOTES TRANSLATED INTO SEATS AS A FUNCTION OF DISTRICT MAGNITUDE**

Proportionality is based on the average deviation between vote and seat shares.

Proportionality increases at a decreasing rate as district magnitude increases. Proportionality approaches, but never reaches, 100%
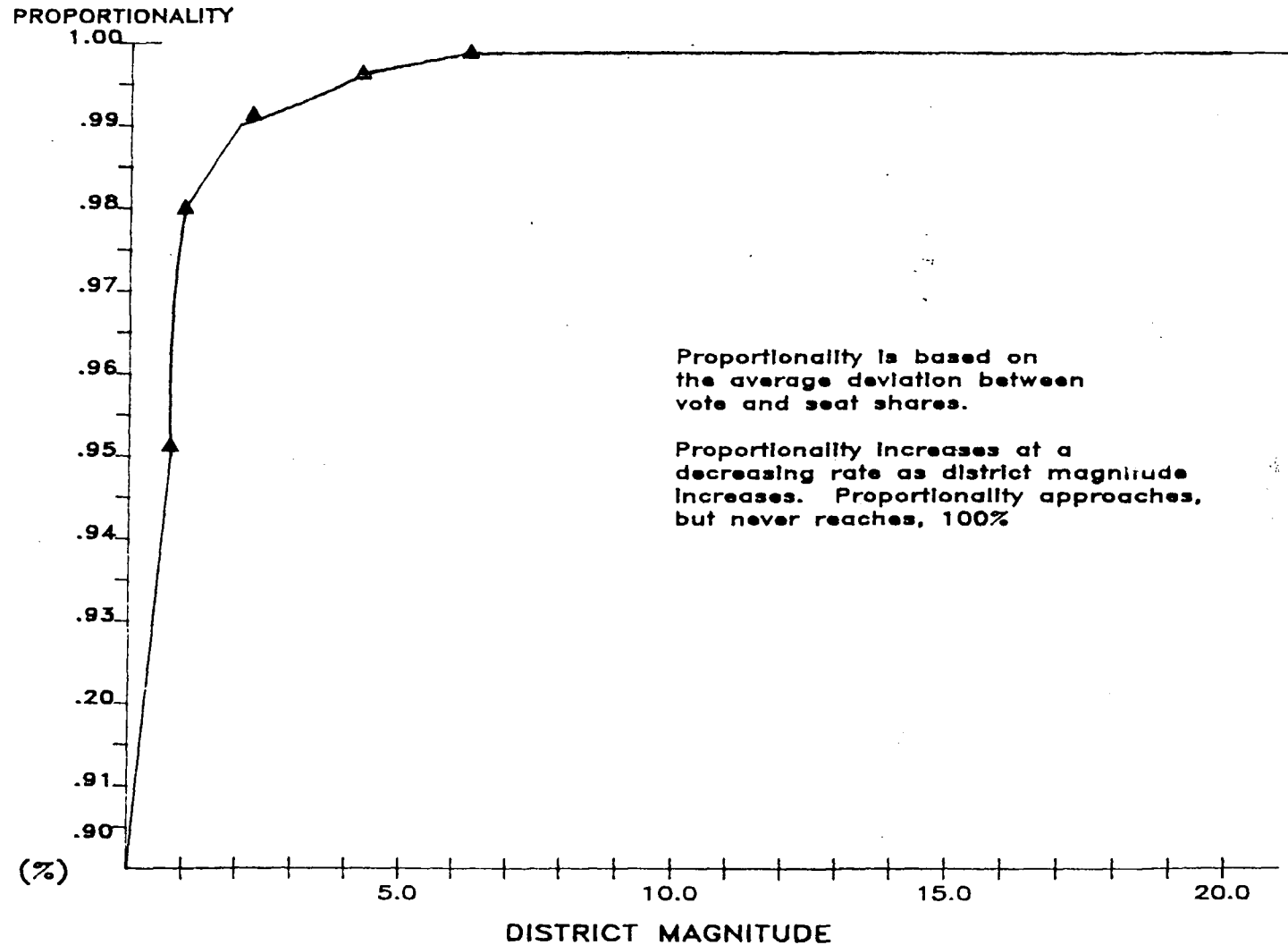
average formula is the d'Hondt. Under this procedure, ratios of votes to seats are calculated for each party, and the first seat is awarded to the party with the highest ratio. Beginning with number of seats held by each party, n, equal to zero, the ratios are calculated using the equation party's votes/n + 1 = party's votes/1. So after the largest party has been awarded the first seat, its new ratio will be party's votes/(n + 1) = party's votes/2.

Highest Average and Largest Remainder Formulae Compared

To see why larger parties would consider highest average to be a fairer system than largest remainder, recall the second half of our earlier example. Using largest remainder, party A was awarded 4 seats and party D 1 seat. Yet party A received 42% of the votes, compared to party D's 6%. Party A could therefore rightly claim that since it received seven times as many votes as party D, it is entitled to seven times as many seats. Using the d'Hondt highest average formula, the seats would be allocated as follows: party A would be awarded 5 seats, party B, 3 seats, party C, 2 seats, and party D would receive no seats. This example illustrates a general difference between highest average and largest remainder; highest average tends to be more biased in favour of larger parties and more biased against smaller parties than does largest remainder.

The equations used by largest remainder and highest average formulae can be and have been adjusted such that the above tendencies are

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reversed. However, as noted by Rae, the most powerful determinant of proportionality is district magnitude.[10] Thus, if a political system wished to increase the proportionality of its electoral outcome, it would be simpler and more efficient to increase the average district magnitude rather than switch to another PR formula. In the analysis of our data, then, we will assume that the impact on our results, had we used an alternative formula, would be minimal. We will assume that comparing the effect of different district magnitudes on the translation of votes into seats is much more revealing. Based on these assumptions, we will use the equation which makes our results simplest to calculate - the Droop quota.

Variables Affecting Proportionality

Based on the hypothesis that there is a positive curvilinear asymptotic relationship between proportionality and district magnitude, we would assume that by increasing the district magnitude from the single-member constituency used by FPP to a district magnitude of two, there would be a dramatic increase in proportionality; in other words, we would expect the largest party to suffer a dramatic decrease in seats. If this is the case, then our first objective, executive stability through majority government, will become virtually unobtainable. And if our first criterion fails, our second criterion, stability of the political system as-a-whole through multiregional representation in government, is not worth pursuing in practical terms. However, it is precisely because the two criteria are intricately related that the possibility exists for a large party with multiregional support at the level of the electorate to

gain just as many seats with a district magnitude of two as with a district magnitude of one.

The degree to which a party's loss of seats in one region is compensated for by a gain in seats in another region under a more proportional electoral system is a function of three factors: the party's total share of votes, the distribution of its vote share, and the number of parties competing in each region. These three variables interact differently depending on the district magnitude.

To illustrate how these variables would interact using an FPP system, let us use the example of a country with two "regions" of equal population and four political parties. Party A receives 40 percent of the total vote, Party B receives 30 percent, Party C 20 percent, and Party D 10 percent. If voter support for each party is constant throughout the country, then under FPP, Party A will be awarded all the seats in the legislature. However, if Party B receives 45 percent of voter support throughout one region, and only 15 percent in the other region, then Party B will receive half the seats. In other words, there is more political "pay-off", in terms of seats, for the second largest party in an FPP system to seek regionally concentrated voter support. At the same time, it is to neither the advantage nor the disadvantage of Party A to seek more regionally concentrated support, since doing so would neither increase nor decrease its total number of seats in the legislature. Meanwhile, Party A finds itself in a situation where it represents only one region in the legislature, even though it is supported by 40 percent of the voters in the other region.

The above example is imaginary, but not unrealistic of how the FPP system actually operates. Describing the tendencies of the FPP system within the Canadian political system, Cairns made the observation that FPP is biased against the N.D.P., a small party with relatively diffuse support, and biased in favour of the Social Credit party, a small party with quite concentrated regional support[11]. As a result, a party representing interests that cut across regional boundaries is continuously underrepresented in the central government legislature, while a party symbolic of regional protest is overrepresented in the Canadian legislature. In an article written in 1977, Richard Johnston and Janet Ballantyne made the additional observation that for large parties in the Canadian political system, the FPP electoral system is biased in favour of a large party with diffuse support more so than a large party with regionally concentrated support[12].

However, in the previous example we saw that while FPP was biased in favour of both large parties, it rewarded the large party with regionally concentrated support the most. The explanation is that voter support for the two large parties in the Canadian political system is neither as diffuse nor as concentrated as that for the two largest parties in the example.

To provide an even more extreme example of how powerful a determinant of electoral outcome geographical distribution of voter support can be, consider the following case. Party C, with 20 percent of voter support, receives all of its support in one region. Party A

receives 35 percent of voter support in one region, and 45 percent in the other, while Party B receives 25 percent in one region, and 35 percent in the other. If voter support for each party is constant within each region, then the FPP system will award Party C, with 20 percent of total votes, with half the total seats. Meanwhile, Party B receives no seats.

The example of the effect of geographical distribution of party support on the translation of votes into seats when the FPP system is used also provides an illustration of how the term "wasted vote" can be used. The most common usage of the term "wasted vote", to refer to a situation where voters feel that their votes are wasted when they vote for a party that finishes third and out of the race, will be dealt with at a later point. For now, we want to confine ourselves to situations where parties gain more or less votes than necessary to gain a constituency seat.[13] Referring to the previous example, in one region Party A received 35 percent of the votes and no seats. Since Party A has nothing to show for the 35 percent of voter support it received, in effect those 35 percent of votes were wasted. Meanwhile, in the other region, Party A received 45 percent of the votes, when all it needed to receive in order to win all the seats was 35.1 percent. In effect, the 10 percent of the votes Party A received above what it needed to win all the seats in the region (its "margin of victory") were wasted.

Understanding the distribution of voter support for political parties in terms of wasted votes and margin of victory gives us a better idea of how proportionality will be affected when district magnitude is increased. If a simple bivariate relationship existed between

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proportionality and district magnitude, then we would expect proportionality to increase when district magnitude was increased from one (FPP) to two. Similarly, increasing district magnitude to two would be expected to decrease the bias in favour of the largest party. However, as the next example illustrates, if the largest party has relatively diffuse support, and there are one or more parties with more regionally concentrated voter support, then when district magnitude is increased to two, the number of wasted votes of the largest party may decrease. Hence, the bias in favour of the largest party may actually increase. This of course is the first criterion that the alternative electoral system must meet.

In this next example, there are three regions of equal population, and voter support is constant within each region. Region One is inhabited by an ethnic minority. The largest party in Region One is the Nationalist Party, which receives 51 percent of the vote. Regions Two and Three are inhabited by the ethnic majority, and Region Two is the economic metropolis of the country, while Region Three is an economic hinterland. The largest party in Region Three is the Anti-Establishment Party, which receives 51 percent of the vote. The Accommodation Party receives the remaining 49 percent of the vote in Region One, 70 percent of the vote in Region Two, and 30 percent of the vote in Region Three. The Alternative Party receives the remainder of the votes. We thus have a situation where two parties are confined to single regions and a third party has voter support ranging from 30 percent to 70 percent across regions.

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Using the FPP system, there will be the following outcome. In Region One, the Nationalist Party's margin of victory is 2 percent. In Region Two, the Accommodation Party's margin of victory is 40 percent. In Region Three, the Anti-Establishment Party's margin of victory is 20 percent. Assuming that a political party has limited resources with which to compete in an election campaign, the Accommodation Party has a cushion of 40 percent in Region Two, which in terms of political pay-off in the way of votes, would be better spent in seeking more voter support in other regions. As it stands now, the Accommodation Party has wasted the excess 40 percent of the votes it received in Region Two, just as it has wasted the 49 percent in Region One and the 30 percent in Region Three which resulted in no seats. In fact, if we add the three margins of victory together with the percentage of votes of all the losing parties in each region, we find that on average 64 percent of the votes were wasted.

If proportionality is measured in terms of votes translated into seats, the outcome is equally distorted. The Anti-Establishment Party and the Nationalist Party, each with one-sixth of the total votes, receive one-third each of the total seats. Meanwhile, the Alternative Party, also with one-sixth of the total votes, but with less regionally concentrated support, receives no seats. The other party with diffuse support, the Accommodation Party, received one-half of the total votes, but only one-third of the total seats.

It was noted earlier that in Canada the FPP system has been biased in favour of a large party with diffuse support. However, this example is not meant to be a reflection of how the FPP system has actually operated within the context of the Canadian political system. Rather, it is intended to illustrate that geographical distribution of partisan support is an independent variable that can significantly affect the proportionality of electoral outcome.

We are therefore predicting that as district magnitude increases, two trends will occur. First, proportionality will increase, and with it a decrease in the bias in favour of large parties. Also, the bias in favour of parties with regionally concentrated support will decrease as district magnitude increases. With respect to individual parties, four trends are predicted. Small parties with diffuse support are expected to gain more seats as district magnitude is increased. Conversely, large parties with concentrated support are expected to lose seats. However, in the case of small parties with concentrated support, we have a two-predictor equation where the sign of one slope is positive and the sign of the other slope is negative; so that whether small regionally concentrated parties gain or lose seats when district magnitude is increased will vary depending on their individual size and concentration. The effect of district magnitude on large parties with diffuse support is also represented by a two-predictor equation with one positive slope and one negative slope, except that the signs are reversed.

Returning to our previous example, we have a case where there is an extremely large party, in terms of votes, which is also very diffuse, in the sense that it is a "large" party in every region. However, using the FPP system, it receives only one-third of the seats in the legislature. The next step is to increase the district magnitude to two, and observe whether the largest party and the other three parties gain or lose seats.

With a district magnitude of two, the Droop quota is 33.4 percent. In Region One, this results in the Nationalist Party winning half the seats and the Accommodation Party winning the other half. In Region Three, the Anti-Establishment Party wins half the seats, and the Accommodation Party the other half, since it has the largest remainder. In Region Two, the Accommodation Party's 70 percent of the votes exceeds the total for both quotas, and consequently it wins all the seats. Comparing this result to that using that FPP, we see that the two small regionally concentrated parties each have their seat share cut from one-third to one-sixth of the total. Conversely, the large diffuse party's seat share has increased from one-third to two-thirds.

From the results of this example, we can set forth as a working hypothesis that for small district magnitudes, the geographical distribution of partisan support can be a more significant determinant than party size of the bias in favour of or against a party. In addition, in the above example when the district magnitude was increased to two, the Accommodation Party increased its total number of seats while at the same time increasing its multi-regional representation. These criteria of

course are the criteria that the alternative electoral system must meet. So even though the parties in our example differ in size and geographical distribution from Canada's national political parties, and even though Canada has more than three regions, when we look at the 1953 to 1965 Canadian national election results, we will be looking for at least one party to display electoral tendencies similar to those of the hypothetical Accomodation Party.

The above examples are meant to illustrate the potential effect of partisan geographical distribution on the proportionality of electoral outcome; they are not meant to portray the actual effect of partisan geographical distribution on electoral outcome in Canada during the period in question. A more direct comparison between the effects of district magnitude and geographical distribution of partisan support on electoral outcomes in Canada is possible, by using the Rae-Taylor fractionalization index[14], the Herfindahl-Hirschman concentration index, Laakso and Taagepera's definition of the "effective" number of parties[15], and Rein Taagepera's mathematical formula for the relationship between district magnitude and number of effective parties[16]. Here we want to compare how much of the fractionalization of the Canadian party system can be accounted for by district magnitude, and how much must be attributed to other factors, including regional concentration of partisan support.

The reader will note that, up until this point, we have been interested in proportionality, and not fractionalization. However, the FPP electoral system is synonymous with the two-party system. Thus, because the FPP electoral system is biased in favour of the two largest

parties, the huge disproportionality of electoral outcome that would occur if FPP were used in a multiparty system is statistically absent in most actual outcomes. Hence, prior to measuring the proximal effects of district magnitude on the proportionality of electoral outcome in Canada at the national and regional levels between 1953 and 1965, we first want to measure the distal effects of district magnitude on the fractionalization of the Canadian party system. This should enable us to see the link, in mathematical terms, between district magnitude, geographical distribution of partisan support, and proportionality, while bypassing the reciprocal relationship between the electoral system and the party system.

First, we have to determine the Herfindahl-Hirschman concentration index (HH), which is calculated by adding the squares of the vote shares for each party; $HH = $ (Party 1's vote share)^2 + ... + (Party n's vote share)^2. For example, if there are four parties, with the vote shares in proportions of 40%, 30%, 20%, and 10%, then $HH = (.4)^2 + (.3)^2 + (.2)^2 + (.1)^2 = .3$. Next, we calculate the "effective" number of parties, N, using the formula $N = 1/HH$. In the above example, the effective number of parties would be $1/.3 = 3.33$. Taagepera has also devised a formula for calculating the relationship between the effective number of parties and district magnitude (M), where $N = 1.25 (2 + \log M)$. The Rae-Taylor fractionalization index, F, can then be calculated using the formula $1-1/N$.

According to calculations done by Rae for the period 1945-65, Canada's party system had a fractionalization of 0.66^{17}. By comparison, Taagepera's formula predicts that for a district magnitude of one, fractionalization would equal 1-1/2.5 = 0.60; and for a district magnitude of two, fractionalization would equal 1-1/2.9 = 0.655. From this we can infer that district magnitude alone does not explain Canada's party system.

Taagepera's formula for the relationship between district magnitude and number of effective parties predicted a two party system for Canada. Yet, according to Laakso and Taagepera's definition, Canada has 1/.33 = three effective parties. Taagepera and Bernard Grofman explain this difference by concluding that the number of parties is a function of district magnitude and of the number of politically salient issues[18].

It was argued earlier that Canadian political parties vary in the concentration or diffusion of their regional partisan support. It has also been argued that the FPP system (district magnitude of one) magnifies the regional differences in partisan support between parties, when translated from the level of the electorate to the level of the legislature; this is the "mechanical" effect of FPP. There is also a "psychological" effect of FPP. As noted by Johnston and Ballantyne, the denial of a party's proportionate share of seats in a region can lead to a "cumulative and self-reinforcing" cycle[19]. Maurice Duverger describes

this psychological effect of FPP as follows:

> In cases where there are three parties operating under
> the [FPP] system, the electors soon realize that their
> votes are wasted if they continue to give them to the
> third party: whence their natural tendency to transfer
> their vote to the less evil of its two adversaries in
> order to prevent the success of the greater evil.[20]

This factor is alternatively referred to as a wasted vote, a split vote,

or strategic voting. In any case, support for the third party continues

to decline with each subsequent election until eventually the "third"

party is relegated to the status of a "fringe" party.

In Canada the mechanical and psychological effects of FPP operate

on a regional basis. The two most important issue dimensions in Canada at

the national level, the economy and ethnicity, both have regional bases.

Thus, unless two national parties both have identical policy platforms,

they will have to build their planks in different regions. Consequently,

if a third party is established that appeals to the interests of a

particular region, then under an FPP system, one of the two original

parties, ie., the one whose platform represents the opposing interests of

another region, will eventually become a marginal party in that region.

In other words, district magnitude can have a long-term effect on the

regional distribution of partisan support, the number of effective

parties, and the number of salient issues..

We are now at the point where we can be confident in making an

inventory of relevant variables; however, we must still use caution

regarding the correlation and causation amongst these variables.

First, we are on solid ground when we deal with the translation of votes into seats: there is a strictly mechanical effect between the translation of votes into seats, with parties' seat shares being a function of their vote shares. However, this is not a simple bivariate relationship; the proportionality of votes to seats is a function of district magnitude, the geographical distribution of partisan support[21], and the number of parties. The aforementioned series of examples illustrates how district magnitude, party distribution of votes, and number of parties affect the proportionality of electoral outcomes. By increasing the number and broadening the range of empirical and hypothetical examples, we could express this multivariate relationship in the form of a three-predictor linear equation. At this point, then, we have a four-variable causal model; where the dependent variable, proportionality, changes according to changes in the values of the three independent variables.

We thus have a triple-cause causal model. But we also have a triple-effect causal model; in addition to proportionality, district magnitude also affects how many effective parties there will be, and how concentrated regional partisan support will be. The number of effective parties is a function of district magnitude and the number of issue dimensions. The geographical distribution of partisan support is a function of district magnitude and other political variables, such as federalism, and socio-economic variables, such as ethnicity and economic geography.

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However, the effects of district magnitude on the number of parties and on regional concentration of partisan support are more psychological than mechanical. Consequently, these effects of district magnitude would have to be measured using a time-series study, with different assumptions and interpretations from those used in this study. In other words, in the analysis of our data we will only be measuring the short-term and not the long-term effects of district magnitude on the Canadian political system. More specifically, we will be measuring the short-term effect of district magnitude on the bias in favour of a large, diffuse party. This bias depends on how much a loss of seats by a party in a region where it is overrepresented is compensated for by a gain of seats in another region where it is underrepresented, when district magnitude is increased. At the same time, no a priori assumptions will be made regarding the long-term effects of district magnitude on proportionality through the intervening variables of number of parties and distribution of support.

The Objectives of this Study

Our objectives in constructing an alternative electoral system are as follows: First, we want to increase district magnitude, while at the same time maintaining or increasing the bias in favour of a large party. We know a priori that large parties generally have a larger swing ratio than small parties, and that the more diffuse support is for a large party, the larger the swing ratio. We also know that as district magnitude increases, the swing ratio for large parties tends to decrease.

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In order for the bias in favour of a large party not to decrease, therefore, the degree of diffusion of its support must have a stronger effect than its size; that is, if diffusion of party support causes the bias in favour of a large diffuse party to increase, while its size will tend to make the bias decrease, when district magnitude is increased, which change is more important? Since the importance of distribution of partisan support decreases as district magnitude increases, this question is only relevant for small district magnitudes.

Second, we want to increase the multiregional representation of a large party. Since the geographical distribution of partisan support is parallel to the regional distribution of partisan support, it is obvious that it is impossible to fulfill the first of our objectives without simultaneously fulfilling our second objective.

Thus, we will be looking to increase the bias in favour of, and the multiregional representation of a large diffuse Canadian political party by increasing the district magnitude from one to two or from one to three. If the results are positive, we will proceed to argue that the respective electoral system is preferable to all others, including FPP, within the situational context of Canadian politics.

CHAPTER 3

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METHODOLOGY

Collection of Data

Canadian federal election results for the period 1953 to 1965 were obtained from a computer tape compiled by Donald E. Blake[22]. Each case contained the constituency number, the province of the constituency, voter turnout in the constituency, the votes obtained by each candidate, the election year, and the total valid votes cast. These data are also published by Howard A. Scarrow, Canada Votes (New Orleans: 1963)[23], for the 1953 to 1962 elections, and by the Report of the Chief Electoral Officer for the 1963 and 1965 elections[24].

In order to create hypothetical multiple-seat constituencies, contiguous constituencies have to be added together. Since the data are originally in alphabetical order, new multiple-seat constituencies cannot be created simply by adding adjacent cases in the original data set. Consequently, the original data set has been re-ordered such that the cases are in sets of six, where within each set adjacent cases represent constituencies contiguous with one another. Unless the data set is again re-ordered into smaller or larger sets, we are left with the options of dividing the sets into subsets of one, two, three, or six-seat constituencies. We can also divide the data set on a province-by-province

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basis.

In order to re-arrange the data set into subsets of contiguous constituencies, reference was made to Federal Electoral District Maps[25]. The decision as to which constituencies should be added together was based on several geographical criteria. Foremost was adherence to within-province subsets. Whenever subsets had to cross provincial boundaries, the northernmost constituencies were used. Otherwise, starting from one corner of each province, constituencies were added to within-province constituencies adjacent to them. In New Brunswick, subsets were created along linguistic lines. In all other cases, the next criteria for adding constituencies were physiographic and rural-urban divisions. Metropolitan areas and rural areas were arranged into separate subsets wherever possible. Where rural areas had to be joined separately, climatic differences, and physical barriers, such as mountains and bodies of water, were used as dividing lines.

As was mentioned earlier, the 1958 election data are not included. There are several related reasons for deciding that the 1958 election should be treated as an anomaly. First, the Conservative party did not need the FPP system to help it form a majority government by translating a minority of votes into an artificial majority of seats; the Conservatives won a majority of the votes. Second, the 1958 election did not result in a situation where the government party was significantly underrepresented in one or more regions; the Conservatives were the largest party in every region.

Also, we expect the mean of our sample set for Conservative vote shares to deviate from the population mean (the population equals all national elections from approximately 1935 to the present). However, the results of the 1958 election would skew the distribution of individual results within the small sample set significantly more than they would the distribution of the population. If we include the results of the 1958 election, the population mean equals 34.27. If we exclude 1958, it equals 32.86. In contrast, if we include 1958 in our sample, the sample mean equals 37.67, while if we exclude 1958, it equals 34.4. For the province of Quebec, the skewing of the population mean versus the skewing of the sample mean by the 1958 election results is even more significant than that on a national scale. By omitting the 1958 election, therefore, we significantly decrease the standard error of the mean of our sample set.

Classification of Data

We are now in a position to begin creating hypothetical outcomes for the 1953, 1957, 1962, 1963 and 1965 national elections. First, in order to create constituencies with a district magnitude of two, the total valid votes cast are added together in sets of two adjacent cases. Then we calculate what fraction of the new total is contained in each case. For example, if there were 40,000 total valid votes cast in one case, and 60,000 in the adjacent case, then one case would contain 40,000/(40,000 + 60,000) = .4 of the total valid votes cast in the constituency of district magnitude two. Next, the percent of total votes each party obtained in each case are calculated by dividing the votes obtained by each party by

the total valid votes cast. Then each party's share of the total vote for the new constituency of district magnitude two can be calculated, by multiplying the percent of total votes each party obtained in each case by each case's fraction of the new total of valid votes cast, and adding the two. For example, if the Liberal party received 50 percent of the vote in one case and 30 percent in the adjacent case, and fractions of valid votes were the same as in the above example, then the Liberal party would obtain (.4 X 50%) + (.6 X 30%) = (.2 + .18) = 38 percent of the vote.

We then calculate the hypothetical outcome using the Droop quota, which for district magnitude of two is 33.4 percent. In the above example, for instance, the Liberal party would be rewarded one of the two seats.

A problem occurs in our calculations when we add two contiguous constituencies where a party runs a candidate in one of the two cases but not in the other case. This situation occurred most often in Quebec, where the Conservatives and NDP failed to run a candidate on several occasions. Where a party received less than 5 percent of the votes in the constituency where it did run, it was assumed that had that party run a candidate in the constituency adjacent to it, it would have received a similarly low vote share, and thus would not have affected the allocation of seats. Where a party received more than 5 percent of the votes in the constituency where it did run, it becomes less certain what would have happened, had it run a candidate in the adjacent constituency. Under such circumstances, there is little choice but to treat these cases as single-seat constituencies, omit them from the results, and to assume that this inconsistency does not significantly skew our results.

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To create hypothetical constituencies and hypothetical outcomes for district magnitudes of three, we follow basically the same method of calculations as we did for district magnitudes of two. First, the valid votes of each case are divided by the sum of the valid votes for all three cases. Then we multiply these three values by the percent of votes each party obtained in each respective case, and add the three. For example, if the number of valid votes in three adjacent cases were identical, all three fractions would be .33. So if the Liberal party received 50% of the vote in one case, 40% in another, and 30% in the third case, then the Liberal party would obtain (.33 X 50%) + (.33 X 40%) + (.33 X 30%) = 40 percent of the vote in the constituency of district magnitude three.

The Droop quota for district magnitude of three is (1/# seats + 1) *100 = 25 percent. In the above example, this would result in the Liberal party being awarded one of the three available seats on the basis of a quota, and being left with a remainder of 15 percent.

The same method of calculations is used to determine each party's share of the vote in hypothetical constituencies of district magnitude six as was used for that of district magnitude two and district magnitude three. Each party's seat share for district magnitude of six is allocated using a Droop quota of (1/7) *100 = 14.3.

The same method of calculations can also be used to determine each party's vote share and seat share in regional constituencies, for example, province-wide constituencies.

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In order to calculate what the election outcomes would have been if district magnitudes of two, three, six or province-wide had been used in the 1953, 1957, 1962, 1963 or 1965 elections, ceteris paribus, the seats won by each party using the above method were counted. Appendix A shows the percentage of the vote won by each party in each election, and the percentage of seats won by each party using district magnitudes of one (FPP), two, three, six and province-wide.

CHAPTER 4

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ANALYSIS OF NATIONAL DATA

Results of the 1953 Election

Looking first at results on a nation-wide scale, and beginning with the 1953 election, we see from Table 4.2 that the Liberals won a majority of the seats with only a minority of the votes. Meanwhile, the Conservatives received a far smaller percentage of seats than of votes. At the risk of side-tracking from the main issue at hand, it is worth noting that Cairns "arbitrarily" defines an "effective opposition" necessary to a working parliamentary system as at least one-third of the seats in the legislature[26]. In the 1953 election, all the opposition parties combined received just over a third of the seats. Or, to look at the outcome another way, the Conservatives received less than one-quarter of the Liberal and Conservative seats combined. Thus, when changes in the parties' seat shares are observed for increased district magnitudes applied to the 1953 election, we should look for district magnitudes that preserve the Liberal party's seats majority, but that also produces a more effective opposition.

We see from Table 4.1 that for a district magnitude of two, the Liberals gain a majority of seats. Although not as sizeable a majority of seats as they received when FPP was used, it is sufficiently large that a handful of defections or resignations would not result in the Liberal

government losing a vote of non-confidence. In addition, not only do the Liberals continue to win a majority of seats with a minority of votes when district magnitude is increased from one to two, but the Conservatives are no longer relegated to the status of a small party.

TABLE 4.1: Liberal Vote Shares and Seat Shares

Year	DM1	DM2	DM3	DM6	DM-Province	Votes
1953	64.5	56.4	54.2	49.6	50.0	49.0
1957	39.6	48.9	42.8	42.6	42.9	41.0
1962	37.7	43.6	37.5	37.3	36.7	37.0
1963	48.7	49.6	45.5	43.2	41.8	42.0
1965	49.4	46.2	44.7	39.8	40.6	40.0

DM1   = Actual Liberal seats

DM2   = Liberal seats using district magnitude of 2

DM3   = Liberal   "   "   "   "   " of 3

DM6   = Liberal   "   "   "   "   " of 6

DM-province = Liberal   "   " province-wide constituencies

Votes   = Liberal votes

When district magnitude is increased to three, the results are basically the same as those for district magnitude of two. However, when district magnitude is increased to six, the Liberals no longer win a majority of seats. Also worth noting is that the Conservatives pass the threshold from receiving a smaller share to a larger share of seats than

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the share of votes they received; however, this outcome is made less significant by the fact that the CCF and Social Credit parties also passed the threshold.

The 1957 Election

When we look at the results of the 1957 election, we see that the Liberals received a larger share of the popular vote than the Conservatives, but that the FPP system awarded the Conservatives more seats. As a result, the Conservatives, the second-largest party in terms of voter support, were able to form a minority government.

When the district magnitude is increased to two, the election outcome is much different. Not only do the Liberals gain more seats than votes, and not only do they gain more seats than the Conservatives, but with a vote share of 41 percent they come within one percent of receiving a majority of the seats. From the point of view of obtaining our objective of awarding the largest party at least as many seats as it received under FPP, this result is spectacular; but is it anomalous within our data set?

Before going on to compare this result to that of later elections, let us first continue to look at the 1957 election outcomes. When district magnitude is increased to three, the relationship between votes and seats approaches complete proportionality. Hence, at district magnitude of three or higher, there is little likelihood that a large

party will have a substantially larger seat share than vote share; that is, a district magnitude of three, if used in the 1957 election, would not have significantly favoured either large party.

When district magnitude is increased from three to six, and from six to province-wide, there is only a 0.3 percent variation in Liberal seat share. This result indicates that an increase in district magnitude beyond three does not result in an increase in proportionality.

Based on the hypothetical outcomes for the 1957 election, then, we will be looking for the following patterns in the next election we look at, 1962. When district magnitude is increased from one to two, the Liberals' seat share increases while the Conservatives' seat share decreases; when district magnitude is increased from two to three, the electoral system is not biased in favour of the two large parties; an increase in district magnitude beyond three does not result in any change in Liberal seat share.

The 1962 Election

In the 1962 election, both the Liberals and the Conservatives received 37 percent of the votes. Yet the FPP system awarded the Conservatives six percent more seats; consequently, the Conservatives, as in 1957, formed a minority government. When district magnitude is increased from one to two, however, the roles are reversed, and the Liberals are awarded three percent more seats. What the results of the

1957 and 1962 elections seem to suggest, then, is that when the two large parties are of equal size, FPP is biased in favour of the party with more regionally concentrated support, while a district magnitude of two would be biased in favour of the party with more diffuse support.

When the district magnitude is increased from two to three, the Liberal seat share drops down to what it was under FPP, which is approximately an equal proportion of votes to seats. The Conservative seat share, on the other hand, goes back up again. This is the only election in the sample set in which the Liberal vote share was not greater than the Conservative vote share, so it is difficult to base any conclusions on this outcome; but it does appear as though increasing the district magnitude from two to three may increase the bias in favour of a large concentrated party.

Finally, as was the case for the 1957 election, when district magnitude is increased beyond three, the Liberal seat share remains unchanged.

The 1963 Election

The results of the 1963 election are notably different from those of 1953 and also from those of 1957 and 1962. 1953 was the last election in which the Liberal party received more than 45 percent of the vote. In the other four elections in the sample set, the Liberals averaged 40 percent of the vote. Prior to 1957, and between 1963 and 1984, the

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Conservatives received vote shares in the lower 30 percent range. Thus, in the 1963 election, the Conservatives returned to a vote share in the lower 30's and the Liberals shifted to a new vote range in the lower 40's. With the Liberals only receiving 42 percent of the vote in the 1963 election, it would have been difficult for the FPP electoral system to manufacture an artificial majority of seats. However, because the Conservatives' voter support dropped to 33 percent, the concentration of Conservative party voter support was unable to compensate for its lack of size. Consequently, whereas the Liberals received 41 percent of the vote in 1957, but received fewer seats than votes, in 1963 they received 42 percent of the vote and came within 1.3 percent of a majority of the seats.

When the district magnitude is increased from one to two, the bias in favour of the Liberals is increased, so that they are within 0.4 percent of a majority of the seats. Of the four elections we have looked at to this point, the Liberal seat share increased, when the district magnitude was increased to two, in three of the four cases. The only exception was 1953, when increasing the district magnitude to two transformed an undesirable landslide Liberal victory into a comfortable majority.

It thus appears from these results that the swing ratio for the Liberal party is much larger for FPP than for a district magnitude of two, and that the district magnitude of two is biased in favour of the Liberal party at a lower vote percentage than FPP is. This means that a district magnitude of two tends to award the Liberal party a majority of seats at a

lower vote share than does FPP, while FPP begins awarding exorbitantly more seats to the Liberals than does district magnitude of two only when such seats are superfluous and an impediment to a working parliamentary system. Also, under FPP the threshold is 40 percent of the vote share; anywhere below this and the chances of the Liberals forming even a minority government appear remote. On the other hand, when district magnitude of two is used, the threshold for the Liberal party is probably below 30 percent, and the Liberals are likely to form a minority government with as little as 35 percent of the vote.

When the district magnitude is increased from two to three for the 1963 election, for the fourth consecutive case Liberal seats decrease while Conservative seats increase. Finally, when district magnitude is increased from three to six, and from six to province-wide, both Liberal and Conservative seat shares decrease as district magnitude increases, until their seat shares are proportional to their vote shares.

The pattern so far, then, is for FPP to be biased in favour of the Conservatives moreso than the Liberals, while district magnitude of two shifts the larger bias to the Liberal party. When district magnitude is increased from two to three, however, the larger bias shifts back to the Conservative party; but both large parties' biases become smaller, as the increased district magnitude is less biased against small parties. Also, the ratio of seat shares to vote shares approaches proportionality at district magnitude of six.

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The 1965 Election

In the last election in the sample set, 1965, the Liberals, with 40 percent of the vote, came within 0.6 percent of a majority of the seats; thus, the FPP electoral system was almost able to manufacture an artificial majority of seats out of a minority of votes. However, the Liberals had to settle for another minority government.

When district magnitude is increased from one to two, the Liberal party's seat share decreases from 49.4 to 46.2 percent. Based on our criteria that an alternative electoral system should award the largest party at least as many seats as does FPP (at least until it has a majority of the seats), this is the only case in our set where district magnitude of two has failed. However, under a district magnitude of two, the Liberals still won more seats than the second and third largest parties combined, even though these two parties together received a majority of the votes. Thus, the Liberals would still have formed a minority government.

When district magnitude is increased from two to three, both large parties' seat shares decreased. This is because the third largest party, the New Democratic Party (NDP), had continued to grow in voter support, until by 1965 it received 18 percent of the vote share. As a result, the number of effective parties began to be a more significant variable affecting the proportionality of electoral outcome; which means the geographical distribution of partisan support would have less of an effect, at least for larger district magnitudes.

Effects of District Magnitude on Liberal Seat Shares

Figure 4.1 shows the relation between Liberal votes and seats for the 1953, 1957, 1962, 1963 and 1965 elections for district magnitudes of one (FPP), two, three, six and province-wide. As the figure illustrates, the slope (regression coefficient) for the linear equation relating Liberal votes to Liberal seats is steeper for FPP than for district magnitude of two. Meanwhile, the intercept (regression constant) of FPP is much smaller. However, when district magnitude is increased from two to three, the slope increases again and the intercept decreases again. This would seem to indicate that the geographical distribution of voter support for the Liberal party still has a significant effect on the translation of votes into seats at a district magnitude of three.

The line passing at a 45 degree angle through the origin in Figure 4.1 represents an equality between votes and seats. Its slope is therefore 1.0 and its intercept is zero. If we translate this into the terminology we have been using so far, a party with a relation of votes to seats the same as this line would have a swing ratio of 1.0 and a zero bias for all values of votes: This is almost the situation for the Liberal party when district magnitude is increased to six or province-wide.

Figure 4.2 shows the relation between Liberal votes and seats for the 1953, 1957, 1962, 1963 and 1965 elections for a district magnitude of two, and between 1935 and 1980 for FPP. (Note: the data for this figure

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FIGURE 4.1   LIBERAL SEAT SHARES USING FPP, DM2, DM3, DM6, AND DM-PROV

SEATS (%)

80

70 — PERFECT PROPORTIONALITY

FPP

60 — DM2

DM3

MAJORITY GOVERNMENT

50

MINORITY GOVERNMENT

40

30 — DM6

PROV

20

10

0

10   20   30   40   50   60   70   VOTES (%)
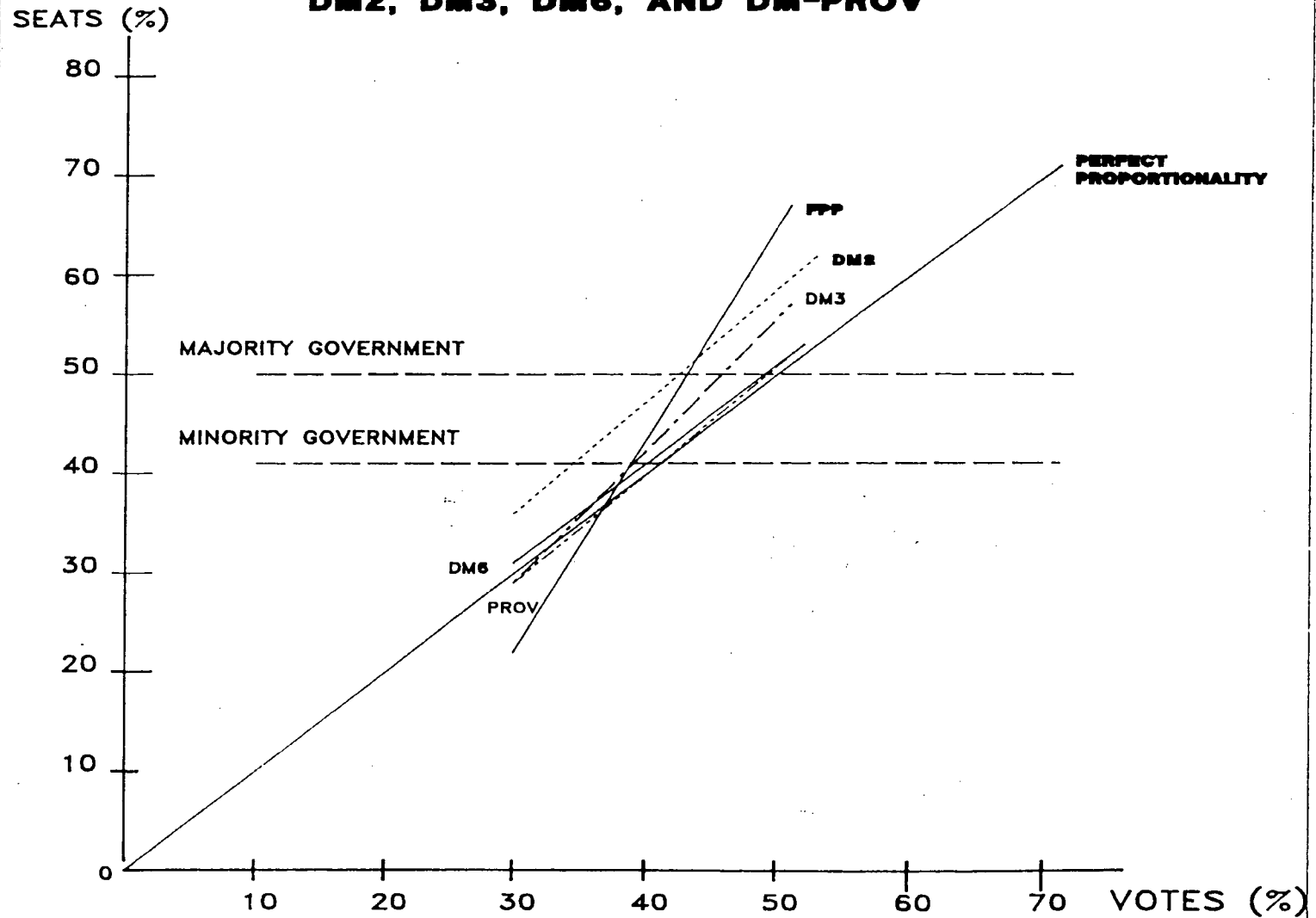
are revealed below in Table 4.2)   There are three horizontal lines on the graph.   The line at seats = 41% represents the smallest seat share any party has ever received and still managed to form a minority government. The line at seats = 50% represents the minimum number of seats necessary to form a majority government.   The line at seats = 66% represents the maximum number of seats held by a government party before problems such as the lack of an effective opposition and the overabundance of unruly government backbenchers begin to hinder the workability of the parliamentary system.

Table 4.2: LIBERAL VOTES AND SEATS FOR DM2 and FPP

Year	Liberal Seats (%)	Liberal Votes (%)	Liberal Seats using DM2 (%)
1935	71	45	-
1940	74	51	-
1945	51	41	-
1949	74	49	-
1953	65	49	56
1957	40	41	49
1958	18	34	-
1962	38	37	44
1963	49	42	50
1965	49	40	46
1968	59	45	-
1972	41	38	-
1974	53	43	-
1979	40	40	-
1980	52	44	-

FIGURE 4.2   LIBERAL SEAT SHARES USING FPP AND DM2
(FPP results include election from 1935-80)

SEATS (%)

FPP

EFFECTIVE OPPOSITION

DM2

MAJORITY GOVERNMENT

MINORITY GOVERNMENT

LEGEND

● FPP
▲ DM2

VOTES (%)
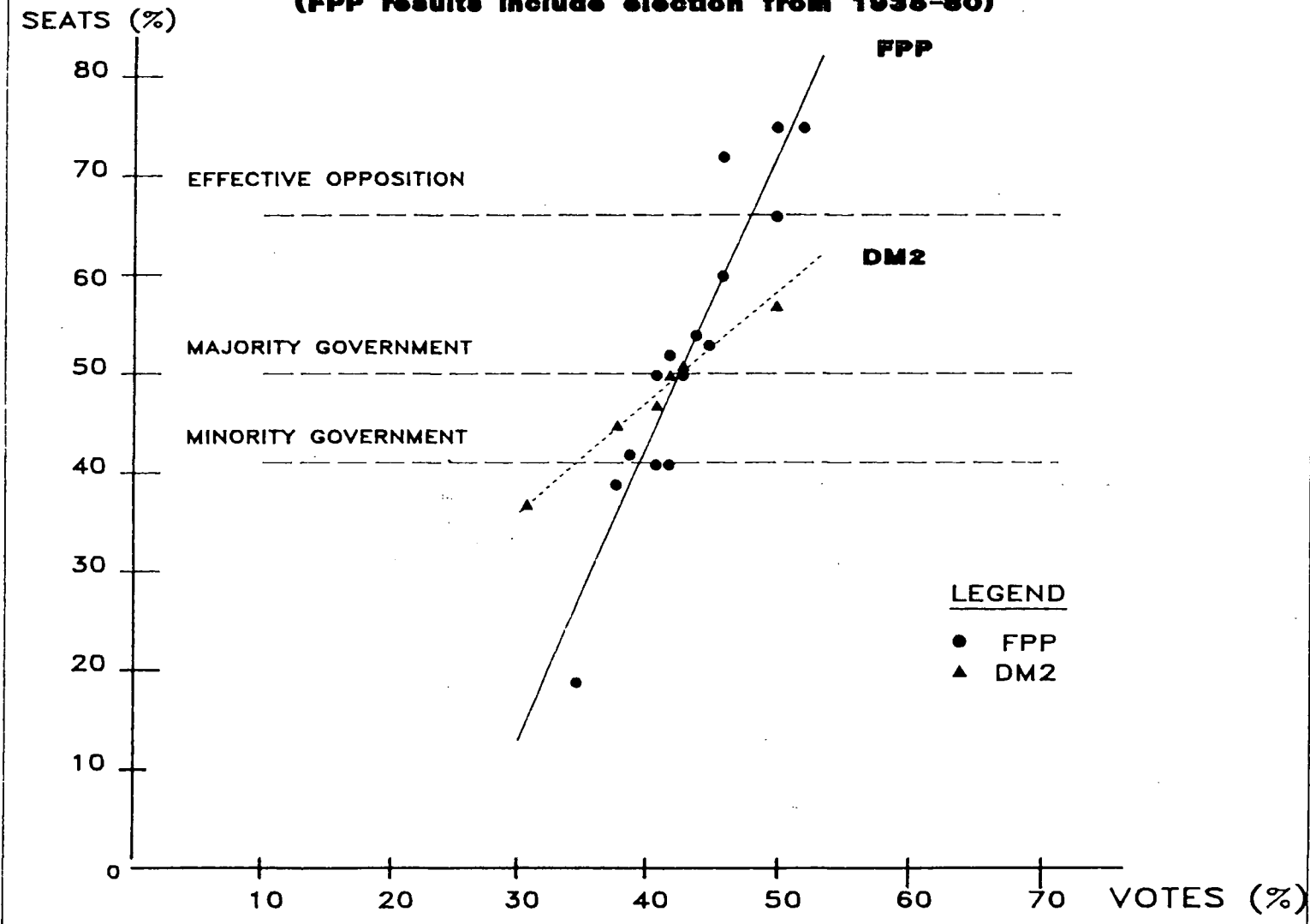
Recalling that our primary objective is to increase the multiregional representation of a large diffuse party without decreasing its total number of seats, Figure 4.2 has several implications, all of which can be interpreted as positive. First, regarding FPP's tendency to manufacture a majority of seats out of a minority of votes, we see that both FPP and a district magnitude of two (DM2) produce a majority of seats with between 42 and 43 percent of votes.

Looking next at minority governments, the reader will recall that in two of the elections in our sample set the Conservatives formed minority governments, even though the Liberals received more votes. In contrast, if we compare FPP to DM2 we see that whereas the Liberals need on average 40 percent of votes if they wish to form a minority government under FPP, they would need only 34 percent under DM2. In other words, if a large diffuse party falls short of forming a majority government, it stands a far better chance of at least forming a minority government if DM2 is used, then if FPP is used. In our sample set, for example, the Liberals would have formed minority governments in the 1957 and 1962 elections if DM2 had been used.

We see from Figure 4.2 that once the Liberals get over 50 percent of the seats, they begin receiving more seats per vote under FPP than under DM2. However, this does not mean that a large diffuse party with more than approximately 42 percent of votes would necessarily prefer FPP to DM2. Certainly a government would not want to be in the precarious position of having their majority lost if one or two of their seats in the

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legislature were somehow lost. Both FPP and DM2 produce a comfortable margin of extra seats at 44 percent of votes; hence, it is only at between 42 percent and 44 percent of votes that the Liberals would encounter an uncomfortably slim majority of seats under DM2.

On the other hand, once the Liberals gain more than approximately 47 percent of the votes, under FPP they receive so many seats that their lopsided victory begins to act to the detriment of themselves and the parliamentary system. Regarding the problems incurred by a government with an extraordinary majority, the prime minister is unable to reward everyone in the government caucus with positions of responsibility. The idle backbenchers then become restless backbenchers. Also, the larger the caucus, the more increased is the likelihood of disagreement of opinion. The most likely outcome is for the cabinet to find the most formidable opposition to some of its policies coming from a group of disaffected backbenchers within its own caucus. At the same time, the ability of the opposition party or parties to effectively fulfill their function of constructively criticizing government policies is seriously hindered by a shortage of personnel.

Finally, when we look at Figure 4.2, we see that there are several occasions when the number of seats won by the Liberals under FPP was much greater or less than that predicted by the linear equation. Hence, if the Liberals were deciding whether or not to call an election based on their popularity amongst decided voters, they would have to be highly uncertain about how many seats those votes would translate into, if FPP were used. For example, there is one occasion where the Liberals, with 41 percent of

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the vote, were unable to win enough seats to form a minority government; meanwhile, on another occasion 41 percent of the vote was enough for the Liberals to win a majority of the seats. In contrast, for the five elections in the sample set, there is less than one percent variance between actual outcomes, in terms of the Liberal seats, and the outcomes predicted by the linear equation for DM2.

Effects of District Magnitudes on Conservative Seat Shares

Before looking at the regional breakdown of Liberal support, we should first observe the effects of increased district magnitude on the Conservative party's total seat share. Figure 4.3 shows the relation between Conservative votes and seats for the 1953, 1957, 1962, 1963 and 1965 elections for district magnitudes of one (FPP), two (DM2), three, six and province-wide. Conservative seat shares for 1935 to 1980 are also shown and are represented by the scatterplot diagram in Figure 3.1. (The data for Figure 4.3 are listed in Table 4.3) The pattern for the translation of votes into seats for the Conservative party when district magnitude is increased from one to two and from two to three is basically the same as for the Liberal party. The slope for FPP is steeper than for DM2, while the intercept for FPP is smaller than for DM2. When district magnitude is increased from two to three, the slope increases again and the intercept decreases again, just as it does for the Liberals. However, while the slopes for the Liberals and Conservatives for DM2 are nearly identical, the Liberal party's intercept for DM2 is approximately 6

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seat-share percentages higher. This 6 percent bias in favour of the Liberals results in some fundamental differences in electoral outcomes for the two parties.

Table 4.3: CONSERVATIVE VOTES AND SEATS FOR FPP, DM2 and DM3

Year	Cons. Seats	Cons. Votes	DM2 Seats	DM3 Seats
1935	16	30	–	–
1940	16	31	–	–
1945	27	27	–	–
1949	16	30	–	–
1953	19	31	28	28
1957	42	39	36	41
1958	78	54	–	–
1962	44	37	41	41
1963	36	33	33	37
1965	37	32	34	34
1968	27	31	–	–
1972	41	35	–	–
1974	36	35	–	–
1979	48	36	–	–
1980	37	33	–	–

FIGURE 4.3   CONSERVATIVE SEAT SHARES USING FPP, DM2 AND DM3
(FPP results include election from 1935-80)

SEATS (%)

EFFECTIVE OPPOSITION

MAJORITY GOVERNMENT

MINORITY GOVERNMENT

FPP

DM3

DM2

LEGEND

● FPP

VOTES (%)
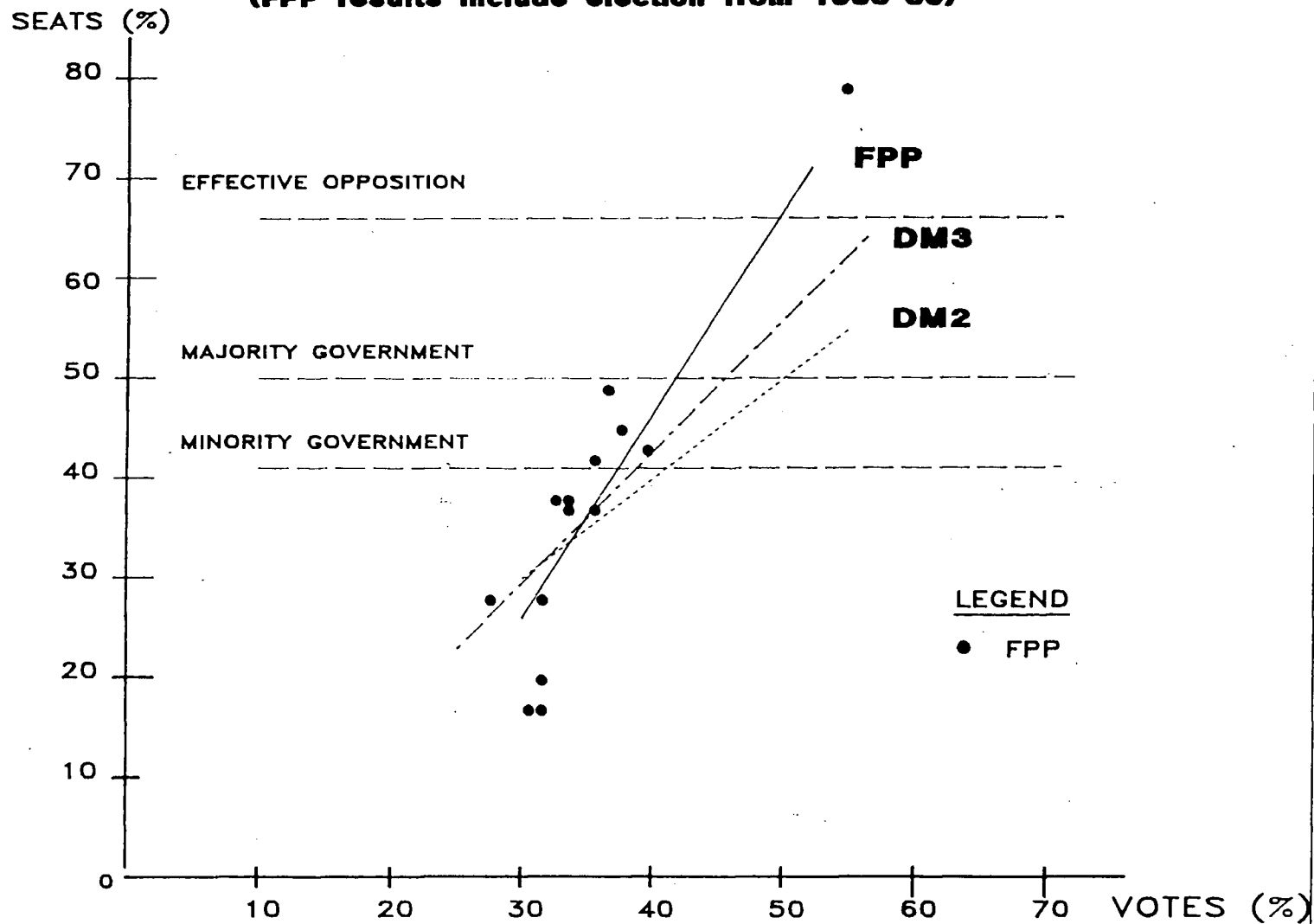
The horizontal line in Figure 4.3 at seats = 41% represents the minimum seat share necessary to form a minority government. The line at 50% represents the minimum seat share necessary to form a majority government. We see from Figure 4.3 that under FPP the Conservatives need approximately 37 percent of the vote share to form a minority government. With a district magnitude of three, they need 39 percent, and with DM2, 41 percent. To form a majority government, the Conservatives need approximately 41 percent of the vote share under FPP, while a district magnitude of three would require 45 percent, and with DM2 they would need 49 percent. Hence, what the Conservatives need to form a minority government using DM2 (41 percent of the vote share) would be enough to catapult them to a majority government under FPP.

The lines of the equations for the relation between votes and seats for the Conservative party when FPP, DM2 and district magnitude of three are used all cross the threshold at about 34 percent. Above the threshold, the line for district magnitude of three lies approximately equidistant between FPP and DM2. Thus, the decrease in the bias in favour of the Conservatives is only half as great when district magnitude is increased from one to three, as when it is increased from one to two.

Thus, while DM2 would be the most preferred electoral system for the Liberal party, the Conservatives benefit more under FPP. In terms of altering the outcome of an election, the most important advantage to one party over the other occurs with respect to forming a minority

government. Under FPP, the Conservatives need approximately 37 percent of the vote share to form a minority government, while the Liberals need approximately 39 percent. In contrast, when DM2 is used the Liberals need approximately 34 percent of the votes to form a minority government, while the Conservatives need approximately 41 percent.

CHAPTER 5

ANALYSIS OF REGIONAL DATA

Looking now at the regional breakdown of partisan support and electoral outcome, the two regions where translation of voter support into representation in the legislature is most skewed are Quebec and the four western-most provinces. It is therefore in these two "regions" that increases in district magnitude will result in substantial changes in party seat shares. With respect to the Liberal party, we will be looking for a decrease in its overrepresentation in Quebec, and an increase in its representation in the West. Hopefully, the gain of seats for the Liberals in the West will at least compensate for their loss of seats in Quebec, when district magnitude is increased.

The Liberals in the West

Appendix B shows the breakdown of support for the Liberals in Quebec and in the West, and for the Conservatives in Quebec. Looking first at the Liberals in the West, we see that in 1953 the Liberal party received a seat share equal to its vote share. Assuming that the FPP system has the same tendencies, with respect to the translation of votes into seats, on a regional scale as it does on a national scale, it appears that the threshold is approximately 35 percent of the votes. Just above this threshold, a party begins winning 3 seat shares for every one percent

increase in vote shares. Just below this threshold, a party begins losing equally dramatic seat shares for every one percent decrease in its vote share.

In British Columbia, the impact of Diefenbaker on Liberal voter support was short-lived. From 1962 until 1972 Liberal vote shares in B.C. rebounded to pre-1957 levels. However, while Liberal support in the Prairie provinces also rebounded in 1962, it never reached pre-1957 levels again. Because of the distortion of votes into seats by FPP, a decrease of 12 percent in Liberal voter support in the West would be enough to deny the Liberals any seat representation in the national legislature. The post-1962 level of Liberal voter support in the West is approximately 6 to 7 percent lower than the pre-1957 level. As a result, the Liberals were not completely wiped out in the West, but their seat share dropped approximately 20 percent. From 1963 to 1972, the Liberals were still a "large" party in the West, in terms of vote shares (approximately 30 percent). However, with only 11 percent of the seats in the West, the Liberals were a Western "fringe" party, in terms of representation in the legislature.

If B.C., where Liberal support returned to pre-1957 levels, is taken out of the Western equation, the historic loss of Liberal voter support in the West is even greater. In fact, it is almost exactly the 12 percent loss that we predicted would completely wipe out the Liberals; with approximately one-quarter of the vote share, they received on average 4 percent of the seats in the Prairies in the 1962, 1963, and 1965 elections.

The biggest losers when Liberal fortunes in the Prairies declined were not the Liberals - they still formed the government. The biggest losers were the people of the Prairie provinces, who were deprived of representation in the government caucus and in the cabinet. One of the two main objectives of this study is of course to alleviate this problem of regional imbalance in the national political parties. The means of achieving this objective is by increasing district magnitude until proportionality is achieved. When proportionality is achieved, Liberal seat shares will equal vote shares in the four Western provinces, which averaged 27 percent for the 1957, 1962, 1963 and 1965 elections.

As can be seen from Table B-1, when district magnitude is increased from one to two, Liberal seat shares increase to 29.5 percent, actually exceeding their vote share. In a two-party system, this would be an unexpected result, since the quota for a DM2 system is 33.4 percent. In a two-party system, a party with 27 percent of the vote would not begin receiving seats until district magnitude was increased to three, for which the quota is 25 percent. However, in Western Canada during this period there was a three-party system, and in B.C. and Alberta there were four effective parties. As a result, most of the seats are awarded using the largest remainder instead of the quota.

When district magnitude is increased from two to three, instead of the seats being allocated using the quota of 25 percent, with the Liberals therefore being awarded one-third of the seats, the Liberal party's seat share decreases to 26 percent. When district magnitude is

increased from three to six, the Liberal seat share is 28 percent. Hence, the Liberal vote-to-seat ratio reaches proportionality at district magnitude of three, while their seat share actually exceeds their vote share under DM2.

The number of seats in Quebec and the West are unequal. Thus, in order to compare the gain of Liberal seats in the West to the loss of Liberal seats in Quebec, the average number of seats gained or lost, and not the average percent, must be used. Under FPP, the Liberals averaged 11.4 seats in the West. Using DM2, the Liberals average 23.6 seats. There is therefore an average gain of 12.2 seats in the West for the Liberals when DM2 is used. The Liberal loss of seats in Quebec under DM2 will be calculated and compared to the gain in the West shortly. But first we want to go through the same sort of analysis for the Liberal party in Quebec as we have gone through for the Liberals in the West.

The Liberals in Quebec

As shown by Table B-2, the FPP system has the same tendencies in Quebec as it does in the West and on a national scale. However, the Liberal party's vote share is above 35 percent in Quebec. So instead of the Liberal party losing three seat shares for every loss of one percent in vote shares, as it does in the West, it gains three seat shares for every increase of one percent in vote shares. The reader will note that this equation no longer applies when Liberal vote shares are above 50 percent. This is because the relation between votes and seats is actually

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an S-shaped curve. For the national results and results in the West, Liberal vote percentages have all been in the range where the S-shaped curve can be approximated by a simple linear equation. In Quebec, however, Liberal vote shares often exceed 50 percent, above which the vote-to-seat ratio rapidly decreases; thus, a 57 percent vote share does not result in a 100 percent seat share.

If the tendencies of FPP and DM2 are the same in Quebec as on a national scale, then above 42 percent of the votes the Liberals will get more seats when FPP is used, while below 42 percent they will get more seats when DM2 is used. Also, above 50 percent of the votes the swing ratio for DM2 is again larger than that of FPP.

From Table B-2 we see that in only one of the five elections did the Liberals receive less than 42 percent of the votes. We thus expect FPP to reward more seats to the Liberals in Quebec than would DM2, in four of the five elections. In order to consider our results positive, therefore, the Liberals must continue to receive more seats than votes in Quebec when DM2 is used, and the Liberals must on average gain more seats in the West than they lose in Quebec when FPP is replaced by DM2.

Comparing the results in Quebec using FPP and DM2, we see that in the one election where the Liberals received less than 42 percent of the vote share, they were awarded more seats by DM2 than by FPP. Also, while the Liberals received well over 50 percent of the votes in two of the elections, FPP only rewarded them with a few more seats than it would have had they they only received 50 percent of the votes. As a result of these

outcomes and the outcomes of the other two elections, the Liberals gained 1.4 seat shares for every vote share under FPP, and 1.2 using DM2. So the results are positive with respect to the Liberals continuing to receive more seats than votes in Quebec when DM2 is used.

The Results For the Liberals in Quebec and in the West Compared

In order to compare the loss of seats by the Liberals in Quebec when FPP is replaced with DM2 with their gain of seats in the West, the average number of individual seats lost in Quebec must first be calculated. Under FPP, the Liberals averaged 53.2 seats in Quebec. Using DM2, they average 43.6. There is therefore an average loss of 9.6 seats in Quebec for the Liberals when DM2 is used. By comparison, it was calculated that the Liberals on average gained 12.2 seats in the West when DM2 is used. There is therefore a net gain of 2.6 seats for the Liberals. In other words, the loss of Liberal seats in Quebec when district magnitude is increased from one to two is more than compensated for by their gain of seats in the West.

However, our objective is not to increase the number of seats of the more diffuse large party. Our objective is to increase the multiregional representation of a large party without at the same time decreasing its seat total. Having attained this objective by using DM2, we should turn our attention to the other large party, the Conservatives.

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The Conservatives in Quebec

The geographical distribution of support for the Conservatives is also quite diffuse. We would therefore expect that increasing the district magnitude would also increase the multiregional representation of the Conservative party, but at the expense of its seat total.

Table B-3 shows the breakdown of support for the Conservatives in Quebec in the 1953, 1957, 1962, 1963 and 1965 elections. In the first two of these elections, 1953 and 1957, the Conservatives averaged 30 percent of the votes, but received only 8.5 percent of the seats. Thus, the position of the Conservative party in Quebec was similar to that of the Liberal party in the West: they were a large party in terms of voter support, but a marginal party in terms of representation in the legislature.

The situation in Quebec in 1963 was different from previous elections. The Social Credit party equalled the Conservative party in vote shares, and exceeded the Conservatives in seats from Quebec. This three-party system altered the tendencies of the FPP electoral system. Where three parties competed in a constituency, the winner no longer needed over half the votes. Also, the Conservatives and Social Credit could agree not to split the "anti-Liberal" vote, and thus follow an election strategy whereby the third-place party in an individual constituency would not run a candidate. As a result, a party might run candidates in only half the ridings and receive an average of 50 percent

of the votes where they did run; however, in the final election results it would appear that this party only won 25 percent of the votes. This is basically the same situation as the one in our examples illustrating the effect of geographical distribution of partisan support on electoral outcomes.

Aware, then, that the Conservatives may not have run candidates in every riding, and that they may have faced one other party in some ridings and two in others, we can proceed with caution to look at the outcomes in Quebec of the 1962, 1963 and 1965 elections. In these three elections, the Conservatives averaged 23.3 of the votes, and received 13.7 percent of the seats. They thus received 7 percent fewer votes but 5 percent more seats in this period than in 1953 and 1957. When district magnitude is increased from one to two, therefore, the changes in Conservative seat share are not expected to be the same for the two periods.

When district magnitude is increased from one to two for 1953 and 1957, Conservative seat shares increase from 8.5 percent to 23.5 percent. Over the 1962 to 1965 period, Conservative seat shares increase from 13.7 percent to 20 percent. The effects of FPP and the effects of increasing district magnitude are thus different for two-party and three-party systems. However, the tendencies are the same; increasing the district magnitude results in a significant increase in Conservative seat shares in Quebec. Over the course of the five elections in the sample, increasing the district magnitude to two results in the Conservative party receiving

an average of 21.4 percent of the seats, as compared to the 11.6 percent they received under FPP, and the 25.8 percent of the Quebec vote they received. This result is only slightly less significant than that regarding the Liberals in the West.

CHAPTER 6

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CONCLUSIONS

Summary of Findings

In conclusion, replacing the single-member constituency electoral
system presently used in Canada with district magnitudes of two would
increase the multi-regional representation of Canada's national political
parties. At the same time, DM2 would have no immediate effect on the
tradition of single-party government. DM2 thus satisfies both of the
criteria necessary for an electoral system to complement a
parliamentary-federal hybrid system of government. In addition, DM2 has
other tendencies which make it superior to First-Past-the-Post, and to
other electoral systems that have previously been offered as alternatives
to FPP.

Regarding the first criterion, manufacturing a majority government
for a party with a minority of seats, FPP and DM2 both award the Liberal
Party during the period of the sample with 50 percent of the seats when it
receives 42 percent of the votes. However, whereas FPP rewarded the
Conservative party more seats than the Liberals in the 1957 and 1962
elections, even though the Liberals received more votes, DM2 allocates
more seats to the Liberals. Thus, under DM2, the Liberals, with more
votes than the Conservatives, would have formed minority governments in
1957 and 1962. Also, whereas the FPP electoral system rewards a party

winning a majority of the votes with an extraordinary majority of the seats, DM2 tends to award it with a smaller, but still comfortable, majority. DM2 thus prevents parliaments lacking in effective opposition and governments burdened with unruly backbenchers. Finally, the outcomes of elections using FPP are highly uncertain, even if the vote shares are known ahead of time. In contrast, the outcomes of elections using DM2 are more predictable.

Regarding the second criterion, multiregional representation of national political parties, under FPP a large diffuse party which is "large" in terms of voter support in a region, is a fringe party in terms of seats in that region. By comparison, under DM2 a party which is large in terms of votes in a region is also large in terms of seats. Hence, if DM2 had been used during the period of the sample set, the Liberal party would have been a large party in Western Canada, and the Conservative party would have been a large party in Quebec.

Psychological Effects

However, while DM2 does not have an immediate effect on the tradition of single-party government, it may in the long-term affect the number of parties and the geographical distribution of partisan support. According to Taagepera's formula, there is a relationship between the number of effective parties and district magnitude, with the number of parties increasing when district magnitude increases. But there is also a relationship between the number of parties and the number of politically

salient issues. At the same time, changes in the geographical distribution of partisan support may alter the national political parties' platforms, which may in turn alter the number and types of issues that are most salient.

Historically, and at present, the two most salient political issue-dimensions in Canadian politics are both regionally defined. Probably not coincidentally, all of Canada's "national" political parties have historically had regionally-concentrated support bases and regionally-biased policy platforms. However, even in regions where the two largest parties are relatively weak, they are still "large" parties in terms of vote shares. Consequently, if DM2 were used instead of FPP, the two largest parties would find that instead of being marginal parties in one or two regions, they would be large parties in those regions. Also, in terms of the political pay-off, instead of a party being a distant second or third in individual ridings when FPP is used, under DM2 it would find itself either winning the second seat or coming within a few vote percentages of doing so. As a result, instead of writing off a constituency, or even an entire region, a party may alter its campaign strategy and formulate policies that appeal more to that constituency or region. If vote shares and seat shares subsequently increased, cross-regional political platforms could become institutionalized.

At the same time, increasing district magnitude makes it easier for smaller parties to gain a seat share proportionate to their share of the vote. This increase in seat accessibility may lead to an increase in the number of effective parties from the present number of three. In a

scenario where there are four or more effective parties and none has a majority of the seats, the prospect of a coalition government would increase.

So increasing the district magnitude may increase the number of parties. But it will more likely lead to a situation where the issue dimensions that divide the two largest parties are ones that cross-cut regional differences. Hence, the other factor that affects the number of parties, the number of issue dimensions, may decrease when district magnitude increases. If this were to occur, then when district magnitude is increased from one to two, the number of effective parties may decrease from three to two. It is therefore impossible to predict what the long-term effects of using DM2 would be. It may lead to a multiparty system. Or it may lead to a two-party system. Or the number of effective parties may remain unchanged.

Alternative Proposals

Since Cairns' first article, several alternative electoral systems have been proposed[27]. All of these proposals have included a two-tier system, under which some members of the legislature would continue to be elected from single-member constituencies, while others would be chosen from province-wide or nation-wide pools. Numerous objections have been made to the two-tier system, including its creation of two classes of legislators. However, where it fails most in comparison with DM2 is in terms of political payoff.

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Under DM2, there is an incentive for parties to increase their appeal to a region where their vote-share borders between that of a small and a large party; a slight increase in voter support may result in a large increase in seats. With the two-tier system, however, parties are assured of significant numbers of seats, even if there is virtually no effort on their part to increase their appeal, with respect to policies of concern to a respective region. In other words, the two-tier system gives regional representation to parties that do not deserve it, and provides no incentive for them to broaden their appeal.

Clarification

DM2 should not be confused with "double ridings". Both elect two representatives from one constituency; however, under DM2 each elector gets one vote, while in double-ridings each elector gets two votes. Giving electors more than one vote violates at least one important democratic principle, and leads to entirely different results from those of DM2.

Those who argue that electors generally vote for the party, and not for the individual candidate, usually use the election results from double-ridings as their primary evidence. The cases abound where parties competing in double-ridings have run one candidate whose experience and respect within the community is unquestioned, and another candidate whose

background is more dubious. Where the margin of victory between the second and third finishers is quite large, the two winners are invariably from the same party, and only a handful of votes separate the more illustrious winner from his less distinguished running-mate.

It is precisely because electors vote for parties, and not for individuals, that double-ridings represent some of the worst cases of gerry mandering. For example, take the case where Party A has a margin of victory of 20 percent in one riding, and loses by a margin of 10 percent in the riding adjacent to it. If these two ridings are merged into a double-riding in the next election, and party support remains unchanged from the last election, then instead of Party A winning only one of the two seats, it will win both seats, with a margin of victory of (20-10)/2 = 5 percent. Thus, by creating double-ridings, a government party could increase its number of seats, even if its voter support did not increase.

In contrast, the opportunity for a government to manipulate constituency boundaries to its advantage is diminished if FPP is replaced by DM2. This is because the ability to manipulate boundaries is a function of the wasted vote; with the ability to manipulate decreasing as the wasted vote decreases. As we have seen, the amount of wasted votes decreases as district magnitude increases. Thus, when district magnitude is increased from one to two, the ability to manipulate boundaries decreases.

Present Day Relevance

At this point in time (July, 1988), the nature of Canada's party system is notably different from that of the period of this study. Hence, the electoral outcome, if DM2 were introduced, would be different now than it would have been then.

However, the two most salient issues in Canadian politics are still economics and ethnicity. Thus, when all three of the largest parties take the same policy position on one of these two issue-dimensions, they effectively disenfranchise all the voters who favour an opposing position. Meanwhile, using the FPP system means that only one of the parties will be rewarded for their position. Depending on how relatively salient this issue is in a particular region, and depending on whether or not the plurality of voters in the respective region favour the opposing position, the only options open to the other two parties are to either lose the election and find themselves without any regional support-base, or to appeal to the interests of the plurality of voters in the respective region. If no party appeals to the interests of the plurality of voters in the respective region, then the door is open for a new party to do so. In other words, when FPP is used in a country where the most salient issues are regionally-defined, regionally concentrated political parties are the rule, and parties with multiregional representation are the exception. Consequently, if Canada continues to use FPP, then in the long-term regional conflicts will continue to be a major source of instability.

In contrast, if DM2 is used, a party does not have to have policy positions favoured by the plurality of voters in a region, in order to gain a large seat share in that region. In other words, if DM2 were to be used in Canada, it is possible that parties with multiregional representation could become the rule.

Further Study

It has already been noted that the high values for the correlation coefficients was in part the result of the degrees of freedom of the small sample. This is probably not the only small-sample phenomenon in the results; it is probable that the swing ratios are also at least slightly off. The only way to decrease the standard error of the regression coefficient is of course to increase the size of the sample.

In order to increase the sample-size, the same methodology would have to be applied to the election results of another period in which the electoral boundaries were not changed. In addition, changes in the total number of constituencies, and historical realignments in party support and geographical distribution, would have to be taken into account. So, while more elections in the sample would increase our knowledge of the properties of DM2, the amount of research involved is beyond the scope of this study.

The Percentage of the Vote Won by Each Party in Each Election, and the Percentage of Seats Won by Each Party Using District Magnitudes of One, Two, Three, Six, and Province-Wide

Party	Year	DM1 Seats (%)	DM2 Seats (%)	DM3 Seats (%)	DM6 Seats (%)	Province-Wide Seats (%)	Votes (%)
Liberal	1953	64.5	56.4	54.2	49.6	50.0	49.0
Conservative	1953	19.2	27.7	28.4	31.7	29.6	31.0
CCF	1953	8.7	8.3	9.5	11.1	11.2	11.0
Social Credit	1953	5.7	5.3	6.4	5.6	5.8	5.0
Creditiste	1953	n/a	n/a	n/a	n/a	n/a	n/a
Independents	1953	1.9	2.3	1.5	2.0	3.5	4.0
Liberal	1957	39.6	48.9	42.8	42.6	42.9	41.0
Conservative	1957	42.3	36.4	40.5	37.6	39.4	39.0
CCF	1957	9.4	6.4	8.3	9.7	10.6	11.0
Social Credit	1957	7.2	6.1	6.1	7.4	6.7	7.0
Creditiste	1957	n/a	n/a	n/a	n/a	n/a	n/a
Independents	1957	1.9	2.3	2.3	2.7	0.4	2.0
Liberal	1962	37.7	43.6	37.5	37.3	36.7	37.0
Conservative	1962	43.8	40.5	41.3	38.1	37.8	37.0
N.D.P.	1962	7.2	6.4	10.2	13.1	13.1	14.0
Social Credit	1962	11.3	9.5	11.0	11.5	12.0	12.0
Creditiste	1962	n/a	n/a	n/a	n/a	n/a	n/a
Independents	1962	n/a	n/a	n/a	n/a	n/a	n/a
Liberal	1963	48.7	49.6	45.5	43.2	41.8	42.0
Conservative	1963	35.8	33.3	36.7	33.0	33.0	33.0
N.D.P.	1963	6.4	5.7	6.4	11.0	12.6	13.0
Social Credit	1963	9.1	11.4	11.4	12.9	12.6	12.0
Creditiste	1963	n/a	n/a	n/a	n/a	n/a	n/a
Independents	1963	n/a	n/a	n/a	n/a	n/a	n/a
Liberal	1965	49.4	46.2	44.7	39.8	40.6	40.0
Conservative	1965	36.6	34.1	33.7	32.2	32.2	32.0
N.D.P.	1965	7.9	11.4	14.0	17.8	17.6	18.0
Social Credit	1965	5.3	8.0	7.2	8.7	8.4	4.0
Creditiste	1965	3.4	6.1	4.9	0.0	0.0	5.0
Independents	1965	0.8	0.4	0.4	1.5	1.1	1.0

The Regional Breakdown of Results for the Liberals in the
West and Quebec, and For the Conservatives in Quebec

Table B-1: The Liberals in the West

Year	DM1 Seats (%)	DM2 Seats (%)	DM3 Seats (%)	DM6 Seats (%)	Votes (%)
1953	36.0	47.0	38.0	33.0	35.0
1957	11.0	31.0	25.0	28.0	27.0
1962	9.0	29.0	22.0	26.0	24.0
1963	14.0	29.0	28.0	31.0	29.0
1965	11.0	29.0	29.0	26.0	28.0

Table B-2: The Liberals in Quebec

Year	DM1 Seats (%)	DM2 Seats (%)	DM3 Seats (%)	DM6 Seats (%)	Votes (%)
1953	88.0	71.6	70.8	62.5	62.7
1957	82.7	64.9	62.5	59.7	60.3
1962	46.7	47.3	44.4	40.3	39.2
1963	62.7	56.8	50.0	45.8	45.3
1965	74.7	54.1	55.6	44.4	45.3

Table B-3: The Conservatives in Quebec

Year	DM1 Seats (%)	DM2 Seats (%)	DM3 Seats (%)	DM6 Seats (%)	Votes (%)
1953	5.0	20.0	25.0	31.0	28.0
1957	12.0	27.0	29.0	32.0	31.0
1962	19.0	30.0	29.0	31.0	30.0
1963	11.0	12.0	21.0	19.0	19.0
1965	11.0	18.0	21.0	22.0	21.0

APPENDIX C

PROPORTIONALITY AS A FUNCTION OF
DISTRICT MAGNITUDE

PROPORTIONALITY

100

DM-PROV

99 — DM6

98 — DM3

97

96 — DM2

95

94 — FPP

93

92

91

(%)

5.0   10.0   15.0   20.0

DISTRICT MAGNITUDE

Proportionality increases at a
decreasing rate as district magnitude
increases.   Proportionality approaches,
but never reaches, 100%

APPENDIX D

Regression Coefficients

Liberals

DM1	Seat Share = -43.6 + 2.2 Vote Share
	(.56) T= 3.9
DM2	Seat Share = 4.15 + 1.07 Vote Share
	(.08) T=12.9
DM3	Seat Share = -10.6 + 1.33 Vote Share
	(.17) T= 7.7
DM6	Seat Share = -0.47 + 1.03 Vote Share
	(.09) T=11.2
DM-Prov	Seat Share = -2.58 + 1.08 Vote Share
	(.11) T= 9.8

Conservatives

DM1	Seat Share = -41.2 + 2.23 Vote Share
	(1.02) T=2.184
DM2	Seat Share = -2.1 + 1.06 Vote Share
	(0.49) T=2.159
DM3	Seat Share = -11.0 + 1.37 Vote Share
	(0.40) T=3.444

* Note: Entries in parentheses are standard errors of b

reject null hypothesis if $t_{4,.05} > 2.132$

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1   Alan C. Cairns, "The Electoral System and the Party System
         in Canada, 1921-1965," Canadian Journal of Political
         Science, No. 1 (1968).

2   Alan C. Cairns, "The Strong Case For Modest Electoral
         Reform in Canada," A Paper Delivered to the Harvard
         University Seminar on Canadian-United States Relations,
         Sept. 25, 1979.

3   Cairns, "The Electoral," p. 55.

4   Edmond S. Morgan, "Government by Fiction: The Idea of
         Representation," The Yale Review, 72 (1983), p. 321.

5   Cairns, "The Electoral," p. 56.

6   Cairns, "The Strong Case," p. 8.

7   Howard A. Scarrow, Canada Votes, (New Orleans: Hanser
         Press, 1963).

8   Cairns, "The Electoral," pp. 56, 57.

9   Douglas W. Rae, The Political Consequences of Electoral
         Laws, (New Haven: Yale University Press, (1971), pp. 139,
         117-118.

10   Rae, p. 139.

11   Cairns, "The Electoral," p. 60.

12   Richard Johnston and Janet Ballantyne, "Geography and the
         Electoral System," Canadian Journal of Political Science,
         10 (1977), p. 861.   Edward R. Tufte states the same thing
         in more general terms when he argues that the more diffuse
         support is for a large party, the larger the swing ratio
         (swing ratio refers to the rate of translation of votes
         into seats) in "The Relation Between Seats and Votes in
         Two-Party Systems", in American Journal of Political
         Science Review, 67 (1973), p. 547.

13   Johnston and Ballantyne, Ibid, p. 862, define the term
         "wasted vote" in this way. Advocates of Proportional
         Representation also frequently use this notion of wasted
         vote.

14   Douglas Rae defines "fractionalization" as "the proportion
         of pairs of members in a system which contains persons who
         have voted for different parties in the last previous election"
         in; "A Note on the Fractionalization of Some European
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15   Markku Laasko and Rein Taagepera, "Effective Number of Parties: A Measure with Application to West Europe," <u>Comparative Political Studies</u>, 12 (1979), pp. 3-27.

16   Rein Taagepera, "The Effect of District Magnitude and Properties of Two-Seat Districts," in Arendt Lijphart and Bernard Grofman, eds., <u>Choosing an Electoral System: Issues and Alternatives</u>, (New York: Praeger, 1984), p. 97.

17   Taagepera, "The Effect of," p. 98.

18   Rein Taagepera and Bernard Grofman, "Rethinking Duverger's Law: Predicting the effective number of parties in plurality and P.R. systems," <u>European Journal of Political Research,</u> 13 (1985), pp. 341-352.

19   Johnston and Ballantyne, p. 858.

20   Maurice Duverger, <u>Political Parties</u>, (New York: John Wiley & Sons, 1963), p. 224.

21   Johnston and Ballantyne, "Geography," measure the geographical distribution of partisan support using a coefficient of variation of a party's vote across provinces, p. 860. Duff Spafford separates the distribution of votes into urban and rural categories in, "The Electoral System of Canada," <u>American Political Science Review</u>, 64 (1970), p. 168. Voting data could of course be classified according to various other alternative definitions of 'region'.

22   Donald E. Blake, "Canadian Census and Federal Election Data, 1908-1968." Univ. of B.C. data library.

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26   Cairns, "The Electoral," p. 57.

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