Condorcet Canada Initiative

Instant Round-Robin Voting

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Foreword

As a Liberal MP in Canada's 42nd parliament, it must be emphasized that the positions and views herein expressed are my own and do not necessarily represent the views or positions of the Liberal Party of Canada, its leadership, nor of the Liberal parliamentary caucus.

This paper proposes a voting system, called Condorcet voting, to be considered as a simple plug-in replacement for our first-past-the-post (FPTP) elections.

I started into this project some years ago looking for alternatives to British Columbia's current provincial system, considering the different options and the arguments for or against each, mindful as well of BC's failed referenda on BC-STV, and in the end I settled on this approach as the best way forward:

1. It can be readily implemented – with minor disruption, low cost, and major positive effect.

2. It is scrupulously unbiased and, unlike our current FPTP system, and regardless of the number of candidates, determines elections on a basis that most reasonable people regardless of political persuasion can readily accept.

3. It resolves the "democratic deficit" that so many, for lack of knowing something better, hope to address by means of proportional representation – but in a simpler, more straightforward way.

Though this venture began with a focus on BC elections, and some echoes of that focus remain (and it is still applicable to that context), it has since been redirected more specifically to Canadian federal elections.

Forward

(BLOG: The Way Forward, 2017-03-01)

I have been pursuing electoral reform for Canada for a number of years. So I was, of course, delighted when it became a plank in our 2015 election platform.

And I was, therefore, devastated by the Cabinet's decision not to proceed with it.

But, I get it.

A. Our Commitment

Our promise was to convene an all-party parliamentary committee to propose a solution for replacing first-past-the-post (FPTP) in time for the 2019 election.

But, though the committee worked long and hard, in the event, their recommendation was simply unattainable in the time remaining.

As a practical matter, we have at this point[1] no more than two years in which to complete such an undertaking. Solutions such as multiple representation (MR), and proportional representation (PR) as well, particularly as proposed by the committee, involve just too many moving parts, too much big change; change comes slowly in Ottawa, and two years is simply not long enough.

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[1] As at 2017-03-01

As I see it, seeing no path forward consistent with campaign commitments and time constraints, the Cabinet saw no option but own up to that reality.

B. Condorcet Voting

But this is my long-time issue, after all, and from this different perspective I see things quite differently. I see a different, but clear, path forward, and two years is plenty of time in which to achieve it. As long as electoral reform remains achievable, I remain committed to it.

The solution I propose is Condorcet voting. In a single voting round each voter casts a simple ballot from which a round-robin of head-to-head match-ups between candidates in each riding ensues, holistically considering all preferences from all ballots.

With Condorcet voting there is no vote-splitting and no need for strategic voting. Condorcet voting reliably determines the majority's true preference. It is scrupulously fair, with no systemic bias for any party, and every vote counts.

In short, Condorcet voting resolves many of the problems that drive so many to ask for MR or PR in the first place, yet it can be implemented as a straight-forward plug-and-play FPTP replacement.

C. Common Cause

There is still time to do this, but no time to waste. We must come together here if we want to achieve change.

I urge those who would really prefer a MR or PR solution to park those goals for a while, for I emphasize that there is simply no path to MR or PR for 2019.

In addition, for those who just want to continue the conversation, failing to acheive any reform at all will severely undercut our ability to revive the conversation another day.

You must decide whether you want to eliminate FPTP elections, at least as a first step, or whether you want to hold out only for MR or PR in one fell swoop. It's not going to happen. You can certainly stick to your guns, but it will just leave us all proudly waving our banners in brave futility through yet one more FPTP election after another.

Let us make common cause, now, around the elimination of FPTP. Let us build the broad consensus that we need, now, on this attainable goal, so that we can go back to the Cabinet and show them that there is, indeed, a way forward.

Let us win here, now, and save those bigger conversations for another day.

Executive Summary

In Canada we elect representatives to the House of Commons by first-past-the-post (FPTP) elections in each respective electoral district.

A. The Problem

FPTP works perfectly well for this when there are only two candidates *for a given position* (i.e.: for binary decisions), but when there are more – and in our elections there usually *are* more – it tends to skewed, unpersuasive victories to the candidate merely having first-preference support of the *largest minority*, not a definitive majority win.

Such minority victories detract from the perception of legitimacy and credibility of the decision.

They also diminish the winners' sense of accountability beyond their own narrow voter bases, and feed into voter cynicism, disillusionment, and over-all disengagement.
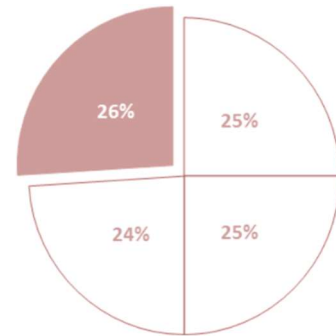
B. The Solutions

There then ensues a hue and cry for voting reform – to replace FPTP with, among other things, Proportional Representation (PR).

Many people, by default it seems, see proportional representation (in some unspecified form) as the only way to address the FPTP problem. While it's not a bad choice, necessarily, it's also not the only, nor necessarily the best, practical and fair solution.

There are other alternatives as well: some places, Australia, for instance, use a preferential-ballot evaluated using an approach called the Alternative Vote (AV), also known as Instant Runoff Voting (IRV).

IRV/AV is somewhat better than FPTP but nevertheless shares its worst flaws.

All is not lost, however, for there are still more ways of dealing with preferential ballots; much better ways, in my view, called Condorcet ("con-DOR-say") methods.

1. Condorcet Methods

Condorcet methods can be readily implemented with minor disruption, low cost, and major positive effect.

In (1) a single voting round (2) each voter casts a single, simple, ballot, from which (3) a round-robin one-to-one match-up of each candidate against each other candidate ensues,   holistically considering all preferences from all ballots.

Absent a preference cycle in the results, all Condorcet methods will determine a winner who most people would acknowledge as the legitimate, true, choice of the majority. Condorcet methods are scrupulously fair, robust, and reliable.

2. Condorcet Completion

 In those (arguably rare) cases where a preference cycle exists, so-called Condorcet "completion" methods break such cycles to achieve a linear ranking of the candidates. Of these, after due consideration, I propose an approach called Ranked-Pairs.

3. Condorcet/Ranked-Pairs

Condorcet/Ranked-Pairs voting is (1) easy for voters to understand and to do and (2) can be implemented as a direct replacement for any FPTP or AV/IRV system to (3) dramatically improve democratic responsiveness.

In the end, the candidate who beats every other candidate, in a "tournament" of one-on-one round-robin competitions, is the winner – and will be the candidate preferred by the majority of voters.

C. The Objective

The goal here, then, is to propose adoption of Condorcet voting for Canadian federal elections.

This is also consistent with a subsequent, or even concurrent pursuit of a Condorcet MMPR system by those who hold PR as the ultimate objective.

Condorcet Voting

A. The Problem at Hand

With first-past-the-post (FPTP) voting the candidate who gets the most votes – wins.

Sounds good, so far: it's simple, easy to explain and understand, and easy to carry-out. And, *when there are only two candidates who attract significant numbers of votes*, it works very well.

But as soon as we see a third, fourth, or even more, candidates, the system starts to break down – in the sense that we tend no longer to get a decision that reflects the will of the majority, but, rather, the largest minority of voters.

> *We could, for example, have one candidate who attracts, say, 26% of the vote, and another couple of them who might each get, say, 25%, and maybe round it all out with a fourth who gets 24%.The FPTP plurality winner here, the largest minority, would be the 26% candidate. Not much of a mandate, really, when 74% of the voters voted for someone else.*

It's a contrived example, but it makes the point. Real experiences with federal elections are typically not quite so extreme nor so closely clustered, but the problem remains.[2]

If we knew more about what the voters wanted in these cases we might find in the end that the given candidate really *is* the true choice of the majority – and be able to demonstrate this to everyone's satisfaction.

But without that additional information we just have a weak win that is criticized and disparaged by the majority who, all in all, feel cheated and disenfranchised.
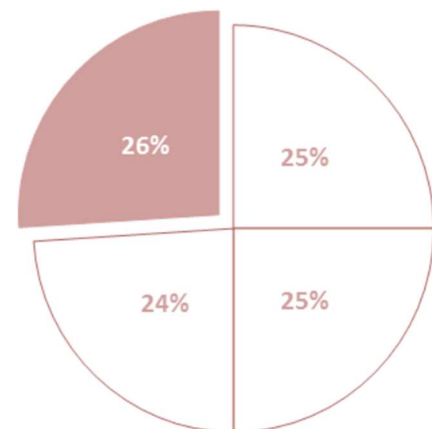
Illustration 1: FPTP Example

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2 Duverger's law, described later, is probably a factor in this. The propensity for voters to second-guess the outcome and move their votes to perceived front-runners gives these candidates a boost at the expense of the back-runners, which will tend to increase the spread.

What it comes down to is that FPTP is a "plurality" system (Single-Member Plurality (SMP)), not, strictly, a majority decision system. Sometimes we do get a clear FPTP majority win, regardless, and we're OK, but too often it means that the successful candidate wins on far too much less than that.

Such non-majority victories detract from the perception of legitimacy and credibility of the decision. They also diminish the winners' sense of accountability beyond their own narrow voter bases, and feed into voter cynicism, disillusionment, and over-all disengagement.

Eventually many people just don't bother to vote anymore. It's probably not the only reason, but it's a good part of it.

For the 2008 federal election voter turnout was 58.8%, an all time low. (Up again in 2015 to 69.6%, however, due to a high level of dissatisfaction among voters – leading to increased engagement.)

At these levels of participation, even a solid majority win is the voice of only a minority of eligible voters; a mere plurality, then, but a scant sliver.

And, it gets worse: in our Westminster-style system, a party that wins more seats than any other, even if this is only a plurality of seats, will typically form government (though, in a plurality situation we could see a coalition arise).

This compounds the problems I've already described, for we also have the real possibility of a large proportion of the seats staking claim on the right to govern being themselves but weak, minority, victories.

Election		Electoral Districts			Strongest Win		Weakest Win		Gov. Seats		
Year	Turnout	#	Pluralities		Votes	% of Eligible	Votes	% of Eligible	#	Pluralities	
2006	64.7%	308	116	37.6%	62.6%	40.5%	32.7%	21.2%	124	67	54.0%
2008	58.8%	308	120	38.9%	82.0%	48.2%	29.2%	17.2%	143	61	42.6%
2011	61.1%	308	154	50.0%	84.0%	51.3%	31.0%	18.9%	166	50	30.1%
2015	68.5%	338	205	60.6%	81.8%	56.0%	28.7%	19.6%	184	97	38.6%

Illustration 2: FPTP Performance

This means that a government can be established on a very weak democratic foundation indeed, seeing themselves accountable to at best a small minority, disconnected from, and functionally deaf to the voices of the public at large.

"It is believed that on average there will only be two viable candidates for any given election under the plurality system. This is because rather than picking the candidate who is their sincere favorite, most voters are likely to instead vote for the one of the perceived front-runners whom they prefer, since this is the best chance they have of their vote making a positive difference.

"This tendency is known as Duverger's law,[3] and is thought to be the primary cause of two-party systems where they exist.

"Given the existence of two major party candidates who dominate an election field together, the entrance of a new candidate is most likely to split the vote of the major party candidate whom they have the most in common with, thus giving the other candidate an advantage, and going directly against the wills of would-be supporters of the emergent candidate.

"This 'spoiler effect' is an extremely strong deterrent against new parties and candidates entering a race where a close competition has already been established between two major parties.

"This is a fatal problem for the competitiveness of political races and the accountability of politicians. Standards are very low for political candidates because they only need to be preferred over a single other viable candidate, rather than over a large field of viable candidates.

"This dynamic also encourages negative campaigning, and severely limits the range of political discourse..."[4]

There are other significant problems, too. One of further particular note is that "similar" candidates will tend to appeal to the same voter base. This tends to "split" the "similar" vote, diminishing the prospects for all "similar" candidates.

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3   Duverger's Law; (additional paragraph breaks added by me)
    http://www.princeton.edu/~achaney/tmve/wiki100k/docs/Duverger_s_law.html
4   Plurality; A Survey of Basic Voting Methods 2013-04-03;
    http://www.econ.ucsb.edu/~armytage/voting/survey.htm

FPTP is easy. But "easy" isn't enough for a robust and responsive democracy, and nor does it help the problem of public cynicism, disillusionment, and steady political disengagement.

There are many alternatives to FPTP elections. They all have their own virtues and their own flaws, and there is no system that is perfect in all cases and for all purposes. But we don't need universal perfection; we just need better *enough*.

We need a solution that:

- Is suitable for open, public, general elections and by-elections spanning large areas and involving large numbers of voters;
- Can be phased-in with minimal disruption to existing electoral processes at minimal additional cost;
- Is transparent, and easy to explain and to educate the public in its use;
- Renders decisions in a timely way; and
- Reliably renders decisions that a reasonable person would see as fair and responsive to the will of the majority.

On balance, particularly in respect of this crucial last point, the solution I propose is the Condorcet/Ranked-Pairs method to elect, as now, single members to existing electoral districts.

I asked for just "better *enough*" – Condorcet voting delivers on that, certainly, but much more.

The plurality outcomes noted would not necessarily have changed with this proposed new approach, though some likely would, but they would in any case no longer be merely plurality wins, but rather they would be seen as the demonstrated will of the majority, and as incontrovertible as any election win can be – particularly if along this path we are able to inspire greater participation.

B. *The Will of the Majority*

When FPTP delivers a majority winner it does, as said, fulfill the goal of identifying the will of the majority. But when it doesn't, what, then, is their will?

The idea behind a preferential ballot is that if first-preference choices alone don't sufficiently tell the tale we should consider the matter further in terms of voters' additional preferences, and, in so doing, we can improve upon the determination of what, indeed, is their collective will.

© D.J. McGee / Shutterstock

For most people their first choice is not necessarily their only choice, the sum total of their will; if their first choice is not shared with enough other people, they might still be willing and able to find common ground elsewhere.

We need to capture such alternatives so that we can drill down to a better – majority – decision, and so we come to the preferential ballot.

Yet there are many ways to interpret such preferences, and these do, sometimes, yield different results – meaning that there is room for legitimate debate about what really *is* the will of the majority in such cases.

Nevertheless, with *any* of these systems, once we agree upon which to use, and when, and as long as we apply it honestly, consistently, and transparently, we will get a decision that is far more acceptable to the majority than if we leave it simply at the FPTP plurality result.

C. *Condorcet Method*

In particular, among the many preferential methods, there are those that determine a so-called Condorcet ("con-DOR-say") winner, which many propose, as I do here, delivers an optimum democratic decision:

"A Condorcet method is any election method that elects the candidate that would win by majority rule in all pairings against the other candidates whenever one of the candidates has that property. A candidate with that property is called a Condorcet winner (named for the 18th-century French mathematician and philosopher Marie Jean Antoine Nicolas Caritat, the Marquis de Condorcet,[5] who championed such outcomes).

"A Condorcet winner doesn't always exist because majority preferences can be like rock/paper/scissors: for each candidate there can be another that is preferred by some majority (this is known as Condorcet paradox)...

Illustration 3: Nicolas Caritat, 1743-94, Marquis de Condorcet

"Ramon Llull[6] devised the earliest known Condorcet method in 1299. His method did not have voters express orders of preference; instead it had a round of voting for each of the possible pairings of candidates... The winner was the alternative that won the most pairings." [7]

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5   Nicolas de Caritat, Marquis de Condorcet; http://en.wikipedia.org/wiki/Marquis_de_Condorcet

6   "Ramon Llull (1232–1315), who with the 2001 discovery of his lost manuscripts... was given credit for discovering the Borda count and Condorcet criterion (Llull winner) in the 13th century." http://en.wikipedia.org/wiki/Condorcet_method

7   Condorcet Method; 2013-03-16; http://en.wikipedia.org/wiki/Condorcet_method

If we imagine conducting elections between each candidate and each other candidate, pair by pair, the Condorcet winner will be the candidate (if any) who beats each other candidate in such head-to-head elections.

It's a "round-robin" competition.[8] Every candidate competes one on one against each other candidate to determine the outcome. This is also, perhaps more descriptively, called Instant Round-Robin Voting (IRRV).

We don't actually have to conduct separate elections for each pairwise combination of candidates, of course; we can do this simply by getting each voter to number the candidates on a single ballot according to his or her own preferences.

The noted paradox is that, while any individual voter expressing his or her own preferences (rock, paper, scissors) cannot create a preference cycle (rock, paper, scissors, rock...), different people often have different preferences (paper, scissors, rock), so that such cycles can arise once we consider all the ballots together.

Nevertheless, the proposition remains that for general elections and by-elections the candidate, if any, who wins against every other individual candidate, one on one, will be the choice most acceptable to the majority.

If a preference cycle[9] in the results does happen this assertion becomes more problematic; for a preference cycle can mean that there isn't any candidate who meets this requirement, and then how we break the cycle will affect the outcome.

When we do have a Condorcet winner and yet have a preference cycle involving other candidates, how we might break the cycle only affects the relative rankings of those other candidates, not the overall winner.

The various Condorcet methods differ mainly in how they resolve these situations, even including falling back to another system such as Instant-Runoff Voting (IRV), or even FPTP again to resolve them. None of these is as good as Ranked-Pairs, in my view, but certainly none is worse than starting and ending with FPTP alone.

As long as the solution we choose is well defined and is seen to a reasonable person as fair we can pick any of these preference-cycle approaches, and still improve the democratic responsiveness of the vote well beyond the limits of FPTP alone.

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8   There is a strong tendency, deriving from a long heritage of FPTP elections, to try and map the results into a FPTP situation, and wanting to express the win in terms of a percentage of the "popular vote."

     But it's a tournament, really – we accept tournament winners, such as, say, the Stanley Cup winner, in terms of playoff games won, not in terms of the all-told percentage of score from the individual games.

9   aka. majority-rule cycle.

"We advocate a voting system known as the Condorcet method for elections between more than two candidates... This method allows voters to submit a list of their top choices, in order, rather than just a single choice.

"... The Condorcet method selects the candidate who would beat any other candidate if they were the only two in the race. This method is the only system that can allow multiple similar candidates in the same race without hurting or helping each other's chances.

"However, the main concern about the Condorcet method is that it may not produce an undisputed winner.

"When it does, it's hands-down the best voting system to use. When it doesn't, a tie-breaking protocol is used, which has no guarantees to satisfy everyone's sense of justice.

"The main reason for our data collection is to see whether the Condorcet method produces an undisputed winner in real life.

"This data confirms our hypothesis.

"In all of the different samples that we polled, the Condorcet method not only produced an undisputed winner but usually an entire undisputed order of all the candidates..." [10]

It is worth noting that for a FPTP election that yields a majority winner, this winner is the presumptive Condorcet winner as well, irrespective that there's no opportunity to express other preferences.

However, as noted, FPTP results can be expected to be skewed as people second-guess the outcome and vote according to whom they think has the best chance to win, as opposed to voting their sincere preferences, and remembering that the system itself discourages additional competition.

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10 Voting Research;   Paul Cuff – Sanjeev Kulkarni – Mark Wang – John Sturm; 2012-04-15
     http://www.princeton.edu/~cuff/voting/ (additional paragraph breaks added by me)

D. Condorcet/Ranked-Pairs Method

As said, the particular Condorcet method proposed to replace FPTP is "Ranked-Pairs"[11]:

"Ranked-Pairs (RP) or the Tideman method is a voting system developed in 1987 by Nicolaus Tideman[12] that selects a single winner using votes that express preferences. RP can also be used to create a sorted list of winners.

"If there is a candidate who is preferred over the other candidates, when compared in turn with each of the others, RP guarantees that candidate will win. Because of this property, RP is, by definition, a Condorcet method...."[13]

This can be considered a Condorcet "completion" method; it "completes" the fundamental Condorcet concept by resolving the noted Condorcet paradox, or preference-cycle, situations, should they arise.
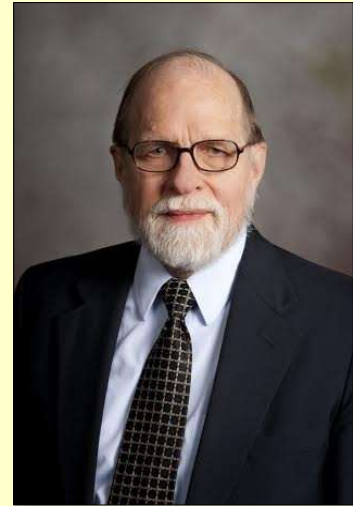
Illustration 4: Dr. Nicolaus Tideman, Department of Economics, Virginia Tech

In addition, while the immediate objective is to replace single-member FPTP election systems, there are meaningful applications for multiple- and proportional-representation systems here, as well:

1. For some MR systems, such as Multiple-Member Plurality (MMP), or STV, for example, a straightforward replacement by Condorcet is available. Condorcet/Ranked-Pairs determines an ordered list of candidates according to voter-preferences from which the "*n*" most-preferred candidates can be selected.

2. Some PR systems, such as Mixed-Member Proportional Representation (MMPR), use FPTP to elect single members in electoral districts then

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11 NOT Ranked Ballots.

12 Dr. Nicolaus Tideman, Dept. of Economics, Virginia Tech:
     https://sites.google.com/site/nicolaustideman/

13 Ranked-Pairs; 2013-03-16; http://en.wikipedia.org/wiki/Ranked_pairs

allocate additional seats on a party-vote basis. By-elections to fill vacancies in multi-member districts are often done by FPTP, as well.

These FPTP elections, often involving more than two candidates, constitute serious flaws in these systems. These flaws can be easily corrected, however, by replacing the FPTP elements with Condorcet voting.

Condorcet Example

A. The Vote

We'll wade through the details later, but first let's get to know the method better by considering an example.

A typical approach to a preferential ballot is for the voter to write-in preference numbers for one or more candidates. This is simple and, in fact, minimizes differences in form from current FPTP ballots.

With Condorcet voting, however, with a large number of candidates the number of candidate pairs can become awkward for manual counting, so I propose a ballot form that corresponds more with an optical/marksense-reader approach, yet can be readily manually counted as well, as circumstances warrant.

This ballot form also offers a more graphic picture of the voter's relative preferences, which makes it easier and faster to count manually, and makes easier transitions between manual and, say, optical/marksense-reader approaches.

A voter can mark candidates as being preferred more, less, or the same as other candidates, or leave them unmarked; unmarked candidates are interpreted as if marked with the ballot's lowest-preference option.

Such a ballot might look something like this:

	Most	*← Preferred →*		*Least*
	1	**2**	**3**	**4**
Alpha	■	[]	[]	[]
Beta	[]	[]	■	[]
Gamma	[]	■	[]	[]
Delta	[]	■	[]	[]

Illustration 5: Example Ballot

- *Alpha* is this voter's most-preferred choice.

- This voter is indifferent between *Gamma* and *Delta*, but prefers them each more than *Beta* and less than *Alpha*.

- *Beta* is this voter's least-preferred choice (need not be marked at all).

These are tallied, one by one, in terms of the relative preferences between each pairwise combination of candidates on each ballot.

B. The Count

The above example ballot would be tallied like this:

Electoral District: Coquitlam – Port Coquitlam			Poll: 123	
Candidate Pairs	**B more-preferred than A**	**No-Preference**	**A more-preferred than B**	**Total**
A: *Alpha* vs B: *Beta*			|	|
A: *Alpha* vs B: *Gamma*			|	|
A: *Alpha* vs B: *Delta*			|	|
A: *Beta* vs B: *Gamma*	|			|
A: *Beta* vs B: *Delta*	|			|
A: *Gamma* vs B: *Delta*		|		|

Illustration 6: Example-Ballot Tally

We proceed in this manner through all the ballots cast. The result upon tallying a whole poll might look like this:

Electoral District: Coquitlam – Port Coquitlam		Poll: 123		
Candidate Pairs	**B more-preferred than A**	**No-Preference**	**A more-preferred than B**	**Total**
A: *Alpha* vs B: *Beta*	ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ‖ (27)	ℋℋ ǀ (6)	ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ‖ (67)	100
A: *Alpha* vs B: *Gamma*	ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ⦀ (48)	(0)	ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ‖ (52)	100
A: *Alpha* vs B: *Delta*	ℋℋ ℋℋ ℋℋ ℋℋ ‖ (22)	ℋℋ ⦀ (8)	ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ (70)	100
A: *Beta* vs B: *Gamma*	ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ (60)	ǀ (1)	ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ⦀⦀ (39)	100
A: *Beta* vs B: *Delta*	ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ (80)	‖ (2)	ℋℋ ℋℋ ℋℋ ⦀ (18)	100
A: *Gamma* vs B: *Delta*	ℋℋ ℋℋ ℋℋ ℋℋ ‖ (22)	(0)	ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ℋℋ ⦀ (78)	100

Illustration 7: Example-Poll Tally

Once all batches of ballots for a given poll are counted they'll be summarized in a single report for the poll and reported to the Returning Officer, who will collect all such reports into a final tally for the district as a whole.

Here, we will take the above example-poll result as the election results for our example electoral district as a whole:

Electoral District: Coquitlam – Port Coquitlam			Poll: All	
Candidate Pairs	**B more-preferred than A**	**No-Preference**	**A more-preferred than B**	**Total**
A: *Alpha* vs B: *Beta*	27	6	<u>67</u>	100
A: *Alpha* vs B: *Gamma*	48	0	<u>52</u>	100
A: *Alpha* vs B: *Delta*	22	8	<u>70</u>	100
A: *Beta* vs B: *Gamma*	<u>60</u>	1	39	100
A: *Beta* vs B: *Delta*	<u>80</u>	2	18	100
A: *Gamma* vs B: *Delta*	22	0	<u>78</u>	100

Illustration 8: Example Electoral-District Count

The candidate who, for the district as a whole, gets the most votes in each pair is the "majority winner" – of the given pair.

(The majority winner for each pairwise election in this case is shown here <u>underlined</u>. Note, as a process crosscheck, that the counts for each row must total to the number of accepted ballots involved in the count.)

C. The Winner

(a) Condorcet Winner (by Inspection)

We can see immediately that in this example *Alpha* wins every pairing in which he or she occurs; Candidate *Alpha* beats every other candidate head-to-head and is the overall winner, the *Condorcet winner*, in fact, by definition.

We can also see that Candidate *Beta* loses to every other candidate, head-to-head, and is the *Condorcet loser*, in fact, by similar definition.

(b)   Candidate Ranking (by Ranked-Pairs)

In practice we will use the Condorcet/Ranked-Pairs method right from the start because it will identify a winner, regardless (who will be the Condorcet winner, if such exists), as well as establishing a complete ranking among all the candidates.

For convenience, we re-express the candidates in each pair, showing the majority-candidate first, in the form:

[majority-candidate] → *[minority-candidate]* – if there is a winner of the pair; or

[majority-candidate] ↔ *[minority-candidate]* – if the pair is tied (in this case the distinction between majority- vs minority-candidate is irrelevant).

1.

Ranked-Pairs		**Majority Vote**	**Minority Vote**
Pair Rank	**Majority Candidate**	**Minority Candidate**		
1	*Delta* → *Beta*	*80+2 = 82*	*18+2 = 20*
2	*Gamma* → *Delta*	*78+0 = 78*	*22+0 = 22*
3	*Alpha* → *Delta*	*70+8 = 78*	*22+8 = 30*
4	*Alpha* → *Beta*	*67+6 = 73*	*27+6 = 33*
5	*Gamma* → *Beta*	*60+1 = 61*	*39+1 = 40*
6	*Alpha* → *Gamma*	*52+0 = 52*	*48+0 = 48*

Illustration 9: Example Electoral District Pair-Ranking

- Sort on descending strength of preference: *majority-vote* (descending)*, minority-vote* (ascending).

- Note that the *majority-vote + minority-vote* value doesn't necessarily equal the number of accepted ballots.

- *Alpha* beats *every* other candidate; as observed earlier, he or she is the Condorcet winner.

2. Starting at the first pair, as sorted ("ranked"), we then accrue the relationships defined by each pair, skipping any pair that conflicts with previous (stronger-preference) "affirmed" pairs, and otherwise affirming them: *the rationale being that a stronger preference should prevail over a weaker preference in any case where we can't keep them both.*

Ranked-Pairs		Affirm	Accrued Result
Majority Candidate	**Minority Candidate**		
Delta → 82	Beta 20	✔	Delta → Beta
Gamma → 78	Delta 22	✔	Gamma → Delta → Beta
Alpha → 78	Delta 30	✔	Gamma → Delta → Beta AND Alpha → Delta → Beta
Alpha → 73	Beta 33	✔	Gamma → Delta → Beta AND Alpha → Delta → Beta
Gamma → 61	Beta 40	✔	Gamma → Delta → Beta AND Alpha → Delta → Beta
Alpha → 52	Gamma 48	✔	Alpha → Gamma → Delta → Beta

Illustration 10: Example Electoral-District Candidate Ranking

There were no preference cycles in this example, so all of the pairs are affirmed. (A preference cycle cannot occur until at least the third pair, so the first two pairs are always affirmed.)

3. We can also do this analysis graphically, where:

   (a) Each candidate is represented by a node in a directed graph;

   (b) Each pairwise relationship is depicted by an arrow pointing *from* its majority candidate *to* its minority candidate; (If it is a tie the arrow goes both ways.)

   (c) We iterate in-order through the ranked-pairs (i.e.: from strongest- to weakest-preference):

      i.   adding arrows to recognize the relationship indicated by each pair; except that

      ii. if the arrow would create a cycle (i.e.: a "contradiction") we omit it: *a stronger preference should prevail over a weaker preference in any case where we can't keep them both*.

   (d) Finally, any node that has no arrows directed *to* it: [14]

      i.   represents *a* most-preferred candidate;

      ii. if there is only one such node it uniquely identifies *the* most-preferred (winning) candidate, and otherwise we have a tie.
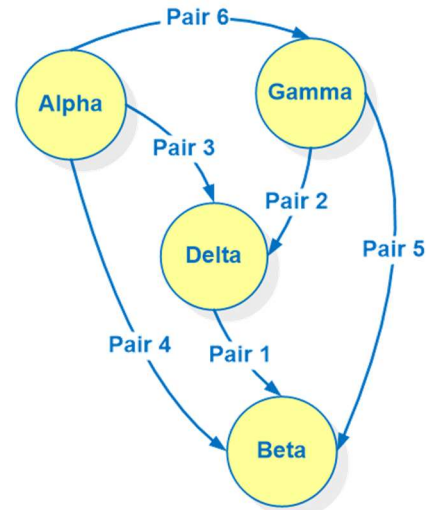
Illustration 11: Example Graphical Analysis
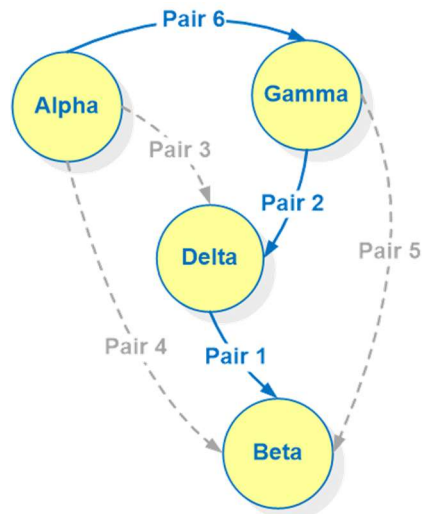
Illustration 12: Example Redundant Paths

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[14] Redundant paths can be removed for clarity. A direct path between two given nodes is redundant if and only if the given "to"-node can be reached from the given "from"-node along a *longer* path according to which the same "from" vs. "to" relationship between the given two nodes exists.)

4. By either technique the final result is the same:

    Alpha → Gamma → Delta → Beta

... giving the following final candidate ranking:

    Alpha (most preferred – no arrows "to")

    Gamma

    Delta

    Beta (least preferred – no arrows "from")
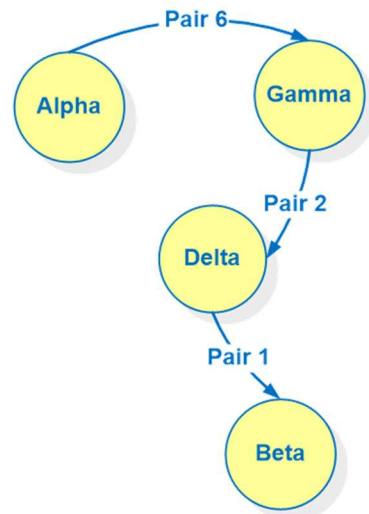
Illustration 13: Example Final Ranking

D. Preference-Cycle Example

When there is a Condorcet winner, every Condorcet method is as good as every other for identifying this winner. It is in those cases where there is no Condorcet winner that the various Condorcet methods differ, which is mainly in how they break preference cycles.[15]

Let us imagine, for example, that we have three candidates: *X*, *Y*, *Z*. With three candidates we will get three distinct pairings: *(X, Y)*, *(X, Z)*, and *(Y, Z)*.

Let us assume we have an election in which we discover that:

1. *X* is more preferred than *Y*: $X \rightarrow Y$;
2. *Y* is more preferred than *Z*: $Y \rightarrow Z$; and
3. *Z* is more preferred than *X*: $Z \rightarrow X$.

Here, there is no candidate who wins every pairwise election so there is no Condorcet winner; more particularly, we have a preference cycle, a *rock-paper-scissor*s situation.

Different Condorcet methods do different things at this point.
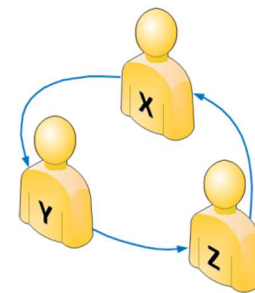
Illustration 14:
Preference Cycle

With the Condorcet/Ranked-Pairs method we look at the magnitude of the preferences:

1. If, say, 60% prefer X, vs 40% who prefer Y: we have a *strong* preference of 60% vs 40% for X more-preferred-than Y*;*

2. If, say, 90% prefer Y, vs 10% who prefer Z: we have a *very strong* preference of 90% vs 10% for Y more-preferred-than X; and

3. If, say, 51% prefer Z, vs 49% who prefer X: we have a *weak* preference of 51% vs 49% for Z more-preferred-than X.
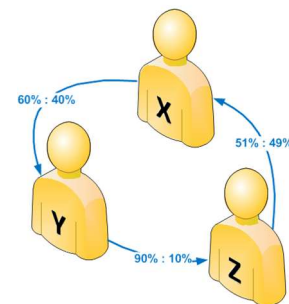
Illustration 15:
Preference Strengths

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15 aka. Majority-rule cycles.

We see that some preferences can be seen as comparatively strong, and others weak.

The Condorcet/Ranked-Pairs method "ranks" the pairs according to their strengths of preference, and then considers these pairs, one by one, from strongest preference to weakest.

If we get to a preference that conflicts-with a previous (stronger) preference (i.e.: creates a preference cycle) we omit it: *the rationale being that a stronger preference should prevail over a weaker preference in any case where we can't keep them both.*
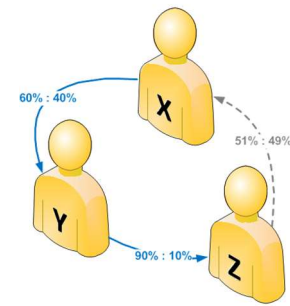
Illustration 16: Conflicts Resolved

This gives us a final ranking among the candidates themselves with no preference cycle remaining:

- *X → Y → Z;* and
- *X* is the Ranked-Pairs winner.

E. *Practical Features*

From a practical standpoint in terms of conducting an election:

1. Voting happens only once; no "multiple rounds" of voting.

    (a) It is easy to understand and to do, and to educate the voters how to do it.

    (b) Each voter gets a single ballot, as now, and fills-in the space in the appropriate preference column for each candidate, which effectively numbers the candidates from first preference onward.

2. We keep the same electoral districts, and we continue to elect only one person per electoral district.

    (a) This is neither a multi-member nor a proportional-representation approach. (Though it could replace the FPTP elements of a Mixed-Member Proportional Representation (MMPR) system, et al.)

    (b) From the perspective of both the voter and the electoral system as a whole, change and adaptation is minimal.

    (c) The winner reflects the true majority will.

3. Counting happens only once at each poll or polling station; no multiple rounds of tallying the vote nor of reallocating of ballots as candidates are "eliminated," as would occur with IRV, for instance – with Ranked-Pairs we do NOT eliminate candidates, but apply all preferences holistically.

4. Depending on the number of candidates (see "Condorcet Details" below):

   (a) the tally can be done manually; it is more labour intensive than FPTP, and to count a poll on election night will take longer.

   (b) With more candidates we would need to count by means of an optical reader, or some other computerized means, but such a count would be at least as fast, if not faster, than at present.

5. The count for each poll is communicated to the Returning Officer on election night to be aggregated with counts from other polls, and, once all polls have reported, the Returning Officer determines the ranking of the candidates, and thus the winner.

Condorcet Details

A. The Ballot

The proposed form of the ballot is as shown here (Illustration 17), and discussed in the above example:

	Most	← Preferred →		Least
	1	**2**	**3**	**4**
Alpha	[]	[]	[]	[]
Beta	[]	[]	[]	[]
Gamma	[]	[]	[]	[]
Delta	[]	[]	[]	[]

Illustration 17 : Pro-Forma Ballot

1. Such a ballot is compatible with an optical/marksense-reader approach, and can be adjusted as needed to accommodate particular optical/marksense-reader technology as might be employed, yet can be manually counted as well, as circumstances warrant.

2. For all such ballots the candidates will be ordered identically but in an order randomly determined by the Returning Officer.

    It has been observed in Australian elections (where voting is compulsory, and all candidates on the ballot must be marked) that some voters just number candidates from first to last as they appear on the ballot without necessarily expressing their true preferences. This is called "Donkey Voting." [16]

    This could be due to them not being familiar with all the candidates, though under Australia`s rules they have to rank them all anyway; it could also be due in part to being compelled to vote, and perhaps such voters have no opinion about all the candidates.

    Listing the candidates randomly instead of alphabetically, minimizes systemic benefits to candidates who sort earlier alphabetically, as would be the case with an alphabetic sort. (It also potentially affects pair-ranking in limited circumstances, as will be seen later.)

    (This would argue as well for randomizing the ballot order per poll, or even per ballot. For a manual process this would be unmanageable, but if desperately desired it could be supported for an optical-reader count.)

    In our case, where voting is non-compulsory and where, as proposed here, not all candidates need to be marked, it seems unlikely that anyone who

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16 Donkey Vote; 2013-03-17; http://en.wikipedia.org/wiki/Donkey_vote

"bothers" to vote would then not make an effort to vote his or her true preferences, such that donkey voting should be unlikely.

3. Instead of marking only one candidate (with an *X* or a tick-mark, as now), any number of candidates can be marked by filling-in the appropriate square in the column representing the voter's preference (no more than one square per candidate).

   These will be interpreted as the candidates being marked with the ordinal preference number associated with the given preference column.

   (For non-optical-reader situations we could accept an X or a tick mark instead of or as well as a fill-in.)

4. All candidates need not be marked. Unmarked candidates will be regarded as if marked with the ballot's lowest-preference option.

5. A candidate with a lower-numbered preference than another candidate means that the lower-numbered candidate is the voter's more-preferred choice between the two candidates.

6. Candidates can have the same preference number as other candidates, indicating that a voter has no preference between or among them.

B. The Count

Once the polls close on election night the ballot boxes are opened and the count ensues.

For manual counting, tally sheets will be pre-printed showing all the candidate pairs and distributed to each poll. Such a form might look like this[17]:

Electoral District:			Poll:	
Candidate Pairs	**B more-preferred than A**	**No-Preference**	**A more-preferred than B**	**Total**
A: *Alpha* vs B: *Beta*				
A: *Alpha* vs B: *Gamma*				
A: *Alpha* vs B: *Delta*				
A: *Beta* vs B: *Gamma*				
A: *Beta* vs B: *Delta*				
A: *Gamma* vs B: *Delta*				

Illustration 18: Example Tally-Form

Such a form will be used to tally batches of ballots for each poll, to accrue totals for the poll, and in the Electoral District office, for recording the total results for the district itself.

When counting, the deputy returning officer examines each ballot in turn, and, for each candidate pair on the tally sheet, tallies the preferences:

1. If both candidate *A* and candidate *B* are unmarked, or where both are marked the same, enters a tally-mark in the "No Preference" column; otherwise

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17 The columns on this form are organized with "B more-preferred-than A" on the left, and "No-Preference in the middle in order to facilitate a manual count.

2. For each candidate *A,* who is marked with a lower number than a given candidate *B,* or where *B* is unmarked, enters a tally mark in the "A more-preferred than B" column; otherwise

3. For each candidate *A,* who is marked with a higher number than a given candidate *B,* or where *A* is unmarked enters a tally mark in the "B more-preferred than A" column;

Note that:

1. Each pair gets exactly one tally mark for each ballot.

2. The total number of tally marks in the preference/no-preference columns for each row should equal the number of accepted ballots tallied; this gives a cross-reference to help identify discrepancies in the count.

3. To facilitate the count the pairs are listed based on ballot order so that in comparing *A* vs. *B* only those candidates following the given candidate *A* on the ballot need be examined.

4. More than one tally sheet can be used, at the discretion of the deputy returning officer, who might select batches of say, twenty, or fifty, or whatever number of ballots, and group them, as well as their respective tally sheets, and then do another similar batch, until done.

   (a) Batch tally sheets mean that errors occurring in the count can conceivably be identified in terms of a given batch, and then only that particular set of ballots need be recounted, rather than the entire poll.

   (b) Given that with many candidates there will be a great many pairs and a greater likelihood of error, batches would be a recommended best practice for a manual process.

   (c) In the event that multiple tally sheets are used in this way the deputy returning officer and assistant will add the counts from each batch tally sheet into a combined result for the poll.

5. In the event that an optical reader is used, as each ballot is passed through the reader it would be tallied and recorded according to the algorithm noted above for the manual process. The output of this, once the polls close, would be a report similar to the tally form noted above.

   (a) Counting by optical reader will be fast, and though a reader per poll could be used, it is fast enough that one installation at each polling station could be shared among all the polls at the given polling station.

6. Regardless of whether counted as a manual process, or using an optical reader, the count for the given poll is then communicated to the Returning Officer, where the action then flows.

   (a) Instead of a single value per candidate, as now, the report will be three values ("B more preferred than A", "A more preferred than B," and "No-Preference") – for each pair.

   (b) The Returning Officer will then combine the given poll's counts with those from all the other polls to accrue the counts for the electoral district as whole.

7. Note that only one counting step is required; once the data are communicated to the Returning Officer and the poll secured, it's done.

C. The Winner

Once the count for the district is complete, we sort (rank) the pairs according to the counts, and then determine the overall results.

1. Definitions

1. In each pair we consider that if the number of ballots in which a given candidate is more preferred is greater than the number of ballots in which the other candidate is more preferred, then:

   (a) The given candidate is the "majority candidate" and the other candidate is the "minority candidate" of the pair;

   (b) If these values are equal then either candidate can arbitrarily be considered the majority candidate, and the other the minority candidate.

2. The number of ballots in which:

   (a) The majority candidate is more-preferred than the minority candidate, plus the number of ballots indicating no-preference, is the "majority vote" for the given pair;

   (b) The minority candidate is more-preferred than the majority candidate, plus the number of ballots indicating no-preference, is the "minority vote" for the given pair.

3. "No-Preference" values are irrelevant when determining the winner of a given pair, but are significant when sorting the pairs.

4. A no-preference value for a pair means that some voters don't prefer one candidate over the other in that same pair.

5. The sum of the more-preferred-than values for each candidate of the pair, plus the no-preference value for the pair, must equal the number of accepted ballots.

   This is not the case for the sum of the majority vote plus the minority vote values (unless the no-preference value is zero).

2. Sorting Criteria

The pairs are ranked, or sorted, as follows:

1. If the majority vote for a given pair is greater than the majority vote for another pair the given pair shall precede the other (majority vote, descending);

2. If the majority vote for a given pair is equal to the majority vote for another pair:

   (a) If the minority votes of the given pairs are equal then they retain the same relative order as they have on the tally sheet (which derives from the random order on the ballot); and otherwise

   (b) The pair for which the minority vote is less than the other pair shall precede the other pair (minority vote, ascending);

   This sorts the pairs by descending strength of preference, or, more specifically: firstly by strongest win (majority vote, descending), secondly by weakest loss (minority vote, ascending), and thirdly by tally-sheet order.

3. The sort on tally-sheet order is a key reason for randomizing the order on the ballot, and is somewhat arbitrary. It should be noted, however, that this is of consequence *only* if there is no Condorcet winner, and if there is no Condorcet winner there is *already* an inherent degree of arbitrariness, however well justified, in choosing *any* particular approach to breaking preference-cycles; this is not materially worse than that already inherent.

   It is also extremely unlikely: if an electoral district has 80,000 registered voters; if we get a 60% turnout we would have roughly 48,000 ballots. For this particular scenario to occur we need that at least two different pairings of candidates get, out of our assumed 48,000 ballots, exactly the same number of majority votes, and exactly the same number of minority votes.

(And, in this unlikely event, whether this tally-order sort affects the outcome will depend on (the arguably rarer case of) whether it makes a difference in whether or not one or both of the affected pairs is affirmed.)

3. Candidate Ranking

Once the pairs are ranked we evaluate each pair in turn to rank the individual candidates themselves with respect to the other candidates:

1. Each pair establishes a relationship between its two candidates in which one candidate is more preferred than the other, or they are preferred the same (tied).

2. For a given pair consisting of candidate X and candidate Y:

   (a) If candidate X is the majority candidate (and is not tied) then we consider that X is more preferred than Y, or: $X \rightarrow Y$; this "more preferred" relation is transitive, meaning that if $X \rightarrow Y$, and $Y \rightarrow Z$ then $X \rightarrow Z$;

   (b) If the pair are tied ("preferred the same as") then $X \leftrightarrow Y$. This relation is transitive, meaning that if $X \leftrightarrow Y$, and $Y \leftrightarrow Z$ then $X \leftrightarrow Z$. This relation is also commutative, meaning that if $X \leftrightarrow Y$ then $Y \leftrightarrow X$.

3. As we evaluate each pair we consider whether the relation it represents conflicts with or else augments the information we've got from previous (stronger-preference) affirmed pairs. If it conflicts we omit it from further consideration, and otherwise we "affirm" it.

   Note that "more preferred than" conflicts with "preferred the same as," and vise versa: $X \rightarrow Y$, and $X \leftrightarrow Y$ cannot both be affirmed.

4. We will only get a "conflicting" pair where there is a preference cycle in the candidate ranking; omitting conflicting pairs breaks any such cycle.

   The Condorcet/Ranked-Pairs rationale is that *a stronger preference should prevail over a weaker preference in any case where we can't keep them both*.

In the end we have a complete ranking of the individual candidates with no preference cycles remaining:

- This will uniquely identify one candidate for whom no other candidate is more preferred, who is then the Ranked-Pairs winner (and the Condorcet

winner as well if in the original data there was no preference cycle involving this candidate);[18] [19] and otherwise

- If there is more than one, the election is tied.

In the event that a computerized count is done this facility could, if desired, be extended to transmit the results electronically to the district returning office, which could then also automatically accrue the results, rank the pairs, and determine the final candidate ranking.

4. Recounts

Current practice is that if the result is "close," which means the difference in counts between the candidate with the most votes and any other candidate is less than 1/1000th of the total number of accepted ballots, we automatically trigger a recount.

This is because in a close race a counting error of a few votes one way or the other can be significant and can produce an entirely different outcome.

The count should be exact, of course, but errors do happen, or disputes can arise regarding the evaluation or rejection of particular ballots, so if we're closer than some presumed margin of error, we must apply extra diligence in verifying the result.

With Condorcet voting, such factors can factor into every candidate pairing. But, on the other hand, if we have two or more candidates who have little support among the voters, such candidates are likely to be vying for last-place, which means that the votes between pairs of such candidates should all be expected to be close – and we don't want to force un-needed recounts.

The proposal, then, is that an automatic recount would be required if:

1. There is more than one candidate in first-place (a tie); otherwise

2. For any pair involving the indicated winner, the majority-vote vs minority-vote is less than, say, 1/1000th of the total number of accepted ballots.

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[18] For greater certainty, if a given candidate is the most-preferred candidate in every candidate-pair in which said candidate occurs, that candidate is the Condorcet winner, the candidate most-preferred by the voters, and shall win the election.

[19] For greater certainty, if a given candidate is not the most-preferred candidate in any candidate-pair in which said candidate occurs, that candidate is the Condorcet loser, the candidate least-preferred by the voters, and shall not win the election.

D.   *Practical Issues*

The time required to do a tally for a poll will be proportional to the number of pairwise candidate combinations, and to the number of ballots:

Candidates	Pairs	Time / Ballot	Time / Poll
3	3	6 s	0.5 h
4	6	12 s	1.0 h
5	10	20 s	1.7 h
6	15	30 s	2.5 h
7	21	42 s	3.5 h
8	28	56 s	4.7 h
10	45	90 s	7.5 h
20	190	380 s	31.7 h

- *n* candidates: $n (n - 1) / 2$ pairs.

- A poll contains maybe 400 voters, give or take; Assuming a (high?) 75% turnout: 300 ballots.

- Assuming it takes as long as 2 seconds per pair, per ballot to count.

- As seen, with many candidates the manual processing time could quickly get out of hand.

Illustration 19: Count-time Estimates

This is clearly more demanding than tallying a FPTP election, and is often discounted as a manual process for that reason.

As a manual method, with these assumptions, we hit the wall around, say, seven candidates, though this will depend on the actual time per pair per ballot and the actual number of voters. Specific benchmark testing is in-order.

A manual count would be reasonable up to this vicinity, which limitation would also be facilitated if we continue to constrain parties to run no more than one candidate per electoral district.

BC General Election	Candidates / District	Electoral Districts	Worst Case Scenario		
			Electoral District[20]	**Largest Poll**	**Count Time (@ 2s/pair)**
2013	2	1	Kootenay – East	194 ballots	0.1 h
	3	15	Parksville – Qualicum	268 ballots	0.5 h
	4	35	Maple Ridge – Mission	260 ballots	0.9 h
	5	21	Fort Langley – Aldergrove	339 ballots	1.9 h
	6	8	Vancouver – False Creek	312 ballots	2.6 h
	7	4	Abbotsford – Mission	235 ballots	2.7 h
	8	1	Vancouver – Point Grey	203 ballots	3.2 h
2009	3	26	Saanich North and the Islands	245 ballots	0.4 h
	4	36	North Island	264 ballots	0.9 h
	5	16	Shuswap	381 ballots	2.1 h
	6	7	Vancouver-False Creek	230 ballots	1.9 h
2005	3	4	Burnaby-Edmonds	284 ballots	0.5 h
	4	19	West Vancouver-Garibaldi	512 ballots	1.7 h
	5	27	Port Moody-Westwood	544 ballots	3.0 h
	6	19	Delta South	446 ballots	3.7 h
	7	6	Okanagan-Vernon	336 ballots	3.9 h
	8	3	Comox Valley	400 ballots	6.2 h
	9	1	Vancouver-Mount Pleasant	267 ballots	5.3 h

Illustration 20: Worst-Case Counts

Though in each of these elections a large majority of electoral districts and polls within them could easily be manually counted, we nevertheless see some districts with large numbers of candidates, or coupled with ballot counts that would present challenges to a manual count.

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20 BC Provincial Electoral Districts

These are "general" (provincial) poll data, as well, and in many of these cases there are considerably higher ballot counts for the advanced polls.

These cases could stand to be split, either into smaller polls, or to divide their ballots among multiple counting teams. There are too many cases where we're pushing the envelope, however, for a practical manual count.

Prudence dictates that we must be able to accomodate electoral districts with large numbers of candidates, or if our timing expectations are off, which means that we must have available some manner of computerized counting tools that we can deploy where needed, even if not a full-scale roll-out.

A computerized solution could take many forms. The salient problem to be addressed is the tallying of the actual ballots. Aggregating tallies, and the final analysis to determine the final rankings are of minor difficulty.

Perhaps the most direct, straightforward, approach for counting is to use an optical reader[21], and to ensure the ballot conforms to this usage:

- Counting-time requirements, here, would be a tiny fraction of a second per ballot. Such technology is reliable and robust, inexpensive, and has been tried and true for many decades.

- This requires no Internet connection. A printed count report could be signed and included with the ballots, as now, as well as called-in by phone or faxed, as now, to the district office. But it could also be extended with an Internet connection to securely update the data directly to the district returning office.

  This is all straightforward in principle, but it might well also suggest additional process changes such as having a single reader at each polling station and the ballot read and stored in a single location, much as is done in some BC local-government elections, vs whether to maintain a more per-poll approach as now.

  Resolving such particulars, however, is premature at this point; in the event parliament determines to proceed in this manner, the ensuing discussion requires full and active participation by Elections Canada staff, upon whom it would fall to implement and execute the system.

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[21] Marksense reader

Frequently-Asked Questions

A. Optical-Reader/Marksense implementation approaches?

As an illustration of the optical-reader/marksense tallying approach envisioned for a Condorcet voting implementation, some BC local government elections (city councils, school boards) currently use an optical/marksense-reader-compatible ballot, which the voter fills-in, and takes it to a single optical/marksense reader at the given polling station.

The ballot goes through the reader into a sealed receptacle, and in so doing is tallied. (A validation option can be employed here, such that if the ballot cannot be read, or violates prescribed rules, it can be rejected at this time, allowing the voter – without compromising the confidentiality of the vote – to request a new ballot and try again.)

At the end of the day, a key is turned, and a tally report issued. This process can be verified or reproduced if needed, by re-processing the ballots in a similar machine, or by verifying them manually.

This is an excellent tried and true model for adoption of an optical-reader-based Condorcet voting system – at very low cost, and using the same (leased/rented) hardware.

B. Doesn't a preferential voting system mean more minority governments?

Not necessarily.

One method, say FPTP, of electing a single-member electoral district versus a different method, say a preferential system, of electing a single-member electoral district, since they're single-member elections in both cases, cannot in and of itself be a determinant in whether or not we get a minority government.

A proportional system, on the other hand, since its purpose is to ensure that every party is elected according to some granularity of the popular vote – with more parties we will get more, but smaller, blocks of support, which will show a much pronounced tendency to minority governments.

In this respect, given that with a preferential ballot we no longer discourage voting for non-mainstream candidates or non-front-runner candidates as with FPTP, the chances are better for such candidates to win. In this sense we could elect more

independents and smaller parties, which would, as for proportional representation, increase the possibility of minority governments.

But with FPTP, as well, independents and candidates of smaller parties still do run, and we still do, sometimes, elect them, which means that, again, the likelihood of a minority government increases.

The likelihood of minority governments with a preferential ballot, just as with FPTP, is more about the number of parties involved in the election and their relative support by the voters than whether the ballots are counted in terms of FPTP vs. some preferential method.

We have as an example the House of Representatives elections in Australia. Australia uses AV (IRV) in single-seat electoral districts to elect its House of Representatives, used first in a 1918 by-election and continuing to this day. There have been only two minority national governments in this time: 1940–43, and 2010–2013 – only two minority governments in over ninety years![22]

There is also the argument that, even if it is true that we'll get more minority governments, maybe that's not such a bad thing: while a minority government has to work harder to "get things done," it generally cannot do so autocratically since it needs to work with other parties to achieve consensus.

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22 Hung Parliament; 2013-03-17; http://en.wikipedia.org/wiki/Hung_parliament

C. Doesn't preferential voting favour middle-of-the-road candidates?

It first bears asking what does it mean to "favour" a candidate? The implication is that a preferential ballot confers an unfair benefit to such candidates, somehow putting a thumb on the scale to fudge the outcome on their behalf.

I take the notion of "favouring" or "advantaging" in this sense to mean:

1. The outcome for a given candidate differs from the "correct" result; and

2. The outcome is successful for the given candidate.

But it's hard to address this question in any meaningful way without settling on what, in fact, constitutes a "correct" result, without also, in fact, begging the question.

If we take the FPTP result as the benchmark for "correctness," for example, then anything that produces a different result than FPTP is a divergence from the "correct" result, and thus, by definition, favours any non-FPTP winner.

The underlying premise here, however, is that the "correct" result is the result that best represents the will of the majority, this being the candidate who is most-preferred by that majority, or in other words, the Condorcet winner if such exists. By this token, any time the Condorcet winner exists and, in fact, wins, there is no advantage, and any time the Condorcet winner exists but fails to win, he or she is disadvantaged.

Where you start is where you end-up.

But let's look at the proposition, anyway: the typical middle-of-the-road scenario is that given a field of, say, a *centrist* candidate, a *rightist* candidate, and a *leftist* candidate – for those voters for whom the *centrist* is their first choice, their second choices would be expected to be more or less split between the *rightist* and the *leftist*, depending upon which side of center the given voter identifies; and when their first choice is either the *leftist* or the *rightist*, then, as the argument goes, their second choice is more likely the *centrist* in both cases.

The proposition, then, in this context, is that a preferential ballot gives an advantage to the *centrist* candidate.

Let us consider this from the standpoint of FPTP, being the status quo, IRV/AV, being a widely used preferential method, and any method that determines a Condorcet winner, in recognition of the Condorcet approach advocated here:

1. Let there be *L leftist, C centrist,* and *R rightist* first-preference voters.

2. The total number of ballots, the whole pie, then, is: *L + C + R*.

3. Now, let us assume that the second-preference:

   (a) For either a *leftist* or *rightist* first-preference voter, will always be *centrist*; and

   (b) For *centrist* first-preference voters, will split *exactly evenly* between the *leftist* and the *rightist*.

For our Condorcet analysis, with these assumptions, we will get a tally sheet as follows:

Candidate Pairs	B more-preferred than A	No-Preference	A more-preferred than B	Total
A: *leftist* vs B: *centrist*	*R + C*	*0*	*L*	*L + C + R*
A: *leftist* vs B: *rightist*	*R + C/2*	*0*	*L + C/2*	*L + C + R*
A: *centrist* vs B: *rightist*	*R*	*0*	*L + C*	*L + C + R*

Illustration 21: Favouring-Proposition Tally

With respect to our *centrist* candidate, there is symmetry regarding the *leftist* and *rightist*. Without loss of generality let us take $R >= L$, and from the above tally we get:

Case 1
A *rightist* majority:

Majority-candidate		Minority-candidate	Majority-vote	Minority-vote
centrist	→	*leftist*	$R + C$	L
rightist	→	*leftist*	$R + C/2$	$L + C/2$
rightist	→	*centrist*	R	$L + C$

Illustration 22: Favouring, Case 1

Case 2
No majority, or else a *centrist*-majority:

Majority-candidate		Minority-candidate	Majority-vote	Minority-vote
centrist	→	*leftist*	$R + C$	L
rightist	→	*leftist*	$R + C/2$	$L + C/2$
centrist	→	*rightist*	$L + C$	R

Illustration 23: Favouring, Case 2

R is a majority, which means it's more than half the pie, so the other two together make up the rest of the pie, and must be less than R, thus:

$$R > L + C$$

The *rightist* wins all pairings in which he or she occurs, and thus is the Condorcet winner.

Where *none* of L, C, or R is a majority, any two must total more than the other, i.e.: if each is less than half the pie, the other two together must account for the majority of it.

In particular, whether or not C is a majority:

$$L + C > R, \text{ and } R + C > L;$$

The *centrist* wins all pairings in which he or she occurs, and thus is the Condorcet winner.

If $L = R$, we get *rightist* ↔ *leftist*, which would create a last-place tie, but has no effect on the *centrist* as the Condorcet winner.

(We can get the $L >= R$ case by exchanging R vs. L and *leftist* vs. *rightist* in the above; it makes no difference to our consideration of *centrist* outcomes.)

Now, considering an election involving the above candidates:

1. In any case where we get a first-preference majority (Case 1, and Case 2 *centrist*-majority variant), the first-preference majority candidate is the Condorcet winner in all cases, and this candidate always wins whether we use FPTP, IRV, or any Condorcet method; no advantage to anyone.

2. Where we don't have a first-preference majority (Case 2), we have either a first-preference plurality, or two or more candidates are tied for first-preference first place. Regardless, as shown, it follows directly that the *centrist* is the Condorcet winner.

   Who wins the election?

   (a) By FPTP, with a first-preference first-place tie there is no winner; *dis*advantage to the *centrist*. With a first-preference plurality, the plurality candidate wins: if this is the *centrist*, no advantage to anyone; otherwise *dis*advantage to the *centrist*.

   (b) By IRV, if there happens also to be a first-preference last-place tie, there is ambiguity about who to eliminate, but, in any event: if we eliminate the *centrist* either another candidate wins, or there is a tie, both of which *dis*advantage the *centrist;* and if we don't eliminate the *centrist*, the *centrist* wins, with no advantage to anyone.

   (c) By any Condorcet method, the *centrist* wins; no advantage to anyone.

All said, then, with the given first- and second-preference assumptions, which most strongly support the original proposition, the proposition fails:

- while there is demonstrated *dis*advantage to the *centrist* in some non-Condorcet votes,
- there is no advantage whatsoever to the *centrist* due to either preferential approach, whether IRV, or any Condorcet method.

This conclusion rests of course on our stated criteria of "favouring," which, as noted, do beg the question as they themselves rest on our fundamental thesis that the Condorcet winner is the "correct" outcome. Where you start is where you end-up. But it's hard to see that a standard based upon, say, FPTP, would be more appropriate, or more reasonable.

It is true, in any event, that in these scenarios the *centrist* wins by a preferential vote in some cases where he or she would lose with FPTP. But we should *expect* differences – differences are the very point of the exercise; if there were, in fact, no

differences in outcomes between the two systems there'd be little point in changing. Mere difference does not imply either advantage or disadvantage.

There is also a dissonance here due to "run-off" thinking, i.e.: the idea that if your first preference doesn't get elected then your vote goes to your second preference, etc. This is not really what is happening, however: though you are casting a single ballot upon which you've indicated your relative preferences among the candidates, you are voting in separate head-to-head elections in respect of each pair of candidates. Condorcet voting is not a runoff system.

The danger of second-guessing voter preferences in this simplistic way is further revealed in a bit more BC history:

> *"For the 1952 provincial election, the Liberal-Conservative provincial coalition government switched the electoral system from first past the post to the Alternative Vote. The coalition was nervous about the growing popularity of the socialist Co-operative Commonwealth Federation (forerunner of the NDP). With the expectation that Conservative voters would list the Liberals as their second choice and vice versa, the two parties believed they'd garner enough votes between them to stay in power."[23]*

Here, as stated, was an expectation that the new preferential-voting system would confer advantage to middle-of-the-road candidates, thwarting a perceived threat from an upstart, non-middle-of-the-road, rival. Instead, it opened the door on the "other" side of the field to a completely different, evidently under-appreciated, one:

> *"... much to the Socreds' own surprise, the party garnered enough second preference votes to become the largest party in the legislature with 19 seats, one more than the CCF, while the Liberals and Conservatives were practically wiped out...."[24]*

Presuming upon a simplistic model of voter preferences is perilous indeed. The assumptions themselves are fundamentally flawed: the political landscape is not

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23 British Columbia Social Credit Party; 2013-04-30;
    http://en.wikipedia.org/wiki/British_Columbia_Social_Credit_Party
24 British Columbia Social Credit Party; 2013-04-30;
    http://en.wikipedia.org/wiki/British_Columbia_Social_Credit_Party

trivially one-dimensional, ranging in a straight line from the left through the center to the right. It is multi-dimensional, and, depending on the actual parties and their leaders and platforms, as well as the sundry issues and positions that don't fit a uniform one-dimensional paradigm, voters' second and subsequent choices are far more complex and unpredictable than a simplistic left-center-right scenario would suppose.

But let's now look at the question in a different way: let us go back to what "middle of the road" means in this context.

Voting is about making collective decisions about things that it makes sense to decide collectively. For such questions, when a democratic decision of a group is required, the democratic ideal is that "the will of the majority" should prevail.

Once we have determined what that will is, when a choice does indeed have such broad appeal it won't seem "extreme," or "radical" it will, pretty much by definition, be considered "middle of the road."

Arguably, the will of the majority *is* the "middle of the road." In this context, if it is indeed true that preferential voting favours a "middle of the road" result – this is not an indictment of it, but rather the point of it.

D. We'll elect only centrists, who will simply agree on everything?

This is similar to the "favouring middle-of-the-road candidates" question addressed above, absent the pejorative notion of "favouring."

The idea here again seems to be that non-centrist voters would tend to find common cause in centrist candidates so that, when there is no first-preference majority candidate, centrists would tend to be elected more often than not. (When there *is* a first-preference majority candidate, the preferential nature of the ballot will not affect the outcome.)

It is interesting that the same has been said about FPTP (plurality voting), but as a feature, not a fault:

> *"Proponents of plurality voting argue that it is very simple and that it forces voters to elect a centrist candidate through compromise voting."* [25]

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25 Plurality Voting; http://simple.wikipedia.org/wiki/Plurality_voting

... the notion, whether true or not, that more centrist candidates might be elected – seems only to arise as a problem when we talk about changing away from FPTP!

If FPTP voting is itself susceptible to this alleged flaw of preferential voting, it suggests that even when they cannot vote their full preferences, voters tend to second guess the first-preference outcome anyway, correctly or not, and may well then vote a non-first-preference choice in an attempt to achieve the most satisfactory outcome.

With actual preference voting there is no need to second-guess the outcome, and thus no susceptibility to guessing incorrectly. This suggests that preference voting merely delivers more accurately what plurality voters are trying to do anyway.

Nevertheless, as said, the political landscape is multi-dimensional, depending upon many things that don't fit a uniform one-dimensional paradigm, and is much more complex than a simplistic left-center-right model would suppose.

It should also be noted that this question also encompasses a concern about creating a legislative monoculture around consensus candidates that, on the whole, will lack innovation and diversity of ideas.

Legislators, even if elected by a preferential system, will not be as monolithic as this concern supposes; while perhaps keeping common company on some salient issues and principles, they will still each draw upon their own unique body of experience, knowledge, education, intelligence, reason and belief in making their decisions.

Differences of opinion can, of course, be helpful in determining the best path forward, but if it is true that candidates elected by a preferential method might have sufficient in common that they can, in fact, behave in a civil manner, communicate effectively with each other, and maybe even come to agreement on issues, it doesn't seem like such a bad thing.

E. Is a Condorcet Winner really most-preferred by the majority?

This is another "How high is up?" question. Let's start by seeing if we can agree that a first-past-the-post election that has a majority winner does, in fact, reflect the voters' true majority preference?

I think that we could then agree that a mere plurality result, where the preference of some large minority prevails over the majority, is not the true preference of the majority. If we're looking for a majority-decision such a plurality result does not serve at all.

With FPTP, plurality wins only happen when we have more than two choices. So if we were to take each pair of candidates and hold an election between them, between them we will get either a tie, or one candidate will be the clear majority choice.

If we do this for all the possible pairings, it might turn out that there is one candidate who wins a majority in every such pair-by-pair election. The majorities in each case might involve slightly different voters, but still, in each case, we have a decision between the given two candidates, that is either a tie or one candidate is the clear majority preference over the other.

In such a circumstance, where there is a candidate who has won all the one-to-one elections, it seems inconceivable that some other candidate who must, therefore, have lost at least one, and might well not have won any, could in any way be considered the majority choice, or that such candidate could, in fact, win the overall election.

Yet, with FPTP elections involving more than two candidates, where there is not a clear majority win, it is entirely possible that the FPTP plurality winner loses some or even all of the pairwise elections.

With bare FPTP, it is entirely possible that the Condorcet loser, the candidate who loses each and every pairwise election in which he or she participates, the candidate who is defeated on a majority basis by *everyone* in such pairwise match-ups, can, in fact, win the election as a whole.

It's hard to argue that the candidate, who, head to head, one on one, beats every other candidate, isn't the choice on the whole most preferred by the voters.

Such a candidate, who would beat each and every other candidate in head-to-head elections, is, by definition, the Condorcet winner. It's also similarly hard to argue that a Condorcet loser, losing *every* pairwise match-up is not the candidate who is least preferred by the voters.

The thesis here, then, if we accept that a FPTP majority win is the correct majority decision in a given pairing, we must then accept that a Condorcet winner, if such a candidate can be determined, "should" be considered the candidate most preferred by the voters, and that if a Condorcet winner can be determined, that candidate should, in fact, win the election as a whole.

We must, similarly, also accept that a Condorcet loser, if such a candidate can be determined, "should" be considered least preferred by the voters and should NOT win the election as a whole.

In cases where there is a Condorcet winner, one Condorcet method is as good as any other to determine this candidate. In cases where there is no Condorcet winner, however, when no candidate wins every pairwise election, there is more room for ambiguity. This is where the various Condorcet methods differ.

Some methods, as noted earlier, resolve these non-Condorcet-winner decisions by reverting to a straight FPTP, or an IRV decision, or some other approach.

The Ranked-Pairs method, in such cases, honours the results of the pairwise elections as much as possible, with a predilection to keeping those results indicating stronger voter preferences over cases that indicate weaker preferences – in cases where they cannot both be retained. In my view, this approach best retains fidelity with the voters' true intent.

F.   Is Ranked-Pairs the best Condorcet system?

If there is a Condorcet winner in respect of any given election, every Condorcet method will determine this same winner. They're all as good as each other, at this point.

The different methods differ, however, in how they resolve cases where there is not a Condorcet winner, which is to say when there is no candidate who wins all the pairwise match-ups against the other candidates. In practice these cases are arguably infrequent, but, arguably, still occur, and it is easy to construct such scenarios.

I suggest that once we're resolved to use a Condorcet method to evaluate our elections the distinction of which particular one to use is of far lesser importance. Though there are fine distinctions among them all with slightly different mathematical properties, in practical terms it is essential to pick a method that is easily visualized and understood by non-theorists, and straightforward to implement, both in legislation and any attendant technology.

On this basis I discounted "hybrid" solutions such as Condorcet-Hare (Condorcet-IRV), and such, since they typically involve two different tallying systems: if a Condorcet winner is found, we're good with the Condorcet tally, and if not we count and tally again, according to IRV (e.g.). Not a big deal if we're counting by computer, but I don't buy-in to the idea of a second, different tally when there are good systems that work well without.

In the end it came down, in my estimation, to Ranked-Pairs vs Shultze, and on balance I find that Ranked-Pairs is easier to follow, which is why I propose

Ranked-Pairs at this time. But Ranked-Pairs and Shultze will give the same results "most of the time."

I also engaged an email conversation with Dr. Nicolaus Tideman, Department of Economics, Virginia Polytechnic Institute and State University,[26] the originator of the Ranked-Pairs method and a prominent contributor in the field of voting theory, and I thank him for his patience in conversing with me.

Dr. Tideman suggested that I should consider Minimax, as well. Minimax is mathematically very easy, but while mathematically simple, once we have the Condorcet tally, it is not to me as persuasive nor as clear as Ranked-Pairs.

It also (in limited circumstances) fails the "Independence of Clones" criterion, which means that the outcome can be sensitive to the presence of "similar" candidates, though as Dr. Tideman advises, based on his experience with patterns of voters rankings in ballots and surveys: "I would give you even money that if we examined half a million five-candidate comparisons based on real elections or surveys with more than 1,000 voters, we would not find a single example where Ranked-Pairs produced a different result than Minimax, though I would agree that Ranked-Pairs would handle such a case in a more satisfying way. And if you wanted me to take the other side of the bet, you would need to give me odds of at least 10 to 1."

He advised further that: "If there is no problem with getting voters to accept the complexity of Ranked-Pairs, it is the better choice. But if they balk at the complexity, then Minimax may be the best that is attainable."

All in all, then, I propose Ranked-Pairs is the way to go here, and I have worked through the details accordingly. But I would be nevertheless amply content with any other Condorcet method, if it were seen as more likely, and while some of the details would change, such changes would not be exorbitant.

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26 Dr. Nicolaus Tideman, Dept. of Economics, Virginia Tech:
   https://sites.google.com/site/nicolaustideman/

G. Strategic Voting?

We're all familiar with this in our FPTP system. The story goes like this: we've got candidates *A*, *B*, and *C*: "We" really don't want *C* to win, and we foresee that while each of *A* and *B* will get significant portions of the vote, neither is likely to get enough votes on his or her own to beat *C*.

1.   Informal Strategic-Voting Campaign

This might then engender a campaign to get all the we-don't-want-*C* voters to vote for whomever of *A* or *B* is seen as most likely able to beat *C*. If this works, then *C* will be defeated, and one of *A* or *B* will win.

Of course, all of the we-don't-want-*C* voters weren't going to vote *C* anyway, but are not likely all to agree upon which of *A* or *B* should win or is most likely able to beat *C*. There will usually be some rationale put forward for each, such as A's or B's (or their respective parties' previous candidates') showings in the previous election, or the current published opinion polls, and so-on.

But there's no real, reliable, way to coordinate this effort. Some voters will buy-in and vote *A* instead of their preference *B*, and other voters will buy-in and vote *B* instead of their preference *A*, and other voters will just vote *A*, or *B,* regardless, because they don't buy-in at all.

In the end the net effect will be negligible, one way or the other, though this would be difficult to measure; it is questionable whether this has ever actually worked as intended.

2.   Party/Electoral-District-level Electoral Cooperation

Another approach is to devise a more formal cooperation strategy at the party or electoral-district level, where, for districts where it "makes sense," to get the *A*- and *B*-parties to get together and field only one *AB* candidate against the *C* candidate who it is desired to defeat, with the underlying hope that the *A*-voters and the *B*-voters will then vote *AB*, and *C* is defeated.

While this might work for all the voters who would really prefer either *A* or *B* over *C*, such that an *AB* candidate might be an acceptable compromise to them, there might also be voters who would vote *A,* but prefer *C* over *B*, or who would vote *B,* but prefer *C* over *A*, so that if presented with only an *AB* candidate, depending on whether they perceive him or her to be really an *A* candidate or a *B* candidate, they will end up voting *C* where they would not have done so had the *A* and *B* choices

both remained; there might also be *A* or *B* voters who are put-off by being offered only an *AB* vote rather than their choice of *A* or *B*, and will simply not vote at all.

In the end, all else being equal, the votes for the *AB* candidate can be expected to be less than the sum of the expected *A* votes plus the sum of the *B* votes and less those people who decided to stay home, and the *C* votes will be more than the original *C* votes by the number of *A* or *B* votes driven to *C* by the *AB* candidate.

The *AB* cooperation approach will to some extent backfire into increased support for *C*. Whether this shakes-down to a net benefit for the *AB* candidate vs the *C* candidate is moot. But, despite the noted backfire, if *C* has only a few percentage points lead at the outset, for this strategy to succeed it only needs to improve the *AB* percentage by those few percentage points.

All else is not likely equal, however: every election is a new battle – different terrain, generals, and combatants, and different objectives, so the outcomes of the previous election don't necessarily carry forward with any relevance:

> *"No man ever steps in the same river twice, for it's not the same river, and he's not the same man."*   *– Heraclitus* [27]

3.   Party Coalition

Provincially in BC, such a cooperation approach is pretty much already the case as regards the BC Liberal Party[28], which is really a de facto coalition of liberals, conservatives, and orphaned former Social Credit members (which party was itself such a coalition!).

This coalition continues to exist because it has been electorally successful, albeit with internal stresses due to its philosophically-disparate composition. But, so far, the things holding it together have been stronger than the things pulling it apart.

It is nevertheless an artifact of the FPTP system. With a Condorcet voting system such a pre-election coalition will be unnecessary (though after-election coalitions in the case of a minority government are still in order), and will fracture along its internal fault lines as its membership reverts to their respective true colours: the BC Liberal Party would become a party of, well, liberals, and conservatives would, one would suppose, resuscitate the BC Conservative Party, and so forth.

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27 Heraclitus, http://www.goodreads.com/quotes/117526-no-man-ever-steps-in-the-same-river-twice-for
28 Which, let it be said again and again, is NOT in any way affiliated with the Liberal party of Canada!

4. Perception of Non-Viability

Strategic voting also arises in regard to candidates who are simply not seen as being able to win.

Such perceptions, however they arise, are fed and fanned by the press as well as by published public opinion polls and tend to be self-fulfilling. People want to place their vote where it is most likely to have best effect, so, based on a perception of inviability of a given candidate, they will move their vote to a candidate who perhaps isn't their first preference, but who they think has a better chance to win.[29]

This means that the press and opinion polls have an enhanced ability to influence the outcome. It also makes it very difficult for low-profile candidates, independents, or candidates from smaller or start-up parties to gain a foothold.

"Plurality voting is simple, and theoretically provides incentives for voters to compromise for centrist candidates rather than throw away their votes on candidates who can't win.

"Opponents to plurality voting point out that voters often vote for the lesser of evils because they heard on the news that those two are the only two with a chance of winning, not necessarily because those two are the two natural compromises.

"This gives the media significant election powers. And if voters do compromise according to the media, the post-election counts will prove the media right for next time.

"Condorcet runs each candidate against the other head to head, so that voters elect the candidate who would win the most sincere runoffs, instead of the one they thought they had to vote for." [30]

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29 Duverger's Law, again.

30 Condorcet method; 2013-04-10; http://en.wikipedia.org/wiki/Condorcet_method

H.   Preferential voting

Preferential voting (Condorcet methods, particularly, IRV less so) resolves or reduces all of these problems: voters can each vote for their most-preferred candidate, even if the press or the opinion polls say they don't have a prayer, without concern about "wasting" their votes.

Similarly, those who would prefer one of *A* or *B*, and can accept the other but absolutely don't want *C*, can vote *A* or *B* first, the other second, and *C* last, or not at all.

FPTP discourages the proliferation of varied political viewpoints in our democratic discourse, and into the election; preferential voting (Condorcet methods, particularly, IRV less so) encourages it.

I.   Campaigning for your next-preference support?

Another significant consequence of preferential voting (Condorcet methods, particularly, IRV less so) is that second- and subsequent-preferences are important.

This fundamentally changes the game. Parties and candidates will of course continue to court voters for their first-preference votes, but if they can't get those it's still worthwhile, even essential, to court their next- and subsequent-preference support.

This means that candidates and parties must be willing and able to build support beyond their own core bases; they need to appeal to, and be responsive and accountable to a broader electorate. This also encourages cleaner, more positive campaigns.

J.   Confusing if lowest first-preference wins, or largest doesn't?

Firstly, the given tally procedure does not record nor report votes in terms of aggregate first-, or second-preferences, etc., and the tallies cannot be reverse-engineered to discover this.

This is by design, and I would recommend against modifying the tally procedures to do so for the very reason underlying the question.

Aggregate first- or other-preference, etc. standings are irrelevant and misleading. All that matters is the relative standings of each candidate on a per-ballot basis.

Though we might mark each ballot in a first-preference, second-preference, and so-on manner, this is really just a shorthand way of indicating that the given voter prefers a given candidate more-than, the-same-as, or less-than other candidates.

A candidate *X* who is, say, second-preference and preferred more than candidate *Y*, on one ballot, affects the aggregate *X* vs *Y* result exactly the same as when *X* is first-preference and preferred more than *Y* on another ballot. The absolute "preference" numbers have no aggregate meaning – only their relative positions on each given ballot.

Accordingly, we capture and report only how many ballots have *X* preferred more than *Y*, *Y* preferred more-than *X*, or *X* preferred the same as *Y*. We do this for each pairwise combination of candidates.

So, with the given tally procedure, we never see that *X* "only" got so-many first-preference votes vs *Y* getting some other number of first-preference votes. And so this perceptual disconnect cannot arise. We see it here only because we're making the sausage, and we see what's going into it.

But even if the actual first-preference data were captured and reported, we would have the same situation in this respect as prevails where the Alternative Vote / Instant-Runoff Voting is used. And, again, I cite Australia[31], where AV has been used for almost a century in national elections, and is in fact long and widely used in state elections as well. In the case of AV, a lowest first-preference candidate can never win, but it's still easily possible for a non-highest first-preference to do so; they seem to have been able to get past any perceptual disconnect about this.

Having said that, however, if the first-preference, and such, aggregates were indeed captured and reported, it would be important to explain these in proper context to avoid or counteract such misperceptions.

K.   Can I still vote for only one Candidate?

Certainly, if you want. This means you fail to rank the other candidates relative to each other, simply saying that you like that one choice more than everyone else, and dislike all the rest the same. Your choice.

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31 To this example a counter-point has been raised, which is that voting is mandatory in Australia, so that turnout is better, and... various corollaries to that. The main point, however, is whether voters see a problematic disconnect when first-preference results and over-all results are quite different. Arguments about compulsory voting, voter turnout, and such, don't speak at all to this point.

But you've missed your chance to have a say in selecting the best-alternative among the other candidates. So in this case, for you, the point of the Condorcet election is lost. We can lead a horse to water...

If everyone voted like this, the whole election would transpire exactly as-if it was a FPTP election, and, while we'd get no benefit from Condorcet in that case, we would be no-worse-off than had we simply stayed with the FPTP system. If there happens to be a FPTP majority winner, it doesn't make a difference, either way.

But the point of Condorcet elections is for those many cases where we don't get a majority FPTP winner. While some voters might indeed persist in the old ways, despite a better way laid before them, some, hopefully most, won't, which will accordingly allow us to move beyond unsatisfying, unrepresentative, mere plurality results.

L. Are the voters "sophisticated enough" for this method?

It doesn't matter. Such complexity as exists is primarily in the tally, and, to some extent, in the evaluation of the result. But, while we need to document and be able to explain these for those who care about them, the ordinary voter doesn't really need to pay them any attention.

These "complexity" aspects are dealt with by elections officials, who will be (easily) trained to do so, and will likely have software to facilitate this in any event, which will make it even easier.

All the voter needs to know is which candidate he or she likes more than each other candidate, and how to fill-in the ballot accordingly.

This is slightly more work, perhaps, than voting with a FPTP ballot, but no more work than a IRV / AV ballot, or a BC-STV ballot, or any of the many forms of ballot for proportional-representation schemes.

M. Isn't it more important to improve voter turnout?

It is indeed important to improve voter engagement, which will translate, I believe, into improved turnout. But whether this is more- or less-important than improving the voting system is a false choice.

While a new voting system is important, and can in the end improve voter engagement and hence turnout, it will not, suddenly, magically, turn things around overnight. It will help, in time, as people see that their votes are more meaningful, and have a higher sense of the winners' legitimacy, but there is no silver bullet.

Be that as it may, however, the choice here is NOT between achieving a new voting system, vs improving voter engagement. These are to some degree different problems that can be, and should be, addressed separately, though they could still be addressed concurrently.

We can still encourage debate and town-halls, explore social media for getting people involved, recruit interesting candidates, knock on doors, and consider things like online voting, and so-on – quite independently, as well as at the same time improving the fundamental voting system.

Thus, we will no longer see that some party *X* got some given first-preference portion of the so-called "popular vote," which is itself a somewhat contentious observation unless we actually have a ballot choice specifically for the party.

We will be able to see how each candidate fares against each other candidate, because we're really conducting one-on-one match-ups. But there is no meaningful "popular vote" value, so we will no longer be able to contrast a party's so-called "popular vote" with their seats won.

In this sense, we can see that the hue and cry for proportional representation after a given FPTP election is arguably an artifact of the FPTP system itself!

N. Who uses Condorcet methods now?

No parliament or legislature, nor local government currently uses any Condorcet method to elect its members, but:

> *"... a Condorcet method known as Nanson's method was used in city elections in the U.S. town of Marquette, Michigan in the 1920s"* [32]

There are, however, various organizations that do use one variant or another, for elections of boards, or making other decisions among multiple options, such as elections to the UBC Student Society executive, the Wikipedia foundation, and a sundry list of others...[33]

While it would no doubt be helpful if there was a current legislature or parliament implementation to which to point, this should not be an absolute impediment; the mathematical properties of the various Condorcet methods are well studied, their

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32 http://en.wikipedia.org/wiki/Condorcet_method#Use_of_Condorcet_voting
33 http://en.wikipedia.org/wiki/Condorcet_method#Use_of_Condorcet_voting

strengths and weaknesses well known and well documented, and they provide a rock-solid, well understood, basis upon which to proceed.

O. *What system should we use?*

The answer here is: it depends on the kind of decision we're making.

FPTP works well for binary decisions: Yea vs Nay, or one vs another. Do we adopt the motion, or not? Do we adjourn, or not? Do we choose this one candidate, vs that one candidate? In cases like these, FPTP is hard to beat for a majority decision.

When it comes down to making a single choice out of more than two options, however, FPTP is highly problematic, for, as noted, in such cases we tend to get the decision of the largest minority, not a decision of the majority.

There are other, better, systems for such cases: the preferential ballot evaluated in various ways, for instance, and in such cases we'll get, as proposed here, an optimum result with any Condorcet method, or at least a moderate improvement with something like IRV/ AV.

Choosing at which restaurant to hold our annual dinner, for example, is in this category, as is choosing a mayor, perhaps, or a single member to represent one's district in the legislature or parliament.

Choosing multiple options out of a suite of them introduces additional possibilities. Here, we get multiple-representation options, such as: Multi-Member Plurality (MMP), the Single Transferable Vote (STV), or even Condorcet voting, as well as proportional-representation systems, such as: Open or Closed List PR, Mixed-Member Proportional (MMPR), and such.

What food shall we order-in for the meeting? – Chinese, vs Thai, vs Italian, vs Indian, vs... whatever – would be in this category. Condorcet voting would tell us which of these the majority of the given group prefers, and even give us an ordered list of such preferences, but it wouldn't assist us in determining appropriate portions.

But if we can order-in from more than one place, we might indeed want a proportional decision, so 45% of the order might be Indian, and maybe 30%, Italian, and maybe the rest Chinese, according to the varied tastes of the group. Why not?

Perhaps we want to pick our representatives in the legislature this way, too, so that the various ideological or philosophical perspectives of the group can be better represented as well. Not a problem, providing that's what we want to do.

Each voting system has its own pluses and minuses, for various purposes. They're different tools for different jobs, and should be employed as appropriate for the job at hand.

I submit that for electing single-representatives to legislatures, when we typically have more than two candidates (and, indeed, I offer the value judgement that we should, in fact, encourage multiple candidates), Condorcet/Ranked-Pairs, or at least some other Condorcet method, is the best way to go.

The decision about whether or not we want multiple- or proportional-representation should not be made because FPTP is so bad at electing single-representatives when we have more than two candidates, or for making "all votes count" (a contentious argument), or railing on about the disconnect between the FPTP so-called popular-vote vs the final aggregate seat count (another contentious argument), but should, instead, be made because we explicitly want more varied voices and viewpoints within our legislatures, or not – while at the same time recognizing the benefits and pitfalls, including more minority governments and possible log-jams and accountability issues that can also ensue.

Let's have that discussion, by all means, but meanwhile let's not let it pin us down to an egregiously flawed FPTP status quo.

Let's get the upgrade from FPTP underway, now, and leverage that, perhaps, into a later adoption of a Condorcet MMPR, if it turns out that proportional representation is really what we want, or perhaps a regionalized multiple-representation system in the manner of a Condorcet STV.

Appendices

A. Canada Election Act Summary of Changes

Current (FPTP)	Change (Condorcet)
Electors may mark their ballot with only one candidate.	Electors may mark their ballot with one or more candidates.
Regular Ballots allow for only one marking space per candidate.	Regular Ballots will for each candidate allow *n*, (or *n-1*) marking spaces for an elector to mark his or her ballot (where there are *n* candidates.)
Regular ballots are initialized on the back by the respective deputy returning officer.	Regular ballots are (instead?) marked on their face by the deputy returning officer with a machine-readable "checksum" that will identify the polling division as well as authenticate the ballot.
Regular ballots are rejected for all the usual reasons, including marking more than one candidate.	Regular ballots are rejected for all the usual reasons, except marking more than one candidate, but in addition are rejected: 1. if a given candidate is marked more than once; 2. If all candidates are marked with the same preference (which is equivalent to not marking any candidate); or 3. If the polling-division/deputy-returning-officer checksum is invalid or not registered with the reader. Ballots that are machine counted without being seen by anybody, would NOT need to be rejected because of identifying information written on them by electors – but as soon as, or if, they are counted or examined by any person, such ballots must be rejected as well.
Special Ballots provide one space into which a candidate name can be written. The same ballot form can be used for all electoral districts.	Special Ballots must provide at least as many spaces as there are candidates, and the order in which the candidates appear on the ballot defines the elector's order of preference among those candidates. This might mean special ballots for each electoral district having some given number of candidates, so that the appropriate number of name spaces can be included.

Current (FPTP)	Change (Condorcet)
Special ballots are rejected for all the usual reasons, including writing more than one candidate name.	Special ballots are rejected for all the usual reasons, except writing more than one candidate name, but in addition are rejected if any candidate name is written more than once.
There is one or more ballot box per polling division, and for each ballot box there is a deputy returning officer, and a poll clerk. Electors identify themselves to the deputy-returning-officer/clerk.

The deputy returning officer initials the back of every ballot. When the ballot is given to the elector the deputy returning officer removes and keeps the stub.

When the elector is done marking the ballot, the deputy returning officer ensures that the returned ballot matches the stub, and removes the counterfoil.

The elector (or, if requested, the deputy returning officer) then places the ballot in the ballot box, and the clerk strikes through the elector's name from the register of voters.

Once the polls close, the ballot box is opened, the ballots dumped on a table, and counted one by one, touched only by the deputy returning officer, but one-by-one displayed to any scrutineers as may be present, as the deputy returning officer announces the disposition of the ballot, i.e.: whether it is rejected, or counted for a particular candidate, and placed on a pile accordingly. The scrutineers can register disagreement, and the ballot can then be separated as a disputed ballot.

Once the count is complete, ballots are placed in envelopes, one envelope per candidate, and sealed in the ballot box.

The vote can be identified with the polling division, because the ballot boxes | In the event that we undertake a manual approach, the process will unfold similarly as for the current case, except the manner of the count will differ, and the ballots will be stored in a single envelope before being sealed in the ballot box, not one envelope per candidate.

In the event that we use a ballot reader, the process will change.

The anticipated scenario, as for some local government elections (in BC et al), is that there will be one reader per polling place.

The easiest transition will be that the election is conducted as at present, then upon opening the ballot boxes after the polls close, the ballots would be fed into a ballot reader, one-by-one by the deputy returning officer for each polling division.

Upon completion of each poll in this manner the ballot reader would be likewise used by the next polling division at the given polling place, and so on, until all the polling stations were counted.

The other, perhaps preferred transition, though more difficult in the sense that it requires more change to the conduct of the vote, is that a single ballot reader at each polling place would collect the ballots live, during election day, from multiple polling divisions.

This means that ballots cannot be related to a polling division, as before, unless the ballots also have a ballot-reader-readable polling-division number incorporated. (Form3: Poll/Checksum)

In this scenario, an elector, once given a ballot, will mark it, then proceed to the ballot reader to feed it into the reader (in such manner that the particulars of the vote are kept confidential), and the ballot will then fall into a secure receptacle incorporated into the reader. |

Current (FPTP)	Change (Condorcet)
correspond with all or part of a polling division. Eventually the results of the election will be reported by polling division (unless the number of electors is so small that this would compromise the confidentiality of the vote, and in that case the ballots will be combined with another polling division for counting and reporting.	The ballot is not folded, not handed back to the deputy returning officer for removal of the counterfoil, or handled by the returning officer at all after being in the hands of the elector. It is possible to configure the reader to flag invalid ballots (un-marked, all candidates marked the same, or candidates marked more than once, etc.) and allow the elector to retrieve the invalid ballot to correct it or ask for another, or to let the invalid ballot stand. There can still be a deputy returning officer and clerk per polling division, though probably fewer personel would be required. The elector's name would be struck-through on the voters list once the ballot was given, not after being placed in the ballot box. There would be an election official in charge of the ballot reader to assist people in its use, to protect the reader, and maintain the integrity of the process. Once the polls close, the ballot reader, which will maintain a running count as ballots are fed through it, will be switched to a report mode to issue a tally, which can then be conveyed to the returning office to be accrued with results from other polling places. (This could be done electronically, but that is a refinement to be left to a later day, and keeping the reader isolated from the Internet will avoid concerns about illicit access from the network.) In the event that there is a problem with the reader, or perhaps a power failure or such that might derange the running count, the reader can be reset, and the ballots re-fed through it, or fed through another reader. They can, of course, also be counted manually, as circumstances require. The ballot stub, and counterfoil are not relevant for the given deputy returning officer will not see the ballot after giving it to the elector. So the stub and counterfoil are removed before handing the ballot to the elector. Similarly, instead of having the deputy returning officer initial the ballots, I propose marking the ballot

Current (FPTP)	Change (Condorcet)
	with a ballot-reader readable poll-id and/or checksum assigned to the polling-division/deputy-returning-officer, which will be validated by the ballot-reader.
For advanced polls the polls are sealed after close of polls on each day, sealing the ballots in an envelope (without revealing the how they are marked by electors), and re-opened the next. The ballots cannot be counted prior to the close of polls on election day.	Advanced polls proceeding without a ballot reader, would transpire as before. Since ballots cannot be counted before close of polling on election day, an advance poll ballot reader would serve only for the validation aspect, and we'd have to take extra precautions to ensure no count was done, or at least not revealed to any person. At the end of each day of advance polling, the ballots would be removed from the machine's secure receptacle, placed within an envelope, and sealed within a ballot box, as before. I don't see enough utility here, and suggest that ballot readers not be used for advanced polls. These ballots can be counted after poll closure on election day after opening the ballot boxes, by submitting them at that time to a ballot reader.
When counting ballots, officials classify them by candidate, making a pile of ballots for each candidate, and tally each ballot one according to the one candidate they each refer. These ballots are placed in an envelope for each candidate (and the number of ballots in a given envelope must match the number of marks tallied for the corresponding candidate), and stored thus in the ballot box. Rejected ballots are placed in a single separate envelope.	When counting ballots, they no longer can be classified to a single candidate. The tally sheet will provide, for each pairwise combination of candidates, a space where one is preferred more than the other, and the other is preferred more than the one, and a space to mark that they are preferred the same. The accepted ballots cannot be classified to a single candidate, and must therefore be placed all in the same envelope. Rejected ballots are placed in a single separate envelope.
Special ballots are not transcribed to regular ballots.	Non-rejected special ballots may be transcribed by election officials to regular ballots to facilitate counting, whether manual counting or to feed them through an optical-reader. In such cases the original special ballot will be marked on the back with a number indicating the polling division, the ballot-box, and a sequential

Current (FPTP)	Change (Condorcet)
	number such as to uniquely identify it.
	The official must write this unique identifying information on the back of the regular ballot to which the given special ballot is transcribed.
The candidate who receives the largest number of votes, providing only one candidate receives that number of votes, is the winning candidate.	The candidate who ranks first via the ranked-pairs algorithm, if there is only one such candidate (the ranked-pairs winner, who will be the Condorcet winner, if such exists), wins the election.
If there are two or more candiates who received the largest number of votes the election is tied, and there is no winner.	If more than one candidate ranks in first place via the ranked-pairs algorithm, the election is tied, and there is no winner.
An automatic recount is required if the difference between the votes received by a candidate with the most votes and any other candidate is less than 1/1000 of the votes <u>cast</u>.	An automatic recount is required in any case where there is a tie for first place, and otherwise if, for any pair involving the indicated winner, the majority-vote vs minority-vote is less than 1/1000th of the total number of <u>accepted</u> ballots
Portions of election expenses incurred by registered parties are refunded providing that candidates endorsed by their respective party receive a given percentage of the vote.	There is no corresponding "percentage of the vote" figure. Parties receive refunds regardless.
Portions of election expenses incurred by candidates are refunded providing that they receive a given percentage of the vote.	There is no corresponding "percentage of the vote" figure. Candidates receive refunds regardless.
Recount Procedure. The judge can decide to just open envelopes for specific candidates, and just count them.	Recount procedure must be updated to reflect that ballots are not classifyable by any given candidate. If we must count the ballots in a batch or a ballot box, we must count all of them, not just for selected candidates. The process for rejected ballots remains as before.