Submission on the **Conduct of the 2004 Federal Election** to the

Joint Standing Committee on Electoral Matters

Parliament House, CANBERRA ACT 2600, AUSTRALIA via email: JSCEM@aph.gov.au

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From: Peter Newland, 13 Ian Crescent, Mitcham VIC 3132 18 September 2005
Telephone: 03 9872 4641; Email: pnewland@bigpond.net.au

This submission describes and recommends introduction of a new vote-counting method called

Consensus Preferential Voting

Ordinary Preferential Voting is good but flawed.

From the votes cast, it can be shown that ***in some cases the candidate elected by an ordinary preferential election would lose a run-off election with one of the eliminated candidates***.

Consensus Preferential Voting, CPV, does not have this flaw.

Instead, CPV can demonstrate objectively, from the votes cast, that ***a CPV-elected candidate would win run-off elections with any other candidate***.

What's the difference between Consensus and ordinary preferential voting?

CPV ***weights all*** preferences before they are counted - it does not ***distribute*** or ***discard*** any preferences. The candidate with the highest CPV count is elected.

In contrast ***ordinary preferential voting inherently discards some parts of the preference votes*** whenever votes are distributed. We can prove that this loss of preference voting information usually distorts the winning margin – or even elects the wrong candidate.

How are preferential votes counted by the CPV method?

Consider an election with 5 candidates. The numbers of 1st, 2nd, 3rd, 4th and 5th preference votes for each candidate are counted. Then ***all*** the first to last preferences for each candidate are weighted and added to give a single CPV tally for each candidate. The candidate with the highest CPV tally is elected.

The key to CPV is correct weighting of all preferences. In a 5-candidate election, all 5th (or ***last) preferences votes for a candidate have a weight of zero*** (i.e. they are worthless); 4th (or ***next-to-last***) ***preferences have a weight of 1***; 3rd preferences have a weight of 2; 2nd preference have a weight of 3; and 1st preference votes have a weight of 4.

Stating this formally: (skip this small print if desired)
The Weight of n^{th} preferences, W_n, in an election where the number of candidates is N, is $W_n = N-n$, where n varies from 1 to N. *The CPV tally for each candidate is the sum as n varies from 1 to N of W_nP_{nc} where P_{nc} is the number of n^{th} preference votes received by the Candidate 'c'.*

How and Why are the 'weighting' values chosen?

The *zero weight is always used for last-preference votes* because they have zero value.

The *weight of 1 used for all 'next-to-last-preference' votes* is somewhat arbitrary. However, in a 2-candidate election (where formal weighting is not necessary) the *effective* weights of 1st & 2nd preference votes are 1 & 0 respectively. So it is logical and convenient to set the weights in a 3-candidate election such that the 1st, 2nd & 3rd preference weights are 2, 1 & 0 respectively. Similarly for 4-candidates: 1st, 2nd, 3rd & 4th preference weights are 3, 2, 1 & 0; and so on for elections with more candidates.

CPV Advantages

1. ***CPV identify the candidate with the best available consensus***. This is because CPV takes all the preference votes into account whereas other vote-counting methods ignore some preference votes.
2. CPV doesn't need time consuming preference distributions and redistributions. This facilitates electronic voting &/or counting.
3. CPV promotes consensus and therefore more stable government. This is because it rewards ***better consensus policies – which may not be the first choice of ideological enemies – but which achieve a higher consensus with the voters***.
4. Apart from its use in elections, CPV can be used to give better results in deciding between multiple competing options, policies, or referenda proposals, etc.
5. Many types of ***'informal' votes can be automatically and fairly recovered by CPV***.
6. CPV can be used for ***multi-member proportional-representation*** elections. If an electorate needs 5 representatives, then the candidates with the top 5 CPV tallies are elected.
7. CPV easily handles both *Above*- and *Below-the-Line* Senate voting under existing voting rules where voters must Vote 1 (only) ***Above-the-Line*** or Vote 1-65 ***Below-the-Line***.
8. CPV can eliminate the distortion possible with the Senate "*Group-Voting-Ticket*" system. Currently voters must choose one Group-Voting-Ticket, or vote 1-65 below the line. However, CPV facilitates desirable voting rule changes which could allow:
   a) ***1-to-N Preference Voting Above-the-Line***. That is, the voter chooses his/her own preference order for parties ***Above-the-Line***, but accepts the ***Below-the-Line*** candidate order as chosen by the parties.
   b) Mixed ***Above-and-Below-the-Line*** Voting. That is, the voter chooses his/her own preference order for parties ***Above-the-Line*** – **but also** chooses a different order of candidates, within one or more parties, ***Below-the-Line***.

This puts voters back in full control without voting 1-65 below the line. E.g. with 65 senate candidates, in 9 parties with from 2 to 6 candidates each, plus 7 'un-grouped' candidates, voters' instructions could be:

1. "Vote 1-10 above the line for groups in the order you choose. This accepts the preference order within each party as decide by each party. The order of ungrouped candidates was decided by ballot. **Or**,"
2. "Vote 1-10 above the line, ***and***, for one or more parties you may vote below the line where you want to vote for candidates in an order different from that shown. When voting this way you must put a number in each box in that group, starting from 1 to the number of candidates in that group. **Or**,"
3. "Vote 1-65 below the line in the order of your preference."

In contrast, with 'Group Voting Tickets' under the current system, voters are told to Vote 1 (only) above the line, **or** vote 1-65 below the line. The problem here is that most voters don't understand the group-voting-ticket system – and if they did, they may well disagree with their party's preference allocation.

Peter Newland 18th September 2005

Recommendations

- Introduce CPV for Upper and Lower House elections.
- Allow preference voting 1-to-N ***Above-the-Line*** voting as in 8 a) above.
- Allow ***Mixed Above and Below-the-Line*** voting as in 8 b) above.

Background of CPV

The Consensus Preferential Vote-counting method, CPV, was invented by the author. As far as is known, it has not been suggested before. Perhaps it could be called 'Weighted Preferential Vote-counting', because the key factor is weighting the preferences in the counting process. However, the term 'Consensus' is preferred because the objective is *consensus* - to determine the ***voter consensus*** - and that is the most important point, since achieving the best consensus on offer should promote more stable government and a better world.

What CPV is not

CPV does not discount or distribute votes - it ***weights*** votes. The CPV tally is not dependent on preference votes flowing from 'eliminated' candidates – because no candidates are 'eliminated'.

A Simple Worked Example

On the following page a worked example illustrates points 1 to 4 as listed under "***CPV Advantages***" above. A detailed working spreadsheet is available to demonstrate and explore the advantages outlined under points 1 to 8 above. A user-friendly version is in preparation.

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Consensus Preferential Voting, CPV – a simplified worked example

This example uses contrived voting patterns to make the arithmetic easy. Realistic voting patterns do not change results significantly - but the arithmetic gets tedious.

Consider three candidates, A, B, and C, with 100 voters using "preferential voting":

Candidates	A	B	C	Totals
1^{st} pref. votes received by each candidate	P_{1A} 35	P_{1B} 34	P_{1C} 31	100
2^{nd} preferences	P_{2A} 14	P_{2B} 17	P_{2C} 69	100
3^{rd} preferences	P_{3A} 51	P_{3B} 49	P_{3C} 0	100
Totals	100	100	100	300

All three candidates polled well on 1^{st} preferences. 2^{nd} preferences show that C is a very popular 2^{nd} choice. 3^{rd} preferences show that A and B are unpopular with about half the voters.

With normal preferential vote counting, C is eliminated and preferences distributed as shown:

Candidate results after elimination of C	A	B	(Ignored preferences)	Totals
Candidates own 1^{st} preference votes	35	34		69
Distributed preferences from Candidate C	14	17	(69)	31
(Preferences which have been ignored)	(51)	(49)	(0)	
Totals after preferences	49	51		100

B wins. Is this fair? Consider: differences between primary votes are minor; C's good 2^{nd} & 3^{rd} preference votes are ignored; A & B's poor 2^{nd} and 3^{rd} preferences are ignored. So could the result be unfair? Note: eliminating C gives exactly the result expected from a run-off election between A and B. So a 2-stage election would give the same results. Does that make it fair?

Let's see: consider a run-off between B & C, which is the same as eliminating A, as below:

Candidate results after elimination of A		B	C	Totals
Candidates own 1^{st} preference votes		34	31	65
Distributed preferences from Candidate A		0	35	35
Totals after preferences		34	66	100

So C wins handsomely over B – much more impressive than B's marginal 'win' over A.

Now we can simulate a run-off between A & C: results are the same as eliminating B:

Candidate results after elimination of B	A		C	Totals
Candidates own 1^{st} preference votes	35		31	66
Distributed preferences from Candidate B	0		34	34
Totals after preferences	35		65	100

So C wins handsomely over A – again much more impressive than B's marginal 'win' over A.

So ***we have proved that B's win was not fair and that eliminating C was wrong***! Now it ***IS*** fair that C should win. But should C win by such an impressive margin? To answer that question, we can evaluate the same election using CPV as follows:

	A	B	C	Totals
Times 2 weight for 1st preference votes	35x2 = 70	34x2 = 68	62	200
Times 1 weight for 2nd preference votes	14x1 = 14	17x1 = 17	69	100
Zero weight for last preferences	51x0 = 0	49x0 = 0	0	0
Sum of weighted preferences	84	85	131	300
normalised consensus result	28%	$28^1/_3$%	$43^2/_3$%	100%

C is declared elected. C needed preferences to win as shown by the 43% normalised consensus score, which indicates that C does ***not*** have an absolute majority. However, ***C has a clear consensus advantage over both B & A, and would easily win a run-off with either B or A.***

In summary: The example illustrates that **CPV gives a correct result where *normal Preferential voting gives a wrong result.***

Peter Newland 18^{th} September 2005