

The Mathematics of Democracy:
Is the Senate really proportionally representative?¹

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Former Prime Minister Paul Keating memorably described the Senate, when the Democrats and Greens shared the ‘balance of power’, as ‘unrepresentative swill’. After the Liberal-National Coalition government won a Senate majority at the 2004 federal election that description has assumed an unintended – and at least partially accurate – meaning. Whilst most discussion has focused on the implications of the executive gaining control of the legislature for the first time in almost two-and-a-half decades, of greater concern is that the majority of voters did not vote for the Coalition in the Senate.

The Coalition parties² only received 45.09 per cent of the first preference vote in the Senate but won 21 of the 40 seats up for election, or 52.5 per cent of the seats. In Queensland – the state that delivered the Coalition its majority at the last election – the Liberal Party won half the seats with only 38.29 per cent of first preferences, whilst the National Party won only 6.61 per cent of first preferences. National Party Senator Barnaby Joyce, the self-proclaimed balance-of-power holder, won his seat with less than half a quota on first preferences, and after a 2.55 per cent swing against the Nationals from the previous election.

How proportionally representative is the Senate’s electoral system?

As many eminent psephologists note – including Antony Green³, Campbell Sharman⁴ and Malcolm Mackerras⁵ – the Senate’s electoral system of Proportional Representation

¹ Thanks to Marian Sawyer, Antony Green and John Uhr for suggesting some useful references and to Peter Brent and an anonymous reviewer for editorial advice.

² Includes the joint Liberal/National Senate ticket and Liberal, National and Country Liberal Senate tickets.

³ Antony Green, *Submission to the Joint Standing Committee on Electoral Matters* (Online), viewed October 2005, <<http://www.aph.gov.au/house/committee/em/elect04/subs/sub073.pdf>>, 2005.

⁴ Campbell Sharman, *The Senate, Small Parties and the Balance of Power*, Politics, vol. 21, 1986, pp. 20-31.

by Single Transferable Vote (PRSTV) as currently practised is only semi-proportional. Under this system a candidate is elected by winning a droop quota, which is calculated by dividing the number of formal votes by one more than the number of Senators to be elected, and then adding one vote. Thus, at half-Senate elections for each State, the quota is about one-seventh of the vote. However, not all candidates or parties achieve a full quota, as in the aforementioned example, and some candidates or parties receive more than a full quota. Votes in excess of a quota and the votes of the lowest placing candidates are distributed according to preferences until all the seats are filled with full quotas. As most voters⁶ simply put a '1' above the line on a Senate ballot paper, their preferences are distributed according to a pre-election registered group ticket, which directs how preferences are to be distributed.

It should be noted that Group Ticket Voting (GTV) is not a requisite feature of PRSTV, but is a modification that was introduced by the Hawke Labor government as part of their 1984 electoral reforms. As Marian Sawer⁷ observes, Australia's version of PRSTV has become a closed party list system by default. The use of State/Territory lists rather than a single national list also affects the outcome. Green⁸ argues that since the introduction of GTV: 'Democracy has been enhanced by the cut in informal voting, but a democratic deficit is developing, with serious questions as to whether the results engineered by group ticket voting truly represent the will of the electorate'. A notable example from the last election was Labor and the Democrats preferencing Family First ahead of the Greens, resulting in the election of a Family First Senator in Victoria with only 1.88 per cent of the primary vote.

Furthermore, the Senate's electoral system can only be regarded as semi-proportional because of the small number of seats per State. Unlike New Zealand, for example, where about 50 seats are proportionally allocated according to a party's national vote share, there are only six Senate seats per State at a half-Senate election. The greater the

⁵ Malcolm Mackerras, *How the Labor Party helped the Senate fall into the clutches of the Coalition*, *Canberra Times*, 30/08/05, 2005, p. 11.

⁶ 95.85 percent of voters used ticket voting at the 2004 election.

⁷ Sawer, Marian 2004, *Above-the-Line Voting – How Democratic?* (Online), Democratic Audit of Australia, viewed October 2005, <<http://democratic.audit.anu.edu.au/abovetheline.pdf>>.

⁸ Green, p. 35.

number of seats the greater the proportionality, as the quotas are smaller and therefore closer to the actual vote shares.

Is six the right number of vacancies?

The centrepiece of the 1984 electoral reforms was the enlargement of the parliament, specifically the House of Representatives. However, as Section 24 of the Constitution (also known as the ‘nexus’ provision) requires that the number of members of the House of Representatives be ‘as nearly as practicable, twice the number of senators’, the Senate increased from 64 to 76 Senators, or an increase from 10 to 12 Senators per State (there was no increase in the number of Territory Senators). Yet this did not result in greater proportionality or representativeness of minority groups, despite a slight lowering of the quota. As Sharman⁹ argued at the time, the changes ‘will alter the quota for election of senators in a way which will have the consequence of making it harder for minor party and independent candidates to secure representation in the Senate’.

Since the 1984 elections, when the reduced quota was first used, cross-bench¹⁰ Senators have been elected 47 times. At half-Senate elections during that period (i.e. excluding the double dissolution election of 1987 where a full Senate was elected), cross-bench Senators have been elected 37 times. Of those 37 times, only three times have they ever achieved quotas in their own right – South Australian Democrats John Coulter (1990) and Natasha Stott Despoja (1996), and One Nation’s Heather Hill¹¹ in Queensland (1998).

Lowering the quota does not only affect minor parties and independents, but all candidates, including major party candidates. Whilst it seemingly makes it easier for a minor party to win one seat, it also makes it easier for the major parties to win three seats, and to deny representation to minor parties. The more significant effect of the changes was not the lowering of the quota, but the increase to an even number of

⁹ Sharman, p. 20.

¹⁰ I use the term ‘cross-bench’ rather than minor party to distinguish parties such as the Democrats from the Nationals.

¹¹ Heather Hill was subsequently declared ineligible for election by the High Court because she also held British citizenship. One Nation’s Len Harris won the seat instead.

vacancies at a half-Senate election, which actually compromises one of the basic principles of representative democracy, and has finally benefited a major party.

As can be seen in Table 1, with an odd number of vacancies, a group requires a majority of the vote to win a majority of the seats. With an even number of vacancies a group requires more than a majority of votes, but more significantly, does not need half of the vote to win half of the seats. Thus, at the 2001 federal election, all the Coalition needed was approximately 43 per cent of the vote in each State (and 33 per cent in each Territory) to win half of the seats (at a half-Senate election). At the following half-Senate election in 2004, all they needed was 43 per cent in the five of the States and 57 per cent in the other (and 33 per cent in each Territory) to win a majority. Even if Labor wins government at the next election, all the Coalition need to do at the next half-Senate election is win 42 per cent of the primary vote in five of the six states, and only 28 percent in the other state (and 33 per cent of the primary vote in the territories) and they will be able to block any legislation. If the Coalition wins at least 42 per cent of the primary vote in all of the States and a third of the vote in the Territories, they will retain their majority in the Senate.

Table 1: Quotas required to win one seat, half of the seats, and the majority of the seats

No. of Senators to be elected	% of vote for 1 seat (+ 1 vote)	Half^a of the seats	% of vote for half^a of the seats	Min. no. of seats req'd for majority	Min. % of vote req'd for majority
2	33.3	1	33.3 + 1 vote	2	66.7 + 2 votes
3	25.0	1	25.0 + 1 vote	2	50.0 + 2 votes
4	20.0	2	40.0 + 2 votes	3	60.0 + 3 votes
5	16.7	2	33.3 + 2 votes	3	50.0 + 3 votes
6	14.3	3	42.9 + 3 votes	4	57.1 + 4 votes
7	12.5	3	37.5 + 3 votes	4	50.0 + 4 votes
10	9.1	5	45.5 + 5 votes	6	54.5 + 6 votes
12	7.7	6	46.2 + 6 votes	7	53.8 + 7 votes
14	6.7	7	46.7 + 7 votes	8	53.3 + 8 votes

^a or one less than the minimum number of Senators required for a majority in the case of an odd number

However, under the old Senate numbers (30 Senate seats at a half-Senate election excluding the Territories), the present situation would have been much less likely. Table 2 shows the possible permutations (assuming a generally even spread of Senate seats

per state) for a party or parties to win half the total number of seats and a majority of seats. To win half the seats, the Coalition would have had to have won two seats in half of the States and three seats in the other three States. More importantly, to win a majority, the Coalition would have had to have won three seats in four of the States and two seats in the other two States. That is, they would have had to have won a majority of the vote in the majority of the States, which is more consistent with the basic principles of representative democracy.

Table 2: Possible distributions of seats per State to win half of the seats and a majority of the seats

Total seats	Half	State						Maj.	State					
		A	B	C	D	E	F		A	B	C	D	E	F
30	15	2	2	2	3	3	3	16	2	2	3	3	3	3
36	18	3	3	3	3	3	3	19	3	3	3	3	3	4
42	21	3	3	3	4	4	4	22	3	3	4	4	4	4

Changing the quota

At the 2004 election, the Coalition/Liberal tickets won more than 3 full quotas in all States except Queensland. In Queensland, the Liberal and Labor tickets both won 2 full quotas, whilst the Liberals and the Nationals had the highest partial quotas and won the final two seats, giving the Coalition an overall majority of seats.

Table 3: Quotas based on 2004 election results (6 seats)

Party	NSW	Vic	Qld	WA	SA	Tas
Coalition	3.09	3.09	-	-	-	-
Liberals	-	-	2.68	3.45	3.32	3.23
Nationals	-	-	0.46	0.06	0.03	-
Labor	2.55	2.53	2.22	2.28	2.48	2.35
Greens	0.51	0.62	0.38	0.56	0.46	0.93
Family First	0.04	0.13	0.24	0.06	0.28	0.17
Democrats	0.15	0.13	0.15	0.14	0.17	0.06
One Nation	0.13	0.05	0.22	0.17	0.08	-

If the old Senate numbers had been retained, it is quite conceivable that with GTV the Coalition would have still won a majority (see Table 4). However, the Coalition/Liberals/Nationals would have only received two full quotas in all States on first preferences. They would probably have won three seats in Western Australia (at the

expense of the Greens) and South Australia. However, in the other States the Greens would have put up a better challenge to the Liberals for the final seat on the excess Labor votes and Democrat votes.

Table 4: Quotas based on 2004 election results (5 seats)

Party	NSW	Vic	Qld	WA	SA	Tas
Coalition	2.65	2.65	-	-	-	-
Liberals	-	-	2.30	2.96	2.85	2.77
Nationals	-	-	0.40	0.05	0.02	-
Labor	2.18	2.17	1.90	1.95	2.13	2.01
Greens	0.44	0.53	0.32	0.48	0.40	0.80
Family First	0.03	0.11	0.20	0.05	0.24	0.14
Democrats	0.13	0.11	0.13	0.12	0.14	0.05
One Nation	0.11	0.04	0.19	0.15	0.07	-

If the numbers had been increased (to 7 seats per State), the Coalition/Liberals would have had three full quotas in every State on first preferences (see Table 5). The Coalition parties would probably have won four seats in Western Australia and South Australia. The Greens would have done much better, winning their Tasmania seat on first preferences, and with Democrat preferences, the Greens would have been close to winning the final seat in NSW and Victoria at the expense of the Coalition. In Queensland, the National seat may have been won by Family First, with One Nation, the Democrats and Labor all preferencing the Family First lead candidate ahead of Barnaby Joyce.

Table 5: Quotas based on 2004 election results (7 seats)

Party	NSW	Vic	Qld	WA	SA	Tas
Coalition	3.53	3.53	-	-	-	-
Liberals	-	-	3.06	3.95	3.80	3.69
Nationals	-	-	0.53	0.07	0.03	0.00
Labor	2.91	2.89	2.53	2.60	2.84	2.68
Greens	0.59	0.70	0.43	0.64	0.53	1.06
Family First	0.04	0.15	0.27	0.07	0.32	0.19
Democrats	0.18	0.15	0.18	0.16	0.19	0.07
One Nation	0.15	0.06	0.25	0.20	0.09	-

Possible solutions

There are many possible solutions for making the Senate more representative. Sharman¹² suggested that: ‘One possible solution is for states to elect their twelve senators in groups of five and seven at successive half Senate elections, with three states electing five, and three states electing seven senators at any given half Senate election’. Of course, that would be mean that Senators would be elected using different quotas, although that is the case now with the Territory Senators. Another possible solution would be to increase the size of the Senate, from 12 to 14 Senators per State (so that an odd number, 7, would be elected at a half-Senate election). Constitutionally, this would also mean an increase in the number of members of the House of Representatives, which would also be good for representative democracy in Australia. The population has grown since the last significant increase. As Table 6 shows, the average number of electors per division is now greater than when that the last increase was advocated in 1983.

Table 6: Average enrolled voters per electoral division before the increase in March 1983, after the increase of members, and at the 2004 federal election

State	Average enrolment per division March 1983 ^a	Average enrolment per division after increase ^a	Average enrolment per division 2004 election ^b
NSW	75 536	63 687	86 562
Vic.	78 028	64 023	89 923
Qld	73 643	61 369	88 661
SA	80 085	67 764	95 659
WA	72 507	61 352	83 648
Tas.	56 493	56 493	68 562
ACT	68 662	68 662	113 771
NT	57 471	57 471	56 465
Australia	74 989	63 335	87 323

^a Data from the Joint Select Committee on Electoral Reform First Report in 1983

^b Close of rolls before the 2004 federal election

Compared to other Westminster parliamentary democracies, the average number of registered voters per electoral division is higher in Australia than in New Zealand, the United Kingdom, and Canada. At the 2005 general elections the average number of

¹² Sharman, p. 30.

registered voters was under 43 000¹³ in New Zealand and under 68 000¹⁴ in the United Kingdom, whilst the average number of voters at the 2004 Canadian election was under 73 000¹⁵. Another good reason to increase the number of members of the House of Representatives is to adhere to the democratic principle of ‘one vote, one value’. As the Constitution guarantees Tasmania at least five seats and their population has not grown as fast as the mainland States, there is great disparity between the average numbers of electors of each State.

A more controversial reform, which would require a change in the Constitution, would be to elect Senators based on national vote shares rather than the current situation where each State votes as one electorate. As is often observed, the Senate is not the States’ house that the framers of the Constitution envisaged. There would probably be opposition to such a reform from the smaller States, but that could be overcome with a requirement that groups include candidates from every State on their tickets. They could be required to order candidates by alternating between each State, as some overseas parties do with male and female candidates to achieve gender equality. Most importantly such a reform would introduce greater proportionality and also give each Senate vote ‘one value’.

¹³ http://www.electionresults.govt.nz/e9/html/e9_part9_1.html

¹⁴ General election 2005 summary of results
<http://www.electoralcommission.gov.uk/templates/search/document.cfm/13894>

¹⁵ Elections Canada
http://www.elections.ca/content.asp?section=gen&document=part2_div5&dir=rep/re2/sta2004&lang=e&textonly=false#sec51