Parliament of Australia
Department of Parliamentary Services

Parliamentary Library
Information analysis and advice for the Parliament

RESEARCH BRIEF

21 February 2006, no. 10, 2005–06, ISSN 1832-2883

Electoral systems

This is a revision of the well-received paper written in 1989 by Gerard Newman, formerly Director of the Statistics Section of the Parliamentary Library.

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Executive summary

What is an electoral system? What is required of an electoral system? Is there a 'best' electoral system? What are the major categories of electoral system? These questions form the focus of this paper, a revision of an original paper written by Gerard Newman and published by the Parliamentary Library in 1989.

Ostensibly, the prime requirement of an electoral system is that it enables the citizens of a nation to elect their legislative members and, in many cases, the head of state. There is more to it than just that, however, with a number of important factors coming into play. Discussion of these form the major part of this paper. They include:

- Whether or not an electoral system is easily understood by the voters. Is the simplest of all systems, First-past-the-post, to be preferred because it is so easy for voters to comprehend? On the other hand, does it matter if a system is difficult to comprehend if it delivers a legislature whose makeup reflects the popular will?

- How much choice of candidates do voters have? Should voters have full freedom to vote for any particular candidate, or does it not matter that they may only be able to vote for a closed ticket of party representatives with no individual choice possible?

- Does it matter if results of an election are not known for some time? Some results are known very speedily, others can take several weeks. Many would see this as a serious weakness in an electoral system.

- How much does an electoral system enable the voters' wishes to be reflected? Should there be an exact replication (e.g. a 50 per cent vote for a party producing 50 per cent of the legislature's seats), or does it not matter if the leading party gains more seats than its vote would seem to justify?

- Does the electoral system help ensure that a wide range of views is heard in the legislature? If not, does that matter? Should electoral systems be put in place that are likely to see a wider range of representation in the parliament than previously?

- Did a majority of the electorate support a new or re-elected government at the time of the election? If not, does that matter? Should an electoral system be put in place that guarantees this? Some observers believe that is it more important for electoral systems to produce stable governments than necessarily a majority of votes.

- Single-member electoral arrangements are typically based on the representation of particular localities, with the citizen easily able to identify the local member. By contrast, in an electoral system based on multi-member electorates there can be confusion in the general population as to which MP a citizen can approach to air a grievance or to seek assistance. Does this matter?

These questions lead naturally to the question of what is the best electoral system to use to elect members of a national legislature. The implication in this question is that a 'best' electoral system can be found. In fact, there is consensus among political scientists that there is no 'best' system—indeed, it has been acknowledged that all systems have flaws and problems. It has been claimed that the 'necessary first answer' to the question of which is 'best' becomes: 'It depends on what one thinks an electoral system is for'.

Introduction

The Parliamentary Library has decided to republish the paper on electoral systems written in 1989 by Gerard Newman.[1] The paper is concerned with the mechanics of translating votes into seats as well as the consequences of using particular systems. It does not cover other aspects of the electoral process such as electoral administration, franchise arrangements, candidate selection, the role of parties, electoral funding or manipulation of the electoral process.

The purpose of an electoral system is to translate the will of the electorate, as expressed through the ballot box, into members of a legislative body. The ways this can be achieved are many and varied. Electoral systems throughout the world range from very simple First-past-the-post systems to quite complex arrangements using parts of different systems.

Broadly speaking, the function of converting votes into legislative seats can be achieved by a plurality of votes, a majority of votes or proportionally. Thus there are three main categories of electoral systems: plurality, majoritarian and proportional representation. There are also systems that are a mix of features of two or more systems.

Some writers use the term 'electoral system' to mean all the structures and operations that are used to run an election.[2] The means for drawing up of electoral boundaries, the qualification of voters and candidates, the method of voting and the means of settling disputes would thus all be included, as would the administrative structure used to oversee the entire electoral process. Many others, however, use the term quite specifically to describe the voting method itself.[3] This is the way in which the term is used in this Parliamentary Library Research Brief.

The basic function of the electoral systems that will be discussed is the use of citizens' votes to elect members of national or regional legislatures. As seen below, there are many types of electoral system, but the point needs to be made here that electoral systems are not simply neutral statistical arrangements that enable MPs to be chosen for a legislature. The particular system used in a particular location can play an important role in determining:

- who is elected
- the nature of the legislature
- the legislative programme of the legislature

- the place of particular parties in the political system
- the attitude of the general community to the electoral process in general, and
- the attitude of the general community to a particular election result.[4]

The use of a specific voting method in one location may produce quite different outcomes to the use of the same method in another. Therefore we need not only to understand an electoral system, but also the context(s) in which it has been used.

An early classification of electoral system was that between 'direct' and 'indirect' systems. 'direct' systems allow voters to vote directly for candidates and/or parties, whereas 'indirect' do not. This paper deals with 'direct' systems, thus omitting any discussion of 'indirect' systems such as the Electoral College used for the election of the US President.

Part one: what is required of an electoral system?

The answer to this depends on many factors. Given the almost infinite variety of systems and combinations that is possible it is worthwhile considering some basic requirements that an electoral system should possess. It should be noted that some of the following points may not be compatible one with another, and that not all will be present in any individual system. However, the absence of some of these requirements from a system does not necessarily mean that the system does not have merit. The impact of electoral systems varies from country to country due to such variables as local politics, the political culture of a country and historical factors.

Easily understood?

All the features of an electoral system should be easily comprehended by those citizens who will be using it to elect a representative assembly. One of the claimed virtues for First-past-the-post voting arrangements is that the system is simple—a single vote is registered, the candidate with the largest number of votes wins, and the margin of votes is irrelevant. Preferential Voting (the Alternative Vote) as used in Australia is more complex than this, but the evidence of over eighty years suggests that the vast majority of Australian voters understand how to vote in a preferential voting election and, even if some do not understand the actual counting arrangements, they understand the system's effects. The way in which so many voters followed the Australian Labor Party's 'second preference' strategy in the 1990 Australian Commonwealth election is proof of that.[5]

By contrast, the complexity of the so-called 'modified d'Hondt' system of Proportional Representation introduced at the time of the first Australian Capital Territory self-government elections was an important factor in its being replaced after being used for just two elections (1989, 1992). By contrast, many proportional representation systems are very complex and probably understood by few voters, yet have a wide acceptance in European countries.

A choice of candidates?

Ideally, electors should be given the chance to vote for any of the candidates contesting an election. In single-member electorates this is not an issue. In multi-member electorates, though, it sometimes can be. Some countries use 'closed list' systems, where electors in Multi-Member Constituencies may only vote for a party list of candidates' names—they have no say as to which candidates receive their particular vote. By contrast, in Tasmanian and Australian Capital Territory elections where the Hare-Clark proportional representation system is used, although party lists of candidates' names are presented on the ballot paper, the voter is able to vote for any individual candidate on a party list—it is an 'open list' system.

A quick result?

A confirmed British general election result is usually known quickly. This is due to the speed of counting that is possible when an electoral system is used in single-member electorates. To Australian eyes, British final results come through remarkably quickly. In the 2001 British election, for instance, the counting of 31187 votes for six candidates in the seat of Sunderland South was achieved 43 minutes after the close of polls. By contrast, Australian proportional representation elections for multi-member electorates are naturally much slower to count, due to the number of seats to be filled and the larger number of votes than in a single-member electorate. The 2003 election for 21 seats in the New South Wales Legislative Council attracted 284 candidates and 15 groups. Even the handling of each large ballot paper adds substantially to the time taken to count such an election.

Reflecting the electorate's wishes?

The result of an election, whether at the electorate level or across a nation or region, should reflect the way in which people have voted: 'the sense of the majority should prevail', was the way Alexander Hamilton put it in the *Federalist Papers*.[6] Voters in an electorate should see the local member as *their* representative in a national or regional legislature. When First-past-the-post is used, if over half of the voters in an electorate support the winner the link between MP and community is clear. If, however, an electorate vote is evenly split between at least three candidates, it can be asked whether the winner is truly the local representative most preferred by voters? In a national or regional election the ideal is that if half of the voters vote for candidates from a particular party, then that party should win at least half of the seats in the legislature—there should be a high degree of what political scientists call 'proportionality'. In fact, different electoral systems have different impacts upon the key matter of the translation of votes into seats, and not all are as fair as perhaps they should be.

One might suppose that a party should win half the votes in election to win half of the legislative seats, yet a common occurrence is that many systems tend to give the winning party/coalition more seats than their vote would seem to warrant. In the 2005 United Kingdom election the Labour Party won only 35.5 per cent of the vote, yet was able to win

55 per cent of the seats. This has been called the 'winner's bonus'.[7] Provided that the 'winner's bonus' effect does not become too exaggerated, however, people seem prepared to accept this level of distortion.

On the other hand, when the Liberal Party (43.8 per cent) won as many seats in the 1968 South Australian election as did the ALP (52 per cent), the electoral system actually became a matter of public debate in that State.[8] As a consequence, the South Australian electoral system was altered to produce legislatures that more accurately reflected the popular vote. In the United Kingdom a 1992 Liberal Democrat vote of 17.8 per cent returned only 3 per cent of House of Commons seats; in 2001 the respective figures were 18.3 per cent and 7 per cent of the seats. These results were an important factor in stimulating an ongoing discussion about possible reform of the British electoral system—a discussion that has not yet produced any change to the electoral system used in House of Commons elections.[9]

Representing all voices?

What is meant by 'representation'? The original view held that it meant a form of government where the law-making responsibility was delegated by the citizens to duly-elected public officials—representatives of the people. In time this was linked to the fact that citizens actually voted in elections for members of the national legislature. Although many would not have voted for any of the elected officials, the theory was that those elected actually governed for the whole community. The parliament could be said to be 'representative' because it was properly elected.

In more recent times, however, such an idea of representation has been criticised as inadequate. Critics have pointed to the similarity of the peoples' representatives in many legislatures, a phenomenon that indicates the difficulty of some sectors of society in gaining representation:

> The typical Lower House member of parliament in a European democracy reappears everywhere, with remarkably few variants: he is male, mature, middle-class, well educated, and nowadays increasingly likely to be a professional politician.[10]

Generally speaking, legislatures under-represent women, manual workers and religious and racial minorities, and it is a combination of electoral system and party pre-selection practices that have brought about this situation. The Law Commission of Canada cited one concern with First-past-the-post in that country as being the under-representation of 'women, minorities and Aboriginal peoples amongst electoral candidates'.[11] One of the claimed benefits of proportional representation systems is that their use generally sees the election of people who might otherwise be under-represented. Major parties feel they can afford to allocate some place on candidate lists to female candidates and to members of minority interests—particularly ethnic communities. Australia, which uses proportional representation for Senate elections, reflects this clearly. In the six elections between 1990 and 2004, 17.3 per cent of all members of the House of Representatives have been women; the comparable Senate figure has been 28.3 per cent.[12] The first immigrant members of the

Commonwealth Parliament were seen in the Senate rather than the House of Representatives, and the only confirmed Aboriginal parliamentarians to date have both been Senators.

A government supported by the majority?

The Australian electorate is used to, and is quite prepared to accept, governments that do not achieve half of the first preference vote. Such acceptance is probably helped by the importance that the 'two-party preferred' concept has assumed since first being introduced by Malcolm Mackerras in 1972.[13] For example, although the Coalition fell well short of 50 per cent of the first preference vote in 2001, its two-party preferred vote of 51 per cent gave it a clear 2 per cent margin over its main opponent, something that was pointed to as confirming its acceptance by the majority of the electorate. By comparison, after the 1990 and 1998 Commonwealth elections critics who noted the failure of the incoming government to win a majority of either the first preference or two-party preferred vote questioned the legitimacy of the Labor (1990) and Coalition (1998) victories. Since the 1949 election such a result has occurred on only five of 23 occasions—though twice in the 1990s—and it probably safe to assume that there would be calls to change the system were this to become a regular factor in Australian elections.

Stable government?

For some observers the key feature of an electoral system is whether or not its use results in stable government. In those systems where governments can fall if they lose control of the parliamentary lower house, a clear majority in that house is a necessary step towards stability. In the years since Preferential Voting was introduced for House of Representatives elections in 1918, only in 1940 has one party or a coalition of parties failed to win control of the House of Representatives. On the other hand, the instability of the first ACT legislature after the commencement of self-government which produced three ministries between 1989 and 1992, played an important part in explaining the replacement of the 'modified d'Hondt' system after the second ACT election.

Effective constituent representation?

Single-member electoral arrangements are typically based on the representation of particular localities, with the citizen easily able to identify his or her local member. First-past-the-post and Preferential Voting, both of which are based on single-member electorates, fulfil this requirement. By contrast, in an electoral system based on multi-member electorates there can be confusion in the general population as to which MP a citizen can approach to air a grievance. In Australia, whom of 12 State Senators does a resident of a State contact for assistance? This can affect the community perception of the representative nature of the system.[14]

Is there a 'best' electoral system?

Since the Canadian election of 2000 there have been many calls for removal of the First-past-the-post electoral system used in House of Commons elections in that country. 'Fair Vote Canada' was formed in 2000 to campaign for voting system reform. One response came from 103 Canadian political scientists who called on the Canadian Government and the parties to initiate public consultation on the issue, followed by a referendum 'to choose the best system'.[15]

The implication in such a comment is that a 'best' system can be found. In fact, there is consensus among political scientists that there is no 'best' system—indeed, it has been acknowledged that all systems have flaws and problems. In fact, the answer to the question as to the 'best' system clearly depends upon location—as a writer on Caribbean politics put it when discussing Guyana: 'What Kind of Electoral System is Best *for Guyana*?' (italics added)[16] The African National Congress has illustrated how electoral systems are best seen *in situ*, when it proposed five criteria for evaluating electoral systems, all of which were of great importance for a nation, such as South Africa, which was establishing a new governmental system:

- does it deepen democracy and reflect the democratically-expressed will of the people?
- will it contribute to nation-building and maintain political stability and peace?
- will voters feel effectively represented by the elected parliamentarians?
- can voters easily understand it? and,
- is it practical in terms of its implementation?[17]

Such factors would not necessarily be given a high priority in some nations. Clearly then, electoral systems are a means to an end—and the end may involve different considerations in different political settings. For the South Africans the criteria seemed to point to the adoption of variant of the List system of Proportional Representation.

Part two: categories of electoral system

There a host of electoral systems used for national elections in 211 nations, but it is possible to categorise the systems into four broad families:

- plurality
- majority
- proportional

- mixed.

As suggested above, the electoral system adopted by a country probably depends more on the country's political culture rather than any abstract consideration of the relative merits of different voting methods. For example, countries with a British political heritage are more inclined to plurality and majority systems, while those of continental Europe have been more inclined towards proportional systems.

Plurality systems

Plurality systems which are almost always used in conjunction with single-member electorates are the simplest of all electoral systems. Plurality systems are commonly used for the election of Heads of State. A plurality system, such as **First-past-the-post** awards a parliamentary seat to the candidate who receives the most votes regardless of whether the candidate receives a majority of votes. In the following illustration from Canada the Conservative candidate won the seat though not obtaining an absolute majority of votes.

First-past-the-post—St John's South (Canada, House of Commons), 2004

[One to be elected–elected candidate in bold]

Candidate	Votes	%
Hearn (Con)	**13 330**	**39.6**
Coady (Lib)	11 879	35.3
Norman (NDP)	7 989	23.7
Willcott (Grn)	493	1.5
Total votes	33 691	100

Source: Elections Canada

The variation of the First-past-the-post system used in Japan is referred to as the **Single Non-Transferable Vote**. The system is used to elect elected members to both the House of Representatives and House of Councillors. In both chambers members are elected from multi-member electorates. Electors have one vote and candidates with the highest number of votes are elected.

Other variations involving multi-member include the Block Vote and the Cumulative Vote systems. In the **Block Vote** system the elector has as many votes as there are candidates to be elected. Once again the candidates with the highest votes are elected regardless of whether they receive a majority of votes. The Block Vote was the first political system used in Australian Senate elections.

Block Vote—Victoria (Australia, Senate) 1910

[Three to be elected–elected candidates in bold]

Candidate	Vote	%
Findley (ALP)	**217 573**	**48.7**
Barker (ALP)	**216 199**	**48.4**
Blakey (ALP)	**215 117**	**48.1**
Best (Lib)	213 976	47.9
Trenwith (Lib)	211 058	47.2
McCay (Fus)	195 477	43.7
Goldstein (Ind)	53 583	12.0
Ronald (Ind)	18 380	4.1
Total votes	1 341 363	

Note: There were 447 121 voters each of whom had three votes, giving 1 341 363 total votes. Percentages shown are percentages of 447 121, indicating the proportion of voters who supported each candidate. As each voter cast three votes, the percentages add up to 300 per cent.

Source: http://psephos.adam-carr.net/countries/a/australia/1910/vic-1910.txt

The **Cumulative Vote** is of interest to Australia because it is used to elect the Legislative Assembly on Norfolk Island. When the Cumulative Vote is used, voters have the same number of votes as there are positions to fill—in the Norfolk Island case voters have nine votes to elect the nine-person Legislative Assembly. A voter may give one vote to each of nine candidates. On the other hand, the voter may give more than one vote to different candidates, though no more than four votes may be given to any one candidate.

Cumulative Vote—Norfolk Island (Legislative Assembly) 2004

[Nine to be elected–elected candidates in bold]

Candidate	Vote	%	% of voters	No. of voters
Gardner	**1809**	**17.2**	**59**	**690**
Sheridan	**1436**	**13.7**	**50**	**586**
Christian	**949**	**9.0**	**35**	**406**
Boudan	**838**	**8.0**	**34**	**395**
Nobbs	**810**	**7.7**	**32**	**368**
Buffet	**755**	**7.2**	**29**	**342**
Brown, J	**674**	**6.4**	**26**	**308**
Jack	**652**	**6.2**	**27**	**319**
Brown, T	**628**	**6.0**	**26**	**308**
Nicholas	566	5.4	24	278
Robinson, R	512	4.9	22	259
Walsh	426	4.1	16	190
Jope	226	2.2	10	112
Robinson, C	222	2.1	11	124
Total votes	10 503			

Source: http://www.gov.nf/Election2004/index.pl

Candidates needed to be one of the leading nine vote winners to gain an Assembly seat. Gardener's 1809 votes came from 218 voters who gave him four votes, 150 voters who gave him three votes, 165 voters who gave him two votes, and 157 voters who each gave him a single vote—690 voters in all. With the Cumulative Vote some candidates are able to do well despite receiving votes from fewer people than other candidates. In this case the two Browns each had the same number of voters supporting them, although their total votes were 46 apart.

Advantages of plurality systems

- These systems are easier to understand than are Majority or Proportional Representation systems, even when there is more than one MP to elect. In the First-post-the-post example above, the Conservative candidate won the most votes and was elected as member for the Newfoundland riding of St John's South. In the Block Vote example, the three Labor candidates received the most votes—though narrowly—and all won seats. The Cumulative Voting election result is also simple to comprehend—the nine candidates with the highest vote tallies each won a seat in the Norfolk Island legislature.

- Counting tends to be uncomplicated, and produces a speedy outcome.

- In single-member electorates, electors are not required to allocate preferences they may not have.

- Because candidates are not elected as a result of the transfer of preferences, those who have the largest number of primary votes will be successful.

- Where First-past-the-post is used in single-member electorates, the link between voter and MP is said to be clear.

- The Block Vote gives a choice to voters from within a party group. A voter can avoid a candidate from a particular party though still supporting that party by voting for another of its candidates.

- In the USA the use of Cumulative Voting makes the selection of minorities, women and independents more likely than when First-past-the-post is used. Supporters of such candidates may cast all their votes for their preferred candidate, who can win with support from relatively few voters.

Disadvantages of plurality systems

- The 'winner's bonus' phenomenon can be particularly marked. In the 2005 UK election Labour won 55.2 per cent of the seats on a vote of 35.5 per cent.

- These systems can deny representation to quite substantial numbers representing minority opinions. In the 2005 British election the Liberal Democrats' 22 per cent vote secured it only nine per cent of the seats.

- The winner of an electorate may have a relatively small percentage of the vote. In the seat of St John's South the Conservative winner gained only 39.6 per cent of the vote.

- Many votes are therefore 'wasted' in single-member constituencies. In case of St John's South, 60.4 per cent of the voters had no impact on the election result.

- Minor parties are likely to gain representation commensurate with their level of support only if that support is concentrated in a specific area. In 2001, twenty British House of Commons seats were won by minor parties, all of which were regionally based: the Ulster Unionist Party (5 seats, 0.8% national vote) and the Democratic Unionist Party (5, 0.7%) from Northern Ireland, the Scottish National Party (5, 1.8%) and Plaid Cymru from Wales (4, 0.7%).

- The use of First-past-the-post can also result in the election of a government that does not receive support from a majority of the electorate, or even the largest number of votes. In the New Zealand elections of 1978 and 1981, the Labour Party won the most votes yet won fewer seats than the National Party which formed a government after each election.

- The Block Vote system works best when the candidates are independents. When the candidates are members of parties the Block Vote tends to exaggerate the propensity of plurality systems to give a bonus to the largest party. If three candidates are to be elected, for example, it is possible for all three candidates from the same party to be elected with only a small plurality. When used in Australian Senate elections between 1903 and 1918, very often one party would win all three seats in a State, even when the vote was quite close.

- Although the Cumulative Vote may aid the election of minorities, it does not necessarily secure the representation of majority or minority interests in their true proportion.

Majority systems

Majority systems require a winning candidate to receive an absolute majority (more than half) of the vote to ensure election. Such a majority can be achieved through a second ballot or by means of preference voting. The second ballot systems are restricted to electing members from single-member electorates while the alternative vote system can be used for both single- and multi-member electorates.

In the **Second Ballot** system two First-past-the-post elections are scheduled. Candidates who receive more than half of the vote are declared elected. In those electorates where no candidate receives more than half the vote, there will be a second, or run-off, ballot slip. This may be between the top two candidates on the first count, or it may be of candidates who receive a certain percentage of the vote. The Second Ballot system prevents the election of any candidate without an absolute majority of the vote, thus overcoming one of the main criticisms of plurality systems. Second Ballot systems are more likely to be used in presidential elections rather than for legislative elections.

Second Ballot electoral system—France (Presidential election), 2002

[One to be elected–elected candidate in bold]

Candidate	First ballot (%)	Second. ballot (%)
Chirac (RPR)	**19.9**	**82.2**
Le Pen (FN)	16.9	17.8
Jospin (PS)	16.2	-
Bayrou (UDF)	6.8	-
Laguiller (LO)	5.7	-
Chevènement (PR)	5.3	-
Mamère (LV)	5.2	-
Besancenot (LCR)	4.2	-
Saint-Josse (C,P,N,T)	4.2	-
Madelin (DL)	3.9	-
Hue (PCF)	3.4	-
Mégret (MNR)	2.3	-
Taubira (PRG)	2.3	-
Lepage (CAP)	1.9	-
Boutin (FRS)	1.2	-
Gluckstein (PT)	0.5	-

Source: http://www.electionworld.org/france.htm.

The **Alternative Vote** is known to Australians as Preferential Voting and to Americans as Instant Runoff Voting. Preferential Voting is less cumbersome than the Second Ballot system in that it asks the voter to indicate how he or she would vote in the event of his or her first choice candidate being defeated, and of the voter having to choose again from the remaining candidates.

Voters are required to rank candidates in order of preference. This can involve the compulsory allocation of preferences to all candidates (‘compulsory preferential’), or may require the allocation of at least a single preference (‘optional preferential’). If a candidate receives more than 50 per cent of the number 1 votes (the ‘first preferences’), the candidate is elected. If no candidate receives more than 50 per cent of first preference votes, then the candidate with the lowest first preference vote is eliminated and his/her votes are distributed to the remaining candidates on the basis of the second preferences. Candidates are eliminated in this way until one candidate reaches a majority.

Alternative Vote—Benalla (Victoria, Legislative Assembly) 2002

[One to be elected–elected candidate in bold]

Candidates	First count	Second count (Stewart excluded)	Final count (Dwyer excluded)
Allen (ALP)	13 129	14 507	15 279
	(41.3%)	(45.6)	(48.0%)
Sykes (Nat)	**8 414**	**8 802**	**16 531**
	(26.5%)	**(27.7)**	**(52.0%)**
Dwyer (Lib)	8 306	8 501	
	(26.1%)	(26.7)	
Stewart (Grn)	1 961	-	
	(6.2%)		

Source: Victorian Electoral Commission

Advantages of Majority systems

- These systems are easier to understand than Proportional Representation systems and can produce relatively speedy results.
- Majority systems prevent the election of any candidate who lacks an absolute majority of the vote, thus overcoming one of the main criticisms of First-past-the-post.
- These systems tend to avoid the situation where a candidate can be elected on a very small percentage of the vote—though Arthur Hewson (CP) won McMillan in 1972 on the first preference vote of 16.6 per cent.
- Preferential Voting is less cumbersome than the Second Ballot system because it removes the need for voters to have to return to the polling booth on a second occasion.
- Preferential Voting also lessens any perceived dangers of vote-splitting. Voters can give preferences to two similar candidates lessening the fear that a third, unacceptable, candidate may be elected. In Australia the possibility of so-called 'three-cornered contests' between the two major conservative parties was a major reason for the system's introduction for House of Representatives elections in 1918.
- Where 'optional' Preferential Voting is used voters are required only to cast a first preference vote, and therefore can avoid expressing 'preferences' for candidates they may dislike.

Disadvantages of Majority systems

- The principal disadvantage of Majority systems is that results do not always reflect the wishes of the electorate. The party winning the majority of the national vote does not necessarily win a majority of the parliamentary seats—as occurred in the 1998 election

for the Australian House of Representatives. The degree of distortion is likely to be less under Majority systems than under Plurality systems, but is unlikely to achieve the consistently high degree of proportionality of Proportional Representation systems.

- Preferential Voting can often be capricious in its practical application and can result in the election of the least unfavoured, rather than the most popular, candidate.

- In three-cornered contests the result is often more dependent upon which party polls the least first preference votes rather than which party polls the most. In the example given above Dwyer (Lib) was the first Coalition candidate eliminated and his preferences elected Sykes (Nat). However, if 55 voters had changed their first preference vote from Sykes to Dwyer, then Dwyer would have been elected. The crucial question was therefore which party would be placed second and which would be placed third.

- When the Second Ballot is used, the need for a second contest results in greater expense for the candidates and parties involved, greater inconvenience to the electors, and it delays the result of an election, causing uncertainty.

- Under the Second Ballot, electors may use the first ballot as a form of protest vote. If there had been just the single vote for the French Presidency in 2002 it is highly likely that the votes for Chirac and Jospin would have been far larger—and certainly well ahead of that for Le Pen.

- Both Preferential Voting and the Second Ballot are subject to the 'winner's bonus' phenomenon.

- As with Plurality systems many votes are 'wasted' because individual candidates win many more votes than is required.

- When Preferential Voting arrangements requires the allocation of preferences to all candidates on the ballot paper, voters may be required to express 'preferences' for candidates whom they oppose.

- Because many votes may exhaust (have no further preferences to be counted) when 'optional' Preferential Voting is used, it is possible for a candidate to win a seat with fewer than half of the formal votes cast.

- Under 'optional' Preferential Voting if too many voters cast just a single preference, the system becomes a *de facto* First-past-the-post system, defeating a major reason for the creation of Preferential Voting. The ALP's call to 'Just Vote 1' in the Queensland elections of 2001 and 2004 was criticised for that reason.[18]

Proportional Representation

A bewildering number of Proportional Representation systems have been developed in an effort to produce a system under which legislative seats are won by parties in proportion to the proportion of the popular vote they gain. By necessity, this requires more than one vacancy in an electorate, so multi-member electorates are used. Electorates can be:

- a whole country, such as Israel
- a region, such as New South Wales for Legislative Council elections, or
- parts of a region, such as the six Legislative Council electorates in Western Australia.

The more parliamentarians there are to be elected from an electorate, the smaller the percentage of the vote that is required, and the more proportional the overall election result is likely to be. To avoid candidates being elected with very small votes, some countries establish an 'electoral threshold'. This is the vote that a candidate or party must exceed in order to gain parliamentary representation—examples include 5 per cent in Germany, 4 per cent in Italy, 1.5 per cent in Israel.

Proportional Representation systems can be broadly grouped into two categories: **List** systems and **Single Transferable Vote** systems. List systems can be further divided into **Largest Remainder** and **Highest Average** categories. List systems may or may not allow the voter to choose between candidates of the same party. List systems can be:

- closed, allowing no choice at all
- flexible, where the voter can vote for a party or a candidate, or
- free, where the voter may vote for individual party candidates.

The basic concept of Proportional Representation systems is to allocate seats to parties in the legislature in proportion to the votes cast at an election. To achieve this a number of different and quite complex computational arrangements have been devised. These may or may not include the use of the quota, that is, the number of votes required to obtain a seat.

The method of determining a quota is usually by dividing the number of valid votes by the number of seats to be allocated. This method is often referred to as the Hare quota. Three alternatives to the Hare quota exist: the Hagenbach-Bischoff quota, in which the number of votes is divided by the number of seats plus 1; the Droop quota, in which the number of votes is divided by the number of seats plus 1, and one is added to the quotient; the Imperiali quota, in which the number of votes is divided by the number of seats plus 2. In the following examples, 60,000 valid votes are cast and five seats are to be allocated.

Quotas

Method	Formula	Calculation	Quota
Hare	votes/seats	60 000/5	12 000
Hagenbach-Bischoff	votes/seats+1	60 000/6	10 000
Droop	(Votes/seats+1) + 1	60 000+1/6	10 001
Inperiali	Votes/seats+2	60 000/7	8571

Source: T. Mackie and R. Rose, *The International Almanac of Electoral History*, Facts on File, New York, 2nd ed. 1982

The simplest method of allocating seats under proportional representation is the **Largest Remainder** system. Under this system a quota is established, usually the Hare quota, and is used to determine each party's allocation. A seat is allocated for each quota that the party obtains. However, this system does not always provide for the allocation of all seats, as a number of votes will be left over after the allocation of full quotas and some small parties will not gain sufficient votes to obtain a full quota. The remaining seat or seats are allocated on the basis of the largest remaining votes after the allocation of full quotas. In the following example five seats are to be allocated but only three parties receive a full quota. The remaining seats are allocated on the basis of the highest remaining votes.

Largest Remainder

Party	Votes	Hare Quota	Seats	Remainder	Seats	Total Seats
A	8700	4800	1	3900	1	2
B	6800	4800	1	2000	0	1
C	5200	4800	1	400	0	1
D	3300	-	0	3300	1	1
Total	24 000					5

Source: T. Mackie and R. Rose, *The International Almanac of Electoral History*, Facts on File, New York, 2nd ed. 1982

The above example demonstrates one of the limitations of the Largest Remainder system in ensuring proportionality of representation. In the example, party D receives the same representation as parties B and C even though its vote is substantially lower. The system favours smaller parties over larger parties when using the Hare quota. The relative importance of remainders in the allocation of seats can be reduced by the use of a lower quota (Hagenbach-Bischoff or Droop). Lower quotas result in more seats being allocated on the basis of parties receiving a full quota and fewer being allocated by remainders. However, the use of a lower quota does not always overcome the proportionality problem of the Largest Remainder system. Using the example above, the Droop quota produces exactly the same result as the Hare quota.

To overcome problems associated with the Largest Remainder system the **Highest Average** system was devised. The object of the Highest Average system is to ensure that when all seats have been allocated the average number of votes required to win one seat shall be as

near as possible the same for each party. The Highest Average system can be used with or without a quota. When used with a quota, the system is sometimes referred to as a **Hagenbach-Bischoff** system. The system derives its name from the method of allocation of seats to parties. Under the system each party's votes are divided by a series of divisors to produce an average vote. The party were the highest average vote after each stage of the process is allocated a seat. After a party has been allocated a seat its votes are then divided by the next divisor. The Highest Average system has a number of different variations, depending on the divisors used and whether a quota is used or not.

The **d'Hondt** version uses the numbers 1, 2, 3, 4 etc as its divisions. In the following example the d'Hondt is used without a quota. As in the previous example five seats are to be allocated.

d'Hondt Version Highest Average system

Party	Votes	1st Seat Division	2nd Seat Division	3rd Seat Division	4th Seat Division	5th Seat Division	Total
A	8700	8700 (1)	4350	4350	4350 (4)	2225	2
B	6800	6800	6800 (2)	3400	3400	3400 (5)	2
C	5200	5200	5200	5200 (3)	2600	2600	1
D	3350	3350	3350	3350	3350	3350	0
Total	24 000						5

In the above example the first seat divisor is one for all parties. Party A has the highest vote and is allocated a seat. In the second round, votes for party A are divided by two, while all others are divided by one. Party B has the highest vote and is allocated the second seat. The process continues with the divisor for a party increasing by one each time that party is allocated a seat. The above example illustrates the highest average concept of the d'Hondt version. A less complex presentation of the above is shown below. In this example votes of all parties are divided by the series of divisors. From the resultant matrix, seats are allocated to parties with the highest votes.

Alternative presentation of the d'Hondt version

	Party A	Party B	Party C	Party D	Total
Votes	8700	6800	5200	3350	24 000
Divide by 1	8700 (1)	6800 (2)	5200 (3)	2350	
Divide by 2	4350 (4)	3400 (5)	2600	1675	
Divide by 3	2900	2267	1733	1117	
Seats	2	2	1	0	

A comparison of the examples shown under the d'Hondt version of the Highest Average system and the Largest Remainder shows a different distribution of seats and illustrates a characteristic of the d'Hondt version to favour major parties at the expense of minor parties. This can be modified by choosing different divisors. The **Sainte-Lague** version and the **Modified Sainte-Lague** version increase the size of the divisors, thus making it more difficult for a party to win each additional seat. The Sainte-Lague divisors are odd numbers beginning at one (e.g. 1, 3, 5, 7, etc). The modified Sainte-Lague numbers are 1.4, 3, 5, 7, 9. The Sainte-Lague divisors make it harder for major parties to gain each additional seat while the modified Sainte-Lague divisors maintain this characteristic as well as making it more difficult for smaller parties to gain representation through the 1.4 first divisor.

The following examples illustrate the Sainte-Lague characteristic of make it more difficult for major parties to obtain additional seats.

Sainte-Lague version

	Party A	Party B	Party C	Party D	Total
Votes	8700	6800	5200	3350	24 000
Divide by 1	8700 (1)	6800 (2)	5200 (3)	3350 (4)	
Divide by 3	2900 (5)	2267	1733	1117	
Divide by 5	1740	1360	1040	670	

Source: T. Mackie and R. Rose, *The International Almanac of Electoral History*, Facts on File, New York, 2nd ed. 1982

Modified Sainte-Lague version

	Party A	Party B	Party C	Party D	Total
Votes	8700	6800	5200	3350	24 000
Divide by 1.4	6214 (1)	4857 (2)	3714 (3)	2393 (5)	
Divide by 3	2900 (4)	2267	1733	1117	
Divide by 5	1740	1360	1040	670	

Source: T. Mackie and R. Rose, *The International Almanac of Electoral History*, Facts on File, New York, 2nd ed. 1982

In the above example both the Sainte-Lague and modified Sainte-Lague versions produce the same distribution of seats. However, the two versions provide representation for the smallest party at the expense of the second largest party.

In addition to varying the first divisor to make the election of smaller parties more difficult, a threshold can also be used in List systems to achieve the same result. Thresholds require a party to achieve a certain percentage of the vote before they can be eligible to have members elected.

List systems of one variety are another are used widely throughout Western European nations including Austria, Belgium, Denmark, Finland, Italy, Netherlands, Norway, Sweden and Switzerland. In their work on national electoral systems, Reynolds and Reilly state that

of 75 PR systems in use, all but nine use some form of List proportional representation system.[19] Among these are Belgium, Israel, Netherlands, Panama and Portugal. **In Australia the 'above-the-line' feature in Senate ballot papers is typical of list systems**. South Australia had a list system for its Legislative Council elections between 1973 and 1981.[20] Some examples allow a vote for individual candidates, but it is more common for voters only to be able to vote for a party list as a whole. An example of a List system that allows only a party vote is that used in Israel:

List electoral system (closed)—Israel (Knesset) 2003

[120 to be elected]

Party	%	Seats won in Knesset	Proportion of total seats
Likud	29.4	37	30.1
Avoda (labour)	14.5	19	15.9
Shinui	12.3	15	12.5
Shas	8.2	11	9.2
National Union	5.5	7	5.8
Meretz	5.2	6	5.0
Mafdal	4.2	5	4.2
YhT	4.3	5	4.2
Hadash	3.0	4	3.3
Am Ekhad	2.8	4	3.3
Balad	2.3	3	2.5
YBA	2.2	2	1.7
United Arab List	2.1	2	1.7
AY	1.2	-	-
Herut	1.2	-	-

Source: http://www.electionworld.org/election/israel.htm

The form of Proportional Representation familiar to most Australians is the **Single Transferable Vote** used in elections for the Senate, various Legislative Council elections, the Tasmanian House of Assembly and the ACT Legislative Assembly. The Tasmanian and ACT variant, colloquially known as **Hare-Clark**, differs from the system used for the Senate and the States' upper houses in a number of ways. However, the basic concepts are the same.

Voting is in multi-member electorates. Voters are required to rank candidates in order of preference. This may involve the compulsory allocation of preferences to all candidates or may involve the allocation of a specified minimum number. In Tasmanian and ACT elections, for example, voters must allocate a number of preferences at least equal to the number of parliamentarians to be elected. Candidates are elected once they achieve the Droop quota of votes that is needed to be elected. The quota is based on the total number of votes cast and represents the smallest number of votes that will ensure election:

$$\text{Quota} = \frac{\text{votes}}{\text{number to be elected} + 1} + 1$$

In percentage terms this means that a vote of 14.3% is needed to win one of six Senate seats in a half-Senate election, or 7.7% in a double dissolution election. In a Tasmanian House Assembly election 16.7% is needed to win one of five seats in an electorate, while 8.3% will win one of 11 seats being contested in a half-Legislative Council in South Australia.

By a complicated method of counting preferences as well as surplus votes, vacancies are filled as candidates reach the quota. Any candidate whose first preference votes equal or exceed the quota are declared elected. Votes surplus to the quota that have been cast for successful candidates are transferred (at a reduced value) to the remaining candidates according to the second preferences recorded by the voters. As each candidate receives a quota the candidate is elected and the candidate's surplus votes are distributed to candidates still in the count. If all surplus votes have been distributed and vacancies remain to be filled, the candidates with the smallest number of votes are gradually eliminated with those candidates' votes being distributed among remaining candidates until all positions are filled.

Single Transferable Vote—Braddon (Tasmania) 2002

[5 to be elected–winning candidates in bold]
Quota to be elected = 10 140 votes(16.7%)

Candidate	First preferences %	Order of election
Green (ALP)	**17.0**	**1**
Kons (ALP)	**14.0**	**3**
Rockliff (Lib)	**13.1**	**2**
Best (ALP)	**10.6**	**4**
Gaffney (ALP)	9.4	-
Whiteley (Lib)	**7.4**	**5**
O'Halloran (TG)	6.5	-
Downie (Lib)	5.7	-
Pattison(Lib)	5.0	-
Thompson (TG)	2.2	-
Upton (Lib)	1.9	-
Harris (TG)	1.3	-
Ellings (ALP)	1.2	-
Reilly (TG)	1.1	-
Johnson (TG)	1.0	-
Clarke (ALP)	1.0	-
Burnett	0.5	
Ryan	0.4	-
Kelly	0.4	

Source: http://www.electoral.tas.gov.au/pages/house.htm

Advantages of proportional systems

- Proportional Representation generally gives an accurate translation of votes into seats, even for smaller parties that have difficulty gaining parliamentary seats under systems that use single-member electorates. The larger the number of seats to be filled the more accurate this is. Conversely, the smaller the number of seats the harder it is to achieve proportionality. The reduction of members per Tasmanian House of Assembly electorate (from 7 to 5) that was made in 1998, was an effort to make it harder for Green candidates to gain election.[21]

- There is therefore a reduction of the 'winner's bonus' effect.

- In multi-member electorates many fewer votes are 'wasted' than under plurality and majority systems. Every vote counts, even in areas that might be unfriendly for a particular party.

- The use of Proportional Representation makes it very unlikely that one party will hold all seats in a particular region.

- These systems encourage parties to nominate a wide range of candidates. As a consequence, more women are likely to be elected, as are representatives from minority cultures and groups.

Disadvantages of proportional systems

- Some critics dislike the fact that parties can find it difficult to gain a majority of parliamentary seats, making coalition governments a common feature in those countries—particularly in Europe—where Proportional Representation is used. Three of the four ACT Hare-Clark elections have produced minority governments.

- Proportional Representation thus tends to fragment the party system, and can lead to the election of MPs from micro-parties that can gain influence far in excess of their following in the community—as has been seen in the Israeli Knesset and the New South Wales Legislative Council.

- Proportional Representation can aid the election of representatives from outside the political party mainstream. Perhaps the most famous example is the way in which the election of extremists in the years of the Weimar Republic in Germany (1919–33) helped bring about the collapse of the Republic.

- The link between parliamentarian and constituent that is clear in single-member constituencies can be very uncertain when Proportional Representation is used. This is particularly obvious in closed list systems where voters cannot vote directly for or against a particular candidate.

- Another difficulty with Proportional Representation systems is that the way they allocate seats can be extremely complex and difficult for voters to understand.

Mixed systems

The three types of electoral system outlined in this paper (plurality, majoritarian and proportional representation) all have advantages and disadvantages. Logic might suggest that the best electoral system should consist of a combination of individual systems so that the disadvantages of one system might be overcome by the advantages of the others. Some 'mixed' systems have been devised with this aim. An example is Mixed Member Proportional (also known as the Additional Member system) used in Germany, Italy and New Zealand. Part of the parliament (50 per cent in Germany, 25 per cent in Italy, 42 per cent in New Zealand) is elected by Plurality methods, usually from single-member electorates. The remainder of the legislature is chosen from closed party lists, so as to ensure that a party's proportion of the national vote is matched in the national parliament. Thus, if a party were to fail to win a single seat despite gaining 15 per cent of the national vote, it would be granted a number of list seats to bring its representation to approximately 15 per cent of the legislature. If the party wins more individual seats than its national vote entitles it, then it keeps those seats in the legislature, which is temporarily increased in number.

Mixed Member Proportional—New Zealand (House of Representatives), 2005

[120 to be elected]

Party	Party vote (%)	Electorate seats	List seats	Total seats	Proportion of seats
Labour	41.1	31	19	50	41.3
National	39.1	31	17	48	39.7
NZ First	5.7	-	7	7	5.8
Green Party	5.3	-	6	6	5.0
Maori Party	2.1	4	-	4	3.3
United Future	2.6	1	2	3	2.5
ACT NZ	1.5	1	1	2	1.7
Progressive	1.1	1	-	1	0.8

Source: http://www.electionresults.govt.nz

In the New Zealand example given here, NZ First won no electorate seats, but its 5.7 per cent country-wide vote qualified it for a 'topping-up' of 7 seats. By contrast, the Maori Party managed to win four electorate seats but gained no topping up seats because its vote was narrowly based on a few seats. Unlike the previous election where 120 MPs were elected, on this occasion the topping up procedures produced a House of Representatives of 121 members.

Some Mixed systems do not seek to achieve proportionality—often called Parallel Systems. The electoral system used to elect members of the Russian national legislature is such a system, for no provisions exist for representation to be adjusted to achieve proportionality. Voters cast two votes. One of these votes is for a Duma member representing a single-

member electorate—of which there are 225 in all. The other vote affects the election of 225 members elected on a proportional basis.

Parallel systems—Russia (Duma) 2003

Party	Vote	List seats	District seats	Total seats
United Russia	38.0	119	102	221
Communist	12.8	40	11	51
Liberal Democrat	11.7	37	-	37
Homeland Union	9.2	29	8	37
People's Party	1.2	-	16	16
YaBloko	4.4	-	4	4
Union of Right Forces	4.0	-	3	3
Agrarian	3.7	-	3	3
Rebirth of Russia	1.9	-	3	3
Russian Pensioners	3.1	-	1	1
Others	5.1	-	74	74
Against all	4.8			
		225	225	450

Source: http://en.wikipedia.org/wiki/Russian_legislative_election,_2003

In summary

This paper has outlined just some of the electoral systems in use throughout the world. There are many systems, and an almost infinite number of variations. Proponents of particular electoral systems tend to maintain that their particular system is the best and that all others fail to measure up. However, it should be stressed that there is no such thing as the 'best' electoral system, for no single system satisfies all possible requirements. The most appropriate system for a particular location is that which best satisfies those requirements that are considered to be the most important by that particular region. A satisfactory electoral system has been defined as one that, 'performs a range of tasks reasonably well in a specific context even at the expense of doing none of these tasks superbly well'.[22]

Appendix: Australian electoral arrangements

Election	Parliamentary chamber	Voting system
Commonwealth	House of Representatives	Preferential Voting—full allocation of preferences
	Senate	Proportional Representation (STV) (plus group ticket voting)
New South Wales	Legislative Assembly	Preferential Voting—optional allocation of preferences
	Legislative Council	Proportional Representation (STV) (plus group ticket voting)
Victoria	Legislative Assembly	Preferential Voting—full allocation of preferences
	Legislative Council	Proportional Representation (STV) (plus group ticket voting)
Queensland	Legislative Assembly	Preferential Voting—optional allocation of preferences
South Australia	House of Assembly	Preferential Voting—full allocation of preferences
	Legislative Council	Proportional Representation (STV) (plus group ticket voting)
Western Australia	Legislative Assembly	Preferential Voting—partial allocation of preferences
	Legislative Council	Proportional Representation (STV) (plus group ticket voting)
Tasmania	House of Assembly	Proportional Representation (STV)
	Legislative Council	Preferential Voting—partial allocation of preferences
Northern Territory	Legislative Assembly	Preferential Voting—full allocation of preferences
Australian Capital Territory	Legislative Assembly	Proportional Representation (STV)

Source: Electoral Council of Australia

Endnotes

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