

Report of the Independent Commission on the Voting System: Volume 2

Submissions from academics

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The Commission of Electoral Systems
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Dear Colleague

I have pleasure in enclosing some evidence to the commission, which I am giving in response to your invitation. I am sorry that it is a few days late. I will be very happy to give further evidence, written or oral, as required.

Best wishes

Yours sincerely

Iain McLean
Official Fellow in Politics
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Enc

Evidence to the Commission on Electoral Systems

By Iain McLean, Professor of Politics, Oxford University

Summary and recommendations

1. The Commission's desiderata cannot all be fully met simultaneously, but some procedures fulfil them better than others (paras 1-4)
2. The Commission is charged with finding 'an alternative to the present system for Parliamentary elections'. As Parliament comprises two chambers, this seems to imply that it should be looking at the procedures for electing the body that will replace the House of Lords. Bicameralism will in itself help to meet some of the objectives the Commission is instructed to satisfy (paras 5-12).
3. However, the Government probably intended the reference to be to 'elections to the House of Commons'. The remainder of my evidence examines systems for Commons elections in the light of the Commission's criteria, taken in turn (para. 13).
4. The **requirement for broad proportionality** rules out Alternative Vote (AV) but is consistent with any proportional system and some non-proportional ones. The most important determinant of proportionality is the number of seats in each electoral district (paras 14-17).
5. The **need for stable government** will require careful definition of the ill-defined term 'stable government'. It can be met by devices that deliberately advantage large parties, or (as I would recommend) by bicameralism (paras 18-24).
6. **Extension of voter choice** points to open list systems or any system where voters may express their full ranking of candidates (para. 25)
7. **The maintenance of a link between MPs and geographical constituencies** seems to rule out anything except either the Single Transferable Vote or the Additional Member System (although the former Japanese system could also be recommended). Either system would be easy to implement in the UK, but for mostly practical reasons I **recommend** an AMS with each voter having 2 votes and with half of the seats in the Commons being constituency seats (paras 26-39).
8. There is much more to say. I would gladly offer more written and/or oral evidence if that would be helpful (para. 40)

Evidence to the Jenkins Commission [second draft]

By Iain McLean, Professor of Politics, Oxford University

1. I am responding to the Commission's invitation to submit evidence by the end of February 1998. My qualifications in this area are as shown in the accompanying c.v. Briefly, most of my research since 1988 has been in the area of electoral systems. I devised and teach a graduate course, 'Theory of Voting' which, as far as I know, is the only such course in the UK. I have written several books and numerous academic articles on related subjects. I coedit *Electoral Studies*, the leading academic journal in the world on the subject.

2. The Commission's terms of reference are:

The Commission shall be free to consider and recommend any appropriate system or combination of systems in recommending an alternative to the present system for Parliamentary elections to be put before the people in the Government's referendum.

The Commission shall observe the requirement for broad proportionality, the need for stable government, an extension of voter choice, and the maintenance of a link between MPs and geographical constituencies.

3. It is a commonplace that the objectives in the second paragraph of the terms of reference cannot all be met in full. This is but an example of a much deeper problem. The following can be mathematically proven:
 - 3.1. No choice system can simultaneously satisfy some minimal conditions of fairness and logicity;
 - 3.2. No reasonable choice system is proof against manipulation by voters or politicians, or both. Examples of *manipulation* here include voting for a candidate other than one's favourite, in order to maximise one's favourite's chances of election; and arranging the candidates on a ballot paper in such a way as to maximise the chances of a candidate whom a party wishes to promote.¹
4. However, it does not follow that all systems are equally bad, nor that the Commission's criteria are starkly contradictory of one another. No voting theorist can say 'This is the best system', *tout court*. The Commission may safely assume that any witness who tells them so is ignorant of the mathematical underpinning of voting theory. But voting theorists can say which system, or family of systems, is most likely to achieve any particular desideratum. In what follows, I take the criteria in turn (not quite in the order in which they appear in the terms of reference) and examine them in the light of the theory of voting.
5. **System for Parliamentary elections.** This is an implicit criterion. The best system for Parliamentary elections, as the Labour Party's Plant Commission correctly observed, is not necessarily the best system for other types of election. Parliamentary elections are elections of a legislature. Direct presidential elections are examples of elections of an executive. Referendum votes are examples of direct democratic choice. Jury rules are examples of voting in an attempt to discover an unobserved fact. Each of these settings may require a quite different electoral system. Systems to determine the outcome of a referendum must, and systems to elect an executive should, be *majoritarian*; systems of counting jury votes should be based on *probabilistic (stochastic)* reasoning. The appropriate system to elect a Parliament should be either majoritarian or *proportional*, according to one's conception of the purpose of Parliament. See Nohlen 1984; McLean 1991.
6. What then is a legislature for? Parliament has multiple roles: to sustain the executive; to scrutinise executive actions; to represent territory; to represent shades of opinion. As before, these objectives

¹ This paragraph summarises Kenneth Arrow's General (Im)possibility Theorem and some of its corollaries. For further explanation of this highly technical literature see Riker 1982; McLean 1987, 1989.

are not wholly compatible, and writers with one conception of parliament may deny that a role that according to another conception is central is legitimate at all.

7. At least three of the possible roles for a parliament appear in the second paragraph of the terms of reference. 'The requirement for **broad proportionality**' and 'the extension of **voter choice**' speak to the idea of representing shades of opinion. 'The need for **stable government**' speaks to the role of sustaining the executive – or, if the executive cannot be sustained, of replacing it decisively with another. 'The maintenance of a link between MPs and **geographical constituencies**' is self-explanatory.
8. *Any appropriate system or combination of systems* (my emphasis). This permits the Commission to recommend that different components of Parliament be elected in different ways. It is not clear whether the Government wishes the Commission to comment on methods of election for the chamber that is to succeed the House of Lords. But that chamber will be part of Parliament, so I think the Commission is bound to consider it. Most bicameral legislatures feature a combination of systems. If they did not, there would be little point in having two chambers. If their elections were by the same system at the same time, they would be clones of each other. If they were by the same system at different times, then the sociological law that all governments are unpopular at mid-term would ensure that the two houses were usually controlled by different parties.
9. The commonest arrangement of bicameral legislatures in the democratic world is that the lower house represents population, while the upper house represents territory. With very few exceptions, 'representing territory' means giving proportionately more representation to thinly populated areas than to populous ones, whereas 'representing population' is done in a way that gives an advantage to the most popular party or group of parties. See Monroe 1997.
10. In the UK, the present upper house is unelected. The lower house follows the international pattern in the way it represents both territory and parties. Scotland and Wales are overrepresented in proportion to population (McLean 1995), although Northern Ireland is not. The Conservative and Labour parties are overrepresented in relation to their shares of the vote. Scotland and Wales have been overrepresented since 1922; Ireland was overrepresented from 1885 to 1918, and Northern Ireland deliberately underrepresented (because it had a devolved assembly) from 1922 to 1979. Since the end of the two-party duopoly of the popular vote began in 1964, there have been only two elections in which the Conservative and Labour Parties did not both gain a higher proportion of seats than of votes. These were 1966 and 1997; in both of those cases the Conservatives gained a lower share of seats than of votes.
11. Therefore, if the Commission wished to recommend a combination of systems in which the largest parties were overrepresented in the lower house, and (some of) the more thinly populated regions were overrepresented in the upper house, they would be following both international and British precedent. Australia would be a good example of such a system. The Alternative Vote (known in Australia as the Preferential Vote; hereafter called AV) used for their lower house gives an even greater boost to the two largest parties than does the electoral system at present used in the UK. In the Senate, the use of the Single Transferable Vote ensures **broad proportionality**, while the fixed size of each State delegation gives protection to thinly populated States.
12. The impact of a bicameral combination of systems on **stable government** depends on the constitutional relationship between the houses. This is a matter far beyond the Commission's terms of reference. Broadly, however, there is a trade-off between stability and majoritarianism. A government may be defined as stable if a change in the popular majority does not necessarily lead to a change in government. All bicameral systems, of the sort described so far, have this property. Stability and majoritarianism may both be regarded as goods; but they are not wholly compatible.
13. In the remainder of these notes I proceed as if by 'Parliament' the Government means 'the House of Commons', and consider how each of the criteria in the second paragraph of the terms of reference might best be met.

14. **The Commission shall observe the requirement for broad proportionality.** The most important determinant of broad proportionality is the number of seats to be filled in each district. In an S -member district, where V votes have been cast, then by any proportional system and some non-proportional ones, each party will win at least as many seats as it obtains 'Droop quotas'. The Droop quota is the number of votes cast, divided by one more than the number of seats to be filled.² Thus, if 100,000 votes have been cast in a 4-member district, each party will win at least as many seats as can get blocs of 20,001 votes. The last seat will go to a bloc of fewer than 20,001 votes. The rules for determining who gets the last seat also determine whether the system leans in favour of large parties, or of small parties, or of neither.
15. It follows that, to meet this objective, the Commission needs to worry less about electoral system than about the average (and the variation from average) district size. The **requirement for broad proportionality** rules out Alternative Vote (AV) and such variants of it as the 'contingent vote' (*alias* 'supplementary vote') and the French double-ballot system. (The best short discussion is Reilly 1997). But any proportional electoral system is consistent with this objective. So is the Single Non-Transferable Vote system used until recently in Japan.
16. The larger the average district size, the more proportional the result. Thus Ireland, with its electoral districts of between 3 and 5 members, tends to produce election results that are not very proportional. The Netherlands, where there are no geographical constituencies, has very highly proportional results. Of course, it is possible to reconcile the **broad proportionality** and **geographical constituencies** criteria by use of an Additional Member system as in Germany and New Zealand, and as proposed for the Scottish Parliament and Welsh Assembly. I return to this below.
17. The European Parliamentary Elections Bill currently before Parliament illustrates the problem of variable district size. The range of district size as proposed in the Bill is between 3 (Northern Ireland) and 11 (South East). Applying the formula (see footnote 2), we can see that a medium-sized group such as the Green Party will gain an MEP in the South-East if it gets 1/12 of the vote there, but would need 1/4 of the vote in Northern Ireland to get an MEP from there.
18. **The Commission shall observe ... the need for stable government.** It will have to define what it understands by 'stable government'. A possible definition is suggested above (para. 12). One device that generates 'stability', so defined, is bicameralism. Another is deliberate distortion of representation in favour of large parties, which Monroe (1997) labels 'majoritarianism'. This appeals to those who argue that the essential role of Parliament is to provide a majority that can sustain the executive for the full length of a parliamentary term.
19. The simplest majoritarian device would be that found in, for instance, the Mexican constitution, which awards seats to the largest party in the legislature so as to ensure that it has a majority. Such a device would conflict so starkly with the Commission's other requirements that I assume it will not consider it.
20. Other majoritarian devices may be divided into those that *necessarily* and those that *contingently* favour large parties.
21. In the first class is the d'Hondt rule for awarding seats to parties in multi-member districts. This is systematically biased in favour the large. The way it solves the apportionment problem mentioned at paragraph 14 above maximises the likelihood that the last seat will go to a large party. (See Balinski and Young 1982; McLean and Mortimore 1992). In his Second Reading speech introducing the European Parliamentary Elections Bill, the Home Secretary stated that the d'Hondt divisor was not biased towards the large. Unfortunately, this statement was incorrect, and was based on a mistake in the Home Office simulations on which the Home Secretary relied. He has undertaken to 'set the record straight at Committee stage' (letter from the Home Secretary to the

² More exactly, the Droop quota Q is $\lceil V/(S+1) \rceil$ where the notation $\lceil x \rceil$ means 'the integer next above x '.

author, 19.1.98). A more technical briefing note on this subject is available for the Commission if it would like it.

22. However, the proportional effects of having multi-member districts swamp the majoritarian effects of using the d'Hondt rule. Those who wish to maximise the probability that the largest single party in the legislature has the majority of seats prefer to rely on the effects of the present electoral system, or of systems that preserve or increase its majoritarian effect, especially AV and its variants (see paragraph 15).
23. Evidence from elections in Australia and France, and from simulations conducted by Professors Patrick Dunleavy and John Curtice (who I assume will both submit evidence to you) confirms that in many circumstances AV has a majoritarian effect. However, this effect is contingent rather than necessary. It depends on the shape of the underlying dimension(s) of public opinion.
24. The Commission may anyhow wish to define 'stable' in a less mechanical way than I have done. The 'stability' of a bicameral or majoritarian system is of little value if it undermines legitimacy. Thus, for instance, the Australian constitutional crisis of 1975 arose, like the British constitutional crisis of 1909-11, from a deadlock between the two houses. This deadlock was 'stable' as above defined, but it was not obviously desirable. The 'stability' of majoritarianism depends on those who feel that it has ridden roughshod over their preferences nevertheless accepting the legitimacy of its outcomes. Historically, this has been true in Great Britain, but not in Northern Ireland. It is a historically contingent matter.
25. ***The Commission shall observe the requirement for ... an extension of voter choice.*** Where single-member districts are retained, voter choice is extended to the fullest extent possible iff the voter has an opportunity to offer a complete ranking of the candidates. On this criterion, AV ranks ahead of the variants of it in the same family (para. 15). Where there are multiple member districts, there are more possibilities. The Single Transferable Vote (STV) system maximises voter choice by enabling voters to rank the entire set of candidates. If the Commission recommends this system, it should look carefully at the Irish and the Australian Senate rules. In particular, it should avoid the trap of defining an invalid vote as broadly as the Australians do (where it is called an 'informal vote'). The criteria for accepting an STV ranking in an Australian Senate ballot as valid are so demanding that many votes are ruled out of order for simple arithmetic mistakes. Party list systems may be closed or have various degrees of openness. The more open the rules, the better this criterion is satisfied. The Constitution Unit's *Briefing* on the European Parliamentary Elections bill discusses this issue in full and I do not repeat our discussion of it here ([Seyd and McLean] 1998).
26. ***The Commission shall observe the requirement for ... the maintenance of a link between MPs and geographical constituencies.*** When taken in conjunction with the requirement for broad proportionality, this points to either:
 - 26.1. STV in relatively small districts – say between 3 and 5 existing parliamentary constituencies (possibly with an exception for remote rural areas, which might retain single-member districts), or
 - 26.2. An Additional Member (AMS) system, along the lines implemented in Germany or New Zealand or as proposed in the Scotland Bill now before Parliament. A third possibility is:
 - 26.3. SNTV in relatively small districts. This would probably produce similar outcomes to STV. It is not obvious why this should be so, but it is. To explain why would require a supplementary note, which I will supply if the Commission wishes to explore SNTV in depth.
27. The properties of STV are well known. It works smoothly in Ireland (both parts) and for the Australian Senate. The difficulty of conducting STV counts is often greatly exaggerated. It can easily be computerised. Programs for doing so are available from several members of the Electoral Reform Society.

28. If the Commission recommends STV, it will need to propose a procedure for determining constituency boundaries. It would not be necessary to crank up the cumbrous machinery of the Boundary Commissions for this purpose. STV constituencies should be built on local government units. In England, the county or the metropolitan borough would be the basic unit. Some metropolitan boroughs, notably in London, would need to be paired. Some of the new unitary authorities would need to be joined with neighbouring authorities. The Isle of Wight should, exceptionally, be a 2-member seat. In Scotland and Wales, more work would need to be done in order to get 3-to-5 member STV constituencies. This is because of (a) the recent unsatisfactory reorganisation of local government into units of disparate size in both countries; (b) the problem of remote areas. At a minimum Western Isles, and Orkney & Shetland, should remain as single-member districts.
29. Where, exceptionally, single-member districts are needed in an STV system, I recommend that the electoral procedure should be not AV but a system designed to choose the Condorcet winner. I can give further evidence on this point if the Commission recommends STV.
30. The issues surrounding AMS include:
- 30.1. Whether voters have one vote or two
 - 30.2. At what level of aggregation the 'top-up' seats should be counted
 - 30.3. What apportionment rule should be used to allocate top-up seats to the parties
 - 30.4. Whether there should be any change to the plurality ('first-past-the-post') system for electing the constituency members
 - 30.5. The ratio of constituency members to additional members
 - 30.6. How constituency boundaries are to be (re)drawn
31. In Germany and New Zealand, voters have two votes, one for a candidate and one for a party. The number of seats assigned to each party is determined by the party votes. There are special arrangements regarding thresholds, representation of parties who gain only constituency seats, varying the size of the legislature to accommodate extreme imbalances of seats and votes, and Maori seats: all of these important matters on which I assume the Commission is getting evidence from elsewhere, although I can supply it if needed. In the version of AMS proposed by the Hansard Society (1976), voters would have only one vote. The party seats would be filled by each party's 'best losers' in descending order of the vote share obtained in the constituency contest.
32. The main advantage of the Hansard Society scheme is that every candidate must face the electorate directly. Parties would not control which of their candidates won their list seats (this would be an advantage or a disadvantage, depending on one's point of view). The main disadvantage is that it would be difficult to get public acceptance of a scheme where some losers were declared winners.
33. The main advantage of the German/NZ scheme is that it has no problems of legitimacy. MPs in both classes have 'won' their seats. Parties control which of their candidates won their list seats (this would be an advantage or a disadvantage, depending on one's point of view). In Germany, voters tend to use their two votes differently. They use their constituency votes overwhelmingly for one of the two parties which are believed capable of winning the seat, while using their 'second votes' more for parties like the Free Democrats and the Greens, who typically get seats only by this route. This does not strike me as a problem; rather, it is a form of 'extending voter choice'. Therefore I recommend that, if the Commission proposes AMS, it should propose the German/NZ variant, not the Hansard Society one.
34. Should the top-up seats be counted nationally (as in NZ) or regionally (as in Germany)? The larger the unit in which seat entitlements are calculated, the finer the proportionality of the system. Referring again to the quota, in a House of Commons with 659 seats, any party with 1/660 of the UK vote would be entitled to one seat if the top-up operates nationally without thresholds. It is likely that the Commission would recommend some threshold to avoid fragmentation of the legislature (and, perhaps, to keep out extreme groups, although I think that issue should be dealt with by controls on party registration and the existing law on defamation and incitement).

Supposing that threshold is set at 5%, then there would be no advantage in counting nationally. So long as most of the units in which top-up seats were awarded were at least 19 seats in size, parties which got 5% (1/20) of the vote in that unit would get a quota, and much smaller parties would be excluded anyhow by the threshold rule. Regional lists are more sensitive than national lists to sub-national parties, of which several are already represented in the House of Commons.

35. Therefore I recommend that the units for awarding top-up seats should be the nations and regions of the UK. For neatness and consistency, the English regions should be the same as those prescribed in the European Parliamentary Elections Bill.
36. I do not recommend using the d'Hondt rule to assign seats to parties in each region. The Ste-Laguë rule is unbiased as between the large and the small. It should also be used to adjust the entitlements of regions to seats after each census. There are some arguments (reviewed above) for biasing the party allocation in favour of the large, and biasing the regional allocation in favour of the small. Both sets of arguments are unconvincing. Therefore, the Commission should recommend the same, unbiased, procedure for both jobs. In doing so, it will avoid the inconsistency into which the Government has fallen in the European Parliamentary Elections Bill. In that bill, it proposes to use d'Hondt to allocate seats to parties and Ste-Laguë to allocate seats to regions (see [Seyd and McLean] 1998).
37. There has been some suggestion in the Press that the constituency members elected under AMS should be elected under the AV system. In favour of that idea, it would tend to extend voter choice. Against it, AV may produce even less proportional results than the existing system (see the Curtice and Dunleavy et al simulations). Therefore it could put greater strain on the top-up machinery. Also, AV has no mathematical justification. It would be better to change the constituency election to a Condorcet procedure than to change it to AV. However, I do not recommend either course. I recommend that the constituency MPs under AMS should continue to be elected by the existing system.
38. In Germany, the ratio of constituency to top-up members is 1:1. In New Zealand, it is 65:55. For the Scottish Parliament it is proposed to be 73:56. There is a strong practical argument for making it 1:1. For any other change, the Boundary Commissions will have to do a complete review of constituency boundaries. To do that quickly would be extremely difficult because of the grave defects in the Parliamentary Constituencies Act 1986, which governs the Commissions. We have shown (McLean and Butler 1996) that the Rules for Redistribution of Seats embodied in that Act are mutually contradictory. This will need to be sorted out by primary legislation, for which a slot will have to be found. It would not be desirable for the Commission to recommend AMS while a key part of the necessary machinery was unworkable. However, if the ratio is 1:1, that is if half of the seat in the Commons are constituency seats, new constituencies can simply be formed by pairing existing ones. I recommend solving island problems as follows: Isle of Wight to have one constituency seat (it should have two at present – its having only one breaches rule 5 of the Rules for Redistribution of Seats). Western Isles, and Orkney & Shetland to retain their single constituency MPs, and Scotland to have one fewer top-up seat.
39. At several points in this evidence, I have referred to supplementary documents that I have written, or could prepare, on more technical aspects. I have not included them with this evidence because they are bulky, but they cover important points. However, I will very willingly send you any or all of them should you wish. I would also be willing to present oral evidence to the Commission.

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