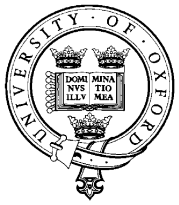

DEPARTMENT OF
POLITICS
AND
INTERNATIONAL
RELATIONS

Report to the Committee on Standards in Public Life

The Electoral Commission and the Redistribution of Seats

David Butler Iain McLean

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This Report was commissioned in early April 2006. It is based on extensive reading of the Boundary Commission Reports and of the academic literature. A bibliography is attached. It is also informed by a one-day seminar attended by representatives of the Boundary Commissions and other stakeholders as well as by observers who have written about the subject. However, responsibility for any views expressed in this report rests solely with its two authors, David Butler and Iain McLean.

Contents

1. This Report was commissioned by the Committee on Standards in Public Life. It looks into the problems that might arise if responsibility for the drawing of parliamentary boundaries were to be transferred to the Electoral Commission, as provided in Section 6 of the *Political Parties, Elections and Referendums Act (PPERA) 2000.*

2. There seems to be general agreement that 'about every ten years' is the right period for general redistributions. But there is a strong case for the actual process to be speeded up. It has, on average, taken six years from start to finish to prepare a new set of boundaries. The map that will come into force at the next General Election will be based on the distribution of the electorate eight or nine years earlier. The Report, citing overseas experience, suggests how matters could be accelerated.

3. The Report argues for constituencies to be determined on the basis of a uniform quota for all the four parts of the United Kingdom. This would give England about ten more seats. Fairness requires substituting the arithmetic for the harmonic mean and the use of the Ste Laguë quota. These concepts are explained in Appendices.

4. The way in which the Rules for the Boundary Commissioners were drafted in 1944 has, inevitably but unintentionally, made the House of Commons advance from 625 in 1950 to 659 in 2001. The Report suggests how this creeping growth could be avoided.

5. The Report outlines potential new Rules which would remove the inherent contradictions of the present ones, simplifying the task of Boundary Commissioners and removing some of the areas of dispute at Inquiries.

6. The Report explores how new technologies, in particular the use of GIS systems, could simplify the redistribution process, allowing an escape from the straitjacket of wards as building blocks.

7. The governance of the Electoral Commission is reviewed. It has a unique accountability structure which seems to be robust against partisan and self-interested interference. Its independence needs to be protected. Boundary-drawing must remain a strictly non-partisan operation, held at arms' length from politicians.

8. The Electoral Commission has built up an impressive record in its six years of existence. It is a unique institution and is in the unusual position of being, effectively, answerable to no one. But the need for a central co-ordinating body to oversee the work of the existing Boundary Commissions or their successors is very strong. We recommend that this function should lie with the Electoral Commission.

1. Introduction

1.1. The *Political Parties Elections and Referendums Act, 2000* c.41 (PPERA) provides for the transfer to the Electoral Commission of the functions of the four UK Parliamentary Boundary Commissions and the three GB Local Government Boundary Commissions to the Electoral Commission. The relevant sections of the Act are ss. 6, 14-20, 163, and Schedule 3. The most material of those sections are set out in Appendix 1 of this Report.

1.2. The Parliamentary Boundary Commissions currently determine boundaries for the UK Parliament. The explanatory memorandum to the 2000 Act (but not the Act itself) notes that 'In addition to their functions under the *Parliamentary Constituencies Act*, the Boundary Commissions are also responsible under the devolution legislation for the review of regional boundaries for elections to the devolved legislatures in Scotland and Wales.'

1.3. The transfer of the four Commissions was not to take place until the completion of the current boundary review, at the time five or six years away; it was then to be effected by an Order-in-Council. The current (Fifth) Review is complete in Scotland, Wales, and Northern Ireland. The new boundaries were used in Scotland for the General Election of 2005. The Fifth Review in England is expected to be completed in 2006. However, it is now possible that an Order transferring the functions under the *PPERA* will not be issued immediately on the completion of the Fifth Review in all parts of the UK.

1.4. In 2002, UK Ministers transferred the function of local government boundary determination within England to the Electoral Commission, as provided under the *PPERA*. Scottish Ministers and the National Assembly for Wales have not exercised the option of transferring the equivalent function for their countries to the Commission.

1.5. In Scotland and Wales, official commissions have looked at the fragmented division of responsibility for boundary drawing; however, their recommendations, discussed in detail below, have not so far been implemented.

1.6. This Report is designed to consider the problems that would arise for the Electoral Commission when, or if, it undertakes the task. However, almost all the problems discussed are relevant for any authority charged with the redistribution of seats. Throughout this Report, therefore, the reader may wish to substitute 'the authority charged with the redistribution of seats' for 'the Electoral Commission' at all appropriate references.

1.7. The principle of equal representation or 'one vote one value' requires that each elector should have something like equal influence on politics through constituencies being of roughly equal size. This principle was not accepted in the pre-1832 House of Commons, nor in the Reform Acts of 1832 or 1867. It was acknowledged in the Third Reform Act 1884 and associated redistribution of seats, but with no machinery to alter constituency boundaries as the population grew relatively more in some areas than others. By World War II the disparities in constituency electorates had become too wide to be ignored. [McLean & Butler 1996 p3-9].

1.8. The first fundamental attempt to find a permanent solution to the problem came in 1944. Following the Speaker's Conference of 1943-4, The *House of Commons (Redistribution of Seats) Act*, *1944* was passed. This set up permanent Boundary Commissions for England, Scotland, Wales and Northern Ireland to keep representation under continuous review and to make periodic reports to Parliament. It provided that constituencies should never vary from the quota by more than 25% this restriction was found to be too rigid and was replaced by a more elastic instruction 'the electorate of any constituency shall be as near the electoral quota as possible, having regard to [the rules about respecting local boundaries]'.

1.9. The 1944 Act provided that there should be no reduction in the representation of Scotland or Wales (then 71 and 35). The Act was amended in 1958, 1979, 1986, 1992, and 1998. The current statutory Rules are given in Appendix 2. A list of relevant statutes is at Appendix 6.

1.10. The fact that (due to lobbying in the Speaker's Conference of 1943-4) the 1944 Act guaranteed minimum numbers of seats to both Scotland and Wales irrespective of future movements in their relative populations created contradictions from the outset. The populations of Scotland and Wales, relative to England, have declined continuously since 1944. Therefore either seats must become unequal in size; or the House of Commons must expand; or both.

1.11. The current Rules (reproduced in Appendix 2) contain several inherent contradictions, regularly pointed out by Boundary Commissioners in their Reports, as well as by politicians and academic observers. One consequence is that every complete redistribution has led to an increase in the size of the House of Commons. But other anomalies flow directly from attempts to apply both Rule 4 (respecting county boundaries) and Rule 7 (respecting local ties, and avoiding inconvenience). This provoked significant litigation in 1954 and 1983 and could cause trouble in the future.

1.12. Respect for these rules downgraded what some might regard as more fundamental, viz., controlling the total size of the House of Commons (Rule 1), and equality of electors (Rule 5). The over-representation of Scotland was substantially reduced by the Scotland Act, 1998. That of Wales remains in place. Northern Ireland is slightly over-represented (Table 1).

Table 1. Electorates per seat in the four countries of the UK, 2005

	Total Electorate	Average Electorate	No. of Seats	Seats at Equal Representation	Difference
UK	44,251,545	68,501	646	646	--
England	36,963,191	70,006	528	539	-9
Scotland	3,851,290	65,276	59	57	+2
Wales	2,231,880	55,797	40	33	+7
N. Ireland	1,148,009	63,778	18	17	+1

Source: *Times House of Commons 2005*; authors' calculations

1.13. The process of boundary reviews has become increasingly cumbrous and long drawn out. Other countries have shown how things can be more expeditiously and efficiently managed.

1.14 This Report sets out facts and problems. In some cases it ventures solutions but in some it leaves questions open. Redistribution is a potentially explosive subject. Its reform should follow extensive administrative and political consultations. But it is clear that, on most of the issues at stake, non-partisan consensual solutions are possible.

2. Frequency of General Redistributions

2.1. *Is the current 8-12 years between revisions the right period?*
The 1944 Act provided that all parliamentary boundaries should be revised at intervals of between 3 and 7 years after the first general redistribution. That took place by statute in 1948 and was the basis for the 1950 general election. The intention was plainly for a redistribution to take place once during every parliament yet to allow for the uncertain length of parliaments.

2.2. When the recommendations of the first routine redistribution came before Parliament late in 1954, there were cross-party protests against the proposed upheaval. By the *Redistribution of Seats Act, 1958* the periodicity was lengthened to 10-15 years (i.e. once in every three normal parliaments).

2.3. The *Redistribution of Seats Act, 1992* reduced the time to 8-12 years. The Conservative Government plainly wanted to accelerate the current redistribution so that new boundaries would be in place for the next general election (which took place in 1997). Table 2 summarises.

Table 2. Intervals between general boundary reviews

1949 Act	Every 3-7 years
1958 Act	Every 10-15 years
1992 Act	Every 8-12 years

2.4. The conflict between inequality of numbers and unnecessary disturbance is generally recognised. Currently few people seem to want a change from the current 8-12 year interval. There are those who argue for an absolute routine with a specified completion date every 10 years (although flexible provisions would be needed to allow for the uncertain timing of elections).

2.5. It would be possible to carry out intermediate reviews to manage small changes and to cope with local boundary alterations. English boundaries are probably more frequently in need of revision than those in Scotland, Wales and Northern Ireland. It would be possible, as in Australia, to carry out reviews of different regions at different times (although this could cause problems should there be a switch to a fixed total number of MPs).

2.6. In comparable countries with single member constituencies, ten years has been the maximum allowable period between redistributions. The United States Constitution requires reapportionment of the House of Representatives among the States to occur every ten years as soon as the figures from the census become available (US Const. Art. I.2.3). In Canada and in New Zealand redistricting normally occurs every five years, after a quinquennial census. In Australia boundaries are normally reviewed every seven years. In Germany boundaries are reviewed in the first year of each four-year Bundestag. In France there is no fixed period. In India boundary revision has been suspended since 1975.

2.7. The case for frequent revisions rests on equity, making the value of a vote as near as possible the same in every part of the country. Population movements can quickly cause the electorates in individual seats to diverge significantly from the intended quota. The United Kingdom, with only four general redistributions in the last fifty years, has had the longest gap between redistributions of any English-speaking democracy except India. It should be noted that in 2002 the Venice Commission of the Council of Europe recommended a 10% maximum to deviations from the average constituency electorate.[Council of Europe, 2002, 2.2. p15]

2.8. When there is a long interval between redistributions it is, of course, possible to remedy anomalies by interim measures. However, few would regard the one UK instance when this has been done - Milton Keynes in 1991 - as a compelling precedent; a lengthy Inquiry led to the creation of one new constituency, changing the size of the House of Commons for one election. It is anomalous that such revisions seem only to be suggested for areas with growing population and not for those with diminishing population. Interim measures therefore increase the upward pressure on the size of the House of Commons.

2.9. The case against frequent revisions turns on the inconvenience caused to citizens and to MPs. It is alleged that electors become confused when they find themselves repeatedly moved from one constituency to another. Politicians' careers are dislocated when their seats disappear. It is held that, for some people and for some purposes, constituencies are communities which should not be disrupted unnecessarily just to satisfy the principle of equal representation.

2.10. However, whatever the interval, there is a case for having a firmly guaranteed time-table. The Labour Government in 1969 and the Conservative Government in 1992 unilaterally varied the arrangements for party advantage. Moreover there is nothing in the legislation which prescribes how quickly the Boundary Commission proposals shall be laid before Parliament. This requires careful attention from the Electoral Commission, or from whatever body becomes responsible for the non-partisan drawing of parliamentary boundaries.

It must be stressed that in any decision on frequency, the length of time consumed by the actual process must be a major consideration.

3. Duration of the Review Process

3.1. *How quickly could or should boundary reviews be completed?*
In 1954 it took the Boundary Commissioners just over 12 months to complete a general review (the First Periodical Review). In 1965-9 it took four years to complete the Second Periodical Review. In 1976-82 the Third Review took six years. In 1991-5 with accelerated arrangements, the Fourth Review was completed in four years. But in 1999-2006 seven years will have elapsed between the beginning of Fifth Review and its final implementation. On current form the general elections of 2008/9 and 2013 or 2014 will be based on the electoral registers of 2000.

3.2. Such delays are not inevitable. When the size of the Australian House was increased in 1983 it took only seven months to change from 125 seats to 148; the redefining of almost every constituency was managed with due process being observed by the Boundary Commissioners in each state.

3.3. In Britain, following the 1992 Act, the process was significantly speeded up. In 1992 Parliament legislated for the Fourth Review to be completed by 31 December 1994. The deadline was not quite met but, with a 260% increase in English staff and a release of High Court Judges' time, the process was completed within four years and three months from its start in 1991. This was the fastest since 1954. The ways in which delays can occur are nicely illustrated by the example from Southwark, quoted in the Final Report of the Boundary Commission for England in 1995 [para 1.14-1.16 in Cmd.4334/1995]

3.4. The transfer of boundary delimitation to the Electoral Commission offers an opportunity to eliminate one of the causes of delay, namely the vastly disparate workload of the present Boundary Commissions for England (>500 seats), Scotland (around 60 seats), Wales (around 40 seats) and Northern Ireland (18 seats). England, with nearly five times as many constituencies as the rest of the UK, is the largest challenge and has understandably been the main cause of delay. If the Electoral Commission takes over, it is required by the PPERA, 2000 s.14 to 'establish four Boundary Committees, one for each of England, Scotland, Wales and Northern Ireland'.. However, it could readily group its work in England using sub committees each covering 50 to 100 constituencies, although with all Committees and sub-committees operating under broadly agreed lines.

3.5. The need to wait for legal rulings as well as the shortage of High Court Judges' time contributed to this. The other Commissions had been able to act more expeditiously. Changes in the Rules (especially specific priority for the equality of representation rule, Rule 5) as well as in the procedures and methods of working and in the procedures for Inquiries, would enable a general review in England to be conducted much more speedily.

3.6. Possibilities for improvement include:

3.6.1. carrying out inquiries on a regional basis;

3.6.2. scrapping the second consultation period with revised recommendations (a practice that serves more as a safety valve than as a source of important changes);

3.6.3. endowing the Commission with a greater discretion about the issues which the Inquiries should address. More generally, an increase in staff and other resources would also accelerate the review process;

3.6.4. removing the right of local authorities to trigger inquiries – on the grounds that local authorities typically reflect only the partisan opinion of the controlling party. Local authority arguments are much more heeded when put forward on an all-party basis and not just emerging from the ruling group. Therefore a possible compromise would be to allow a local authority to trigger an inquiry only when the vote in the authority to do so was passed *nem con*.

3.7. The Chairman of each Boundary Commission is the Speaker of the House of Commons. However, by convention, the Speaker plays no role in their proceedings, and each Commission is chaired by its Deputy Chairman, who is currently a senior judge in each case. At the time of the Third Review it was said that the Lord Chief Justice was prepared to allow the Deputy Chairmen to give only half a day a month to Boundary Commission work. There seems no need to restrict Deputy Chairmanships to senior Judges, except perhaps in Northern Ireland, In contrast to the earlier Redistribution Acts PPERA 2000 does not specify that High Court Judges need to be involved

4. Inquiries

4.1. *Are the arrangements for inquiries satisfactory?*

Over the last fifty years a large amount of individual effort and public money has gone into the procedures for inquiry and appeal. Anxiety to maintain due process, and to ensure public confidence, has cost a great deal of money and caused much delay. It is arguable that a faster approach would simplify the system without leading to any significant decline in equity.

4.2. Inquiries could be speeded up by 1) clarification of rules, 2) stricter timetables, and 3) an increase in personnel.

4.3. A clarification of the conflicting Statutory Rules would save much repetitive argument. New Rules could obviate arguments over the harmonic mean [see Appendix 4] and over what legitimately constitutes 'community of interest' or 'local ties', as well as 'inconveniences attendant on alterations of constituencies' or 'as near the electoral quota as practicable'. There are regular followers of Inquiries who argue that almost all objections based on traditional links are a waste of time but that Assistant Commissioners, eager to demonstrate their fairness, have been unduly tolerant about such evidence. As one wrote 'Much hot air is spent over very small patches of territory, almost always for partisan reasons' [Rossiter et al 1999 Ch.6 & 8].

4.4. An abbreviation of the time periods allowed for objections and appeals would still be compatible with due process. A toughening of the conventions under which appeals could be allowed would also shorten matters.

4.5. But there are more ruthless answers which might be efficient, if not universally popular. One might be insistence on written submissions only. A systematic analysis of

the impact of past Inquiries on the final recommendations, and of the nature of the changes brought about in response to objections, could offer a valuable guide to the future. This was impressively done for the Third and Fourth Reviews by Rossiter et al. Assistant Commissioners seem to have had diverse impressions about their briefing and their remit.[Rossiter et al. 1999 Ch 6 and Ch.8]

4.6. A longer period should be allowed for comment on initial proposals- perhaps two months rather than one or even the minimum of twelve weeks now recommended by the Cabinet Office for all Departmental consultations.. This could be combined with much shorter time limits for the subsequent stages. It can be argued that the Commissions should accept, as a Final Recommendation, the Assistant Commissioner's Report if it accorded with the Rules and if the evidence broadly supported the original proposals. Only if the Assistant Commissioner had acted outside the Rules or misdirected himself should there be a right of appeal. Such a procedure would be unworkable now, as the Rules contradict one another. But if the Rules were rewritten to be mutually consistent, it could become workable.

4.7. At Inquiries, there is no one officially present to defend the Commission's proposals. Often the task has fallen to the representatives of those parties who happened to benefit from them.

4.8. The professionalism of Assistant Commissioners has been much praised, particularly in the case of the Fifth Review when more effort was put into training.

4.9. Clearer rules would reduce opportunities for litigation even in an increasing litigious world. It was pointed out that the Human Rights Act could now be invoked. Although the Courts had shown reluctance to be involved boundary matters, Foot et al., 1983 took twenty days in the High Court and then went to the Court of Appeal; it cost a lot of money and delayed the preparations on all sides for the impending General Election.

4.10. The Appeal Court judgment in Foot included a controversial observation which has complicated the subsequent interpretation of the Rules. The Master of the Rolls, Lord Donaldson, ruled on behalf of a unanimous Court of Appeal that:

> *Overriding these various points however there is, in our judgment, the impact of section 2 (2) of the Act of 1958 [now Rule 7, see Appendix 2 – IM and DB]. There was considerable argument about the construction of this subsection, both before the Divisional Court and before us. For the applicants, Mr. Williams made two submissions, both of which (if accepted) would limit the impact of the subsection. The first (which found favour with the Divisional Court) was that the first limb of the subsection (discharging Boundary Commissions from the duty to aim at giving full effect in all circumstances to the rules) was to be read subject to the second limb of the subsection. On this construction the dispensation in the first limb is effective only to take account of the two matters specified in the second limb viz. inconveniences attendant on alterations of constituencies, and local ties which would be broken by such alterations. This argument found favour in particular with Oliver L.J. in the Divisional Court, because he felt that otherwise no weight would be given to the conjunction "but" which provides the link between the two limbs of the subsection. We have formed a different view. We consider that the*

function of the first limb is to do just what it says, viz. to relieve Boundary Commissions from the duty to give effect in all circumstances to the rules, with the result that, although plainly Boundary Commissions must indeed have regard to the rules, they are not strictly bound to give full effect to them in all circumstances. The word "but" has a role to play because it points the contrast between the dispensation in the first limb of the subsection, and the mandatory requirement in the second limb, that Boundary Commissions shall nevertheless take account of the matters specified in the second limb.

4.11. In the News Release announcing each set of its provisional proposals, the Boundary Commission for England states that this ruling, together with the 1986 Act as amended, gives 'a definitive account of the law'. But it causes severe problems. If it were literally true that the 'second limb' of Rule 7 overrode everything else in the Rules, there would be a strong presumption against changing constituencies, especially in areas of declining population. As a consequence constituencies would become more unequal in size and the House of Commons would continue to get bigger.

4.12. As the first of these has not happened, we conclude that in practice the Commissions have not followed the practice of giving overriding priority to the second limb of Rule 7. Lord Davidson, Deputy Chairman of the Parliamentary Boundary Commission for Scotland at the time of the Third Review, bluntly told a Commons Select Committee, 'we do not subscribe to that view' [Rossiter et al 1999, p. 116].

4.13. Clearly, the situation where an Appeal Court judgment is simultaneously stated to be definitive and ignored in practice can and should be rectified. The only way to do so is by changing the statutory rules.

4.14. It would be technically feasible to programme a revised set of statutory Rules (not the present set, which are formally contradictory and therefore unprogrammable) so as to create a model set of constituencies that optimally fitted the Rules. This could radically shorten the time taken by the Inquiry process. One attempt to do so, by the leading team of academic political geographers, is given at Appendix 3.

5. Quotas

5.1. *Should the electoral register or the Census provide the basis for redistribution?*
The Census should in principle provide the most accurate count of the UK resident population. There are sterner legal penalties for failing to make a Census return, than for failing to make a return for the electoral register; and the public resources that go into compiling the Census almost certainly exceed those devoted to compiling electoral registers. The population census is the basis for allocating seats in the legislature in a number of single-member-district countries. In the USA it is constitutionally mandated.

5.2. Therefore a natural question is whether the same process should be followed in the UK However there are number of difficulties.

5.3. Any attempt to move from electorate to population as the basis for drawing constituency boundaries would be hotly controversial in Northern Ireland, where the

ratio of electorate to population is smaller in one community than the other. The move would therefore have partisan consequences. On grounds of uniformity throughout the United Kingdom, that may rule it out for Great Britain as well.

5.4. The Northern Ireland cross-community problem could of course be addressed by basing constituency boundaries on the adult population but that might not settle anxieties.

5.5. If the electoral registers were efficiently compiled there would be no case for even considering any other population frame. The number of parliamentary electors should coincide with the Census figures for British, Irish, and Commonwealth citizens over 18. But unfortunately neither the electoral register nor the Census is immaculately compiled. ONS studies of the electoral register in 1981 and 1991, as well as an Electoral Commission study in 2000, [Todd and Dodd 1982, Smith 1983, Electoral Commission 2005], found a national error rate of around 8 percent, varying from 1.8 percent among women over 50 to 37 percent among New Commonwealth citizens in stable rural communities to 30 percent among young urban blacks [Smith 1993 p.7-12]. These orders of magnitude were confirmed by the Electoral Commission's own study a decade later, which suggests that bad registration in the early 1990s was not merely a temporary effect of the Poll Tax (community charge) authorities having access to the electoral register. The Electoral Commission reported in 2005 that the majority, 52%, of non-registrants in 2000 came from just three groups: those living with parents (in particular, young people qualifying for the first time (28%); those having moved within the six months prior to the qualifying date (33%) and those renting from a private landlord (27%).

5.6. The Census too has its limitations (which to some extent match those of the electoral register) and it would not be universally accepted as a better guide to the actual distribution of population. The 2001 Census reported highly contentious population numbers for some London and metropolitan boroughs. It would be controversial, until and unless consensus as to numbers and methodology has been reached, to rely on the Census as the population frame for parliamentary boundaries.

5.7. In addition, the Census does not contain information on the citizenship of those it counts. Not every adult recorded in the Census is legally entitled to vote in UK parliamentary elections.

5.8. At present, electoral registration remains a local authority function. There seems to us to be a strong case for transferring that function to the Electoral Commission, because it is part of the core responsibility for the Commission but not for local authorities. There is therefore a risk of local authorities according low priority to the function except when motivated, perhaps for political and even partisan reasons, to raise its profile. Short of transferring the function to the Electoral Commission, the 360 Electoral Registration Officers in England, and their equivalents in Wales and Scotland, should at least be offered a standard package by the Electoral Commission so that their figures could be presented in a common form. CORE (the Co-Ordinated Online Register of Electors) is aiming for data standardisation and common data sets. There are at present over 30 different electoral registration packages used in England; CORE will help on that front

5.9. There are arguments for estimates of future population being taken into account to avoid redistributing on obsolete figures. However, such estimates have often proved misleading, although they have been very successfully used in Australia. They have also been employed in dealing with local boundary matters both in Scotland and England; unfortunately, it has been found that local authorities have a tendency to overestimate the scale of future changes. Arguments over the validity of projections would certainly prolong Inquiries unless only projections from the Office of National Statistics, and not those offered by local authorities, were admissible.

5.10. *Should there be a uniform quota for the whole nation?*
From 1944 to 1998 there was a guarantee of at least 71 seats for Scotland and 35 for Wales so that these parts of the country were significantly over-represented.

5.11. Under the *Scotland Act, 1998*, Scotland was cut to 59 M.P.s, and there can be no case for the continued over-representation of an increasingly devolved Wales. Wales now has 40 seats (instead of a proportionate 33). Northern Ireland was deliberately under-represented in 1920, but in 1979 it was raised from 12 M.P.s to a proportionate 17 or 18.The figures for 2005 (Table 1) show that Northern Ireland and Scotland were slightly over-represented, and Wales substantially so, in comparison with England. There is an overwhelming case for imposing uniformity of quotas between the four parts of the UK.

5.12. There appears to be substantial agreement among those who work the present system on tolerating constituency deviations of up to 10 percent from the national quota-although some would argue for a lower figure.

5.13. In recent years legal rulings across the world, as well as political fashion, have led to an ever more rigid application of strict quotas in redistribution. In the United States deviations of as little as 0.12% have been struck down by the courts. In New Zealand and Canada a 5% limit has been observed. In Australia seats are supposed to be within 31/2% of the population estimates for three and a half years ahead (i.e. halfway through the 7 year redistribution cycle).

5.14. In the UK (where the Commissioners are more constrained by respect for local authority boundaries and by ward-sized building blocks) greater disparities have been thought appropriate. When new boundaries were introduced in 1997, 84% of seats diverged by less than 10% from their appropriate quota (even though that had been based on the 1991 electorate).

5.15. The Boundary Commissioners could have been stricter but that would have entailed extra dislocation and more crossing of boundaries. Would this matter? Opposite views have been expressed on whether the principle of respecting local government boundaries should remain as over-riding as it currently is. In what circumstances, apart from the island constituencies, should 'special geographical considerations' (Appendix 2, Rule 6) justify deviations from the quota?

5.16. The idea of 'rural loading' (lower electorates to allow for the difficulty of representing large and scattered rural populations) seems, in most countries, to have been abandoned. The main exceptions are for islands and for overseas territories. The case for tolerating disparities in order to avoid crossing local authority boundaries or natural obstacles has been increasingly dismissed in favour of strict adherence to quotas. But all those concerned with redistricting would be grateful for clear and uniform guidance on this question. There is no agreement on what 'geographical' means.

5.17. The phrase in the Rules about 'special geographical considerations' is an inherently ambiguous term and is often abused. It is worth considering how far the Mersey and the Tyne, let alone the Solent and the Menai Straits, or even Lough Neagh, should be respected as impermeable boundaries. In drawing boundaries, Commissions should be guided by the phrase, used in Scotland, 'have regard to' rather than by mandatory injunctions

5.18. Problems arise with the Western Isles (Na hEileanan an Iar, 2005 electorate 21434) and Orkney and Shetland (31343), and, in the opposite direction, with Isle of Wight (109,042). These are the extreme outliers in constituency sizes. Some argue that the Scottish Island constituencies should be merged with the adjacent mainland constituencies. Others argue that they should continue to have special treatment. The case for special treatment being given to the Isle of Wight is more debatable.

5.19. After each of the Third, Fourth, and Fifth Periodical Reviews, the Isle of Wight has been a county which, according to Rules 4 and 5, should have been awarded two seats. In each case, it was awarded only one. It is fair to add that no political party or local authority on the Island pressed for more on any of those three occasions.

5.20. There is no reason for a common policy on 'split apples' and 'doughnuts'. When cities are entitled to more than one but less than three members, the boundary drawers have fluctuated between either cutting the city in half or preserving a central core and merging the peripheral areas into surrounding country constituencies. There may be a virtue in diversity.

5.21. There should be no question of reverting to the non-contiguous system of Districts of Boroughs (or Burghs) in Wales and Scotland, a hang-over from 1832 that lasted until 1950.

5.22. There is no virtue in preserving the historic distinctions between borough and county constituencies; they serve to decide which official should be the Returning Officer and to produce some, often anomalous, contrasts in permitted election expenses between adjacent constituencies. There is, equally, no reason for the continued retention of the obsolete boundaries of metropolitan authorities and of Welsh preserved counties as constraints on drawing constituencies.

5.23. Another possible anomaly to address is that in London, the boroughs (i.e., the lower tier of local government) are the units whose boundaries should not be crossed under Rule 4; in the other English conurbations the unit whose boundary should not be crossed under Rule 4 is the former metropolitan county (i.e., the formerly existing upper tier of

local government). If the Boundary Commission for England had not paired and grouped London boroughs in the last two reviews (despite Rule 4) the result would have been smaller seats in London that in the other English conurbations, for no good reason.

5.24. The pursuit of extreme equality in numbers is no guarantee in itself against gerrymandering, as US experience has shown. Equal electorates are a necessary but not sufficient condition of fairness.

5.25. *Is there any case for using the harmonic mean rather than the arithmetic mean in fixing quotas?*
The present Rules require each constituency electorate within a fixed unit (e.g., a county or metropolitan borough) to be as close as possible to the electoral quota, where the electoral quota is the electorate for the whole U.K. divided by the number of seats in the House of Commons.

5.26. McLean and Mortimore have shown (McLean and Mortimore 1992) that this necessitates splitting theoretical entitlements at the harmonic mean, not the arithmetic mean. The harmonic mean of any two adjacent integers is always below the arithmetic mean. For instance, while the arithmetic mean of 1 and 2 is 1.50, the harmonic mean of 1 and 2 is 1.33. When the smallest indivisible units (e.g. Isle of Wight) have a qualifying electorate of more than 1.33 but fewer than 1.5 electoral quotas, they should be assigned 2, not 1, seats. (See Appendix 4 for an explanation).

5.27. This was surely not Parliament's intention, but that is undoubtedly mathematically entailed by the Rules. Because the harmonic mean is further below the arithmetic mean in small units than in large ones, one effect of using it to determine entitlements to seats is to favour small counties over large ones.

5.28. It is suggested that a redrafted set of rules should have the effect of rounding off entitlements at ½ - i.e. the arithmetic mean. This is simply achieved by deleting 'each constituency to be as close to the Electoral Quota as possible' and substituting 'each elector to have as close to the same entitlement to representation as possible'.

5.29. The technology now exists to use geographical information systems (GIS) to construct hypothetical constituencies from small building blocks such as the Census's Output Areas (OAs). OAs are much smaller than the current building block of the local authority ward- (in 2001 the average ward had 5,600 inhabitants but the average OA had 297). GIS technology is rapidly increasing in sophistication.

5.30. It has been the (non-statutory) policy of the Boundary Commissions in Great Britain to use local government wards as the minimum, indivisible, building blocks of constituencies. Some people are sceptical about preserving wards in this way. In Scotland they are now too large to be minimum building blocks because of the change to the Single Transferable Vote in large multi-member wards. In Birmingham and other large cities very large wards make it extremely difficult to keep close the quota, although wards could continue to be viable elsewhere. Wards also present difficulties when the

redrawing of wards occurs, sometimes by necessitating small ad hoc changes and sometimes by requiring the BCs to wait for the local process to be complete.

5.31. A switch to smaller units as building blocks would eliminate these problems. It might however be thought that such a switch opens up the possibility of boundary-drawers being swamped by too many alternatives.

5.32. However, the Boundary Commission for Scotland managed to identify clearly defined neighbourhoods and used GIS to produce new electoral units with very little contention. In the Fifth Scottish parliamentary redistribution the Boundary Commission, with only ten person days work, reduced the near-infinitude of possibilities to only 220 sets of viable constituency options.

5.33. Census Output Areas (≈300 population) and Super Output Areas (≈1500) could technically be used as building blocks; commercial or public-domain postcode software can map the electoral register on to OAs and SOAs. The BC for Scotland managed a 99.95% match of post-codes with GIS data.

5.34. Postcodes are designed for the convenience of post workers and new postcodes are frequently added. Therefore they cannot be directly used as a building block for the boundary drawing process. Their usefulness lies in facilitating the transfer of the electoral register into the GIS. For England, one essential step would be the implementation of CORE (para. 5.8).

5.35. Polling districts are another possible building block-but they are variable in size and frequently changed at the will of the local authority.

5.36. GIS material is already available to political parties. If they are aware where their supporters and opponents are concentrated, they have unprecedented opportunities to propose boundaries (within the rules) that favour their partisan interest. This process has been extensively observed in the decennial delineation of seats in the US House of Representatives. This process is in the hands of the state legislatures and is, typically, conducted by and in the interests of the party that controls the state legislature.

5.37. Since it is impossible to prevent GIS's from being used in this way, the best available antidote is probably for the Electoral Commission to use GIS to produce an optimal plan – optimal in terms of its consistency with the Rules– at the start of any delimitation process, so that the onus is on objectors to dislodge it. It could be argued that, as in Australia and many American States, a computer system using GIS should be made publicly available for general exploration of possible changes.

5.38. *Should a political elements political element be introduced into the Boundary Commissions?*
The partisan consequences of each general review from 1948 to 1983 seemed relatively neutral. The winner got disproportionately more seats than the loser but hypothetical calculations showed that the Conservative and Labour parties would have fared more or less equally for any given share of the vote.

5.39. In the language of political science, the system was 'responsive' but not 'biased'. A system is responsive if each increment in vote gives the leading party a disproportionate increment in seats. That is a feature of the first-past-the-post electoral system. A system is biased if, on an equal share of the vote, one of the two leading parties would win more seats than the other.

5.40. In the 1990's the situation changed. A strong pro-Labour bias developed in the system. The Table below makes the point by showing what would have happened to the majority in the House of Commons after each of the last four elections if, on a uniform swing, the share of votes for Conservative and Labour votes had been reversed. The bias that is revealed is due partly to the movement of population and partly to tactical voting- but the largest cause has been differential turnout in Labour and Conservative areas [Johnson et al. 2001; Curtice 2005].

Table 3. Seats and votes with roughly reversed outcomes 1992-2005

	Actual Outcome				Opposite Outcome				Actual Clear Majority	Opposite Clear Majority
	Seats		Votes %		Seats		Votes %			
	Lab	Con	Lab	Con	Lab	Con	Lab	Con		
1992	271	336	34.4	41.9	384	217	43.8	35.2	Con +21	Lab +117
1997	418	165	43.2	30.7	351	254	31.4	44.5	Lab +185	Con +51
2001	412	166	40.7	31.7	247	342	36.0	38.7	Lab +173	Con +31
2005	356	198	35.2	32.4	307	250	33.0	36.0	Lab +66	Con – 22

Source: authors' calculations

5.41. There is no simple way of remedying this apparent inequity. It developed in the 1990s, certainly not as the result of any conscious act by politicians or Electoral Commissions. If turnout rose back to the levels of 1950-80 the bias in the system be reduced but it would still be there. If the second choice of tactical voters switched from Labour to Conservative the bias would also be reduced. If the parties showed equal skills in putting alternative proposals to the Commissioners, it might also help the Conservatives slightly. But there is no way in which the Commissioners, following their non-partisan remit, could make the system yield for all parties the same number of seats for any given share of the vote.

5.42. Boundary Commissions should take no account of the partisan consequences of their recommendations. Politicians will always seek their own advantage. However, it has been noted that the Boundary Commissions, even when their specific findings have been challenged, has been accepted as impartial over the last 50 years. It is not up to them to remedy the partisan biases that develop in the general working of the system but only to apply the rules (and to point out their deficiencies).

5.43. Although, inevitably, parties will be parties, seeking their own advantage, no party has exact enough data about voting intention for very fine-gauge tuning of its proposals, while each party has enough data to see through the broad implications of their rivals' proposals. Attempts at manipulation have often been counter-productive. In a world of swings and roundabouts what helps a party at one election hurts it at another.

6. Devolution and responsibility for electoral matters.

6.1. Responsibility for boundary setting in the Devolved Administrations of Scotland, Wales, and Northern Ireland is divided. The Electoral Commission is an all-UK body. The Scotland Act 1998 contains a schedule of reserved matters, which are reserved to the Parliament and government of the United Kingdom. Matters which are not on the schedules are devolved to the Scottish Parliament.

6.2. The *Scotland Act, 1998* (c.46, Sch. 5) lists the following among reserved matters:

The Parliament of the United Kingdom;
The registration and funding of political parties;

Elections for membership of the House of Commons, the European Parliament and the [Scottish] Parliament, including the subject-matter of--

the *European Parliamentary Elections Act 1978*,

the *Representation of the People Act 1983* and the *Representation of the People Act 1985*, and

the *Parliamentary Constituencies Act 1986*,

so far as those enactments apply, or may be applied, in respect of such membership.

The franchise at local government elections.

6.3. The *Government of Wales Act, 1998* (c.38) proceeds in the opposite direction. Its Schedule 2 lists eighteen functions to be transferred initially. One of those functions is 'local government', which must include responsibility for the boundaries of local authorities. All other functions remain reserved to the Parliament and government of the United Kingdom.

6.4. Thus responsibility for local government boundaries rests with the Devolved Administrations in both cases – in Wales by devolution, and in Scotland by non-reservation, although the local government franchise is reserved in Scotland.

6.5. Responsibility for the boundaries of the Scottish Parliament and the National Assembly themselves is for the UK Parliament – in Wales by non-devolution, and in Scotland by reservation. Both parliaments base some of their seats on the UK constituencies. In both cases they have single-member constituencies, originally coterminous with Westminster constituencies, and regional constituencies which make the composition of the parliament more proportional to votes cast.

6.6. When the number of Scottish seats in the UK Parliament was reduced from 72 to 59 under the terms of the Scotland Act 1998, coterminosity was broken in order to prevent the Scottish Parliament from shrinking as a pure consequence of this change.

6.7. Despite the breaking of this link, the *Scotland Act* is clear that 'elections for membership of the ... Parliament' are a reserved matter. The *Government of Wales Act* is equally clear that elections for the National Assembly for Wales are not a devolved matter. Therefore, whether or not coterminous constituencies in Wales continue into the future, responsibility for the determination of constituencies in the devolved countries remains a matter for the UK Parliament.

6.8. In both Scotland and Wales, official commissions have looked at these matters since devolution. In Scotland, the Arbuthnott Commission 'was set up by the Secretary of State for Scotland [NB – not by the Scottish Parliament] in the summer of 2004 to look at the likely impact of having different boundaries for Scottish Parliament and Westminster constituencies, and four different voting systems from 2007, for local councils, the Scottish Parliament, the House of Commons and the European Parliament.' (Summary report p. 1).

6.9. The Arbuthnott Commission reported in January 2006. Their recommendations as to boundaries are:

Having the same constituencies for the Scottish Parliament and Westminster is desirable but not essential and should not drive change to the electoral system for the Scottish Parliament.
The boundaries for Scottish Parliamentary constituencies should be within and respect local authority areas rather than Westminster constituencies.
Scottish Parliament regions should be revised to reflect natural local communities and identity and should be built on local authority areas.
The functions of the Boundary Commission for Scotland and the Local Government Boundary Commission for Scotland should be combined to enable the constituencies and regions for the Scottish Parliament and local authorities to be reviewed together. Consideration should also be given to integrating the review of Westminster constituencies in Scotland into this process.

6.10. In relation to boundary drawing, the Commission argue that recent boundary commissioners operating in Scotland have given too much priority to equality of electorates at the expense of community ties. They argue at para 3.24, 'for the Scottish Parliament, the Additional Member System ensures that citizens who are over- or under-represented by virtue of being in unusually small or large constituencies find their representation overall is balanced out.' They go on:

3.42 First, there would be a need to move away from the increasingly strict interpretation of the rules for redistribution of seats in terms of giving primacy to electoral parity.
3.43 Rule 1 in the provisions for reviewing the Scottish Parliament constituencies set out in the Scotland Act 199821 requires that so far as practicable "regard shall be had to the boundaries of local authority areas." Under Rule 2, however, the electorate of any constituency must be as near the electoral quota as is practicable having regard to Rule 1, with the Boundary Commission only being able to depart from the strict application of Rules 1 and 2 if they think that special geographical considerations render it desirable to do so.
3.44 In order for the Scottish Parliament constituencies to be fitted into the local authority framework to the extent which we would wish to see, these Rules will need to be reviewed.
3.45 Secondly, the boundary review for the Scottish Parliament constituencies and local authority boundaries will need to be carried out and completed at the same time. If these reviews remain separate, it is easy to foresee that on a regular basis there will be long periods following an election when the boundaries will not fit together. It would seem therefore to be necessary for the Boundary Commission for Scotland's functions (or those of the Electoral Commission in due course), at least so far as they relate to reviewing the constituencies of the Scottish Parliament, to be integrated with those of the Local Government Boundary Commission for Scotland.
3.46 We cannot see how this can effectively be achieved in practice so long as the two commissions remain separate. Either the Scottish Executive should transfer the functions of the Local Government Boundary Commission, as they already have power to do, to the Electoral Commission, or that commission's functions should be given to the Local Government Boundary Commission, which would need in that circumstance to be reformed. We do fully appreciate that there are political difficulties regarding the devolved/reserved divide in either option, but this is a vital concern that will need to be resolved.
3.47 In addition, we recommend that consideration be given to integrating the review of Westminster constituencies in Scotland within our proposed amalgamated structure and

whatever timescale it adopts, so that further divergence between Scottish communities and Westminster constituencies is avoided.

6.11. Press comment since January 2006 suggests that, since some of the Commission's proposals are likely to be unwelcome to both the Secretary for Scotland and the First Minister, they are unlikely to be implemented. Neither the Secretary of State nor the First Minister had formally responded to Arbuthnott by the date of this report.

6.12. Arbuthnott's recommendations on boundaries are not among those that aroused political controversy. Yet they are problematic from a UK perspective. Their arguments for giving more priority to local communities and less to electoral equality depend on there being list MSPs to balance out any over- or under-representation. But this argument does not apply to England. It is hard to envisage a UK Parliament writing a set of boundary-drawing rules that give priority to equal representation in England and priority to local government boundaries in Scotland. Arbuthnott did not consider (and was not required to) the knock-on implications of its boundary recommendations for England. We conclude that they are impracticable.

6.13. The Richard Commission was appointed in 2002 by the Rt Hon Rhodri Morgan AM, First Minister of the National Assembly for Wales, {NB: not by the Secretary of State for Wales] to review:

- the scope of the Assembly's powers: whether they are adequate to meet the needs of Wales; and
- the number of elected Assembly Members and their method of election.

6.14. It reported in 2004. Unlike Arbuthnott, it did not address the coterminosity problem. However, it did recommend that the Additional Member System for election of AMs should be replaced by Single Transferable Vote. It does not discuss the interaction of local government, National Assembly, and parliamentary boundary drawing, except to say in chapter 12:

47. The balance between the two objectives: of creating electoral units which reflect recognised communities, and of proportionality, would, currently, be a matter for the Boundary Commission for Wales (BCW). However, the parliamentary responsibilities of the BCW are to transfer to the Electoral Commission following the current review of parliamentary constituencies and Assembly Electoral Regions. Constituencies of between four and six Members (and exceptionally of three Members in some areas) could be constructed to share boundaries with Westminster (by linking two or three constituencies). These numbers could be adjusted easily to reflect any change in the number of Westminster constituencies.

6.15. Some of the Richard Commission's proposals were taken up in the Government of Wales Bill now before Parliament But the matters in paragraph 12.47 were already covered under PPERA and the Government of Wales Bill does not deal with them.

6.16. The National Assembly for Wales, like the Scottish Parliament, has so far declined to take the powers granted to it by *PPERA 2000* to transfer the local government boundary function to the Electoral Commission.

6.17. One might think that it was a natural implication of devolution that the three devolved administrations should each be responsible for drawing its own parliamentary boundaries. However, this is not the case.

6.18. The boundaries to be used for elections to the Scottish Parliament, the National Assembly for Wales, and the Northern Ireland Assembly remain a UK responsibility. As such, they rest with the three relevant Boundary Commissions and will therefore transfer to the Electoral Commission if and when an Order in Council is issued to transfer their functions to the Electoral Commission.

6.19. It is therefore also anomalous that the Electoral Commission should have just one boundary task, attending to English local government wards.

6.20. There is general appreciation of the value of maintaining four distinct Boundary Commissions, one for each of the 4 territories of the UK, with responsibility for both parliamentary and local government boundaries in its territory; while emphasizing the need for close collaboration and consultation between these bodies. It is overwhelmingly desirable that all four Boundary Commissions should follow a common line in deciding Westminster boundaries.

6.21. Perhaps all four Boundary Commissions should report their general views to a central body, which possibly should be the Electoral Commission, which could recommend legislation about changes to the Rules and to the priorities to be given to each of them.

7. The Size of Parliament

7.1. *Should the Rules be modified so as to prevent any increase in the number of MPs?*
Every general redistribution has necessarily increased the size of the House of Commons (with only a single downwards blip caused by the one-off reduction of seats in Scotland consequent on the Scotland Act 1998). Under present Rules that tendency is bound to continue. The harmonic mean and the separate minimums for Scottish and Welsh representation are mainly responsible for this situation.

Table 4 The Size of the House of Commons

1950	625
1955	630
1974	635
1983	650
1992	651
1997	659
2005	(646)
2009	650?

7.2. This unintended ratchet effect was studied by the House of Commons Home Affairs Committee in 1986 but their Report [H.C.86-7, 97-I] was dismissed by the Government [Cm 308/1987]. The matter is dealt with in the Final Report of the Boundary Commission for England in 1995 [paras. 1.9-1.11 in Cm 433-i/1995]. The ratchet effect could be avoided by rewriting the Rules in a non-contradictory way. A firm UK total of seats could be set before calculating quotas, using an arithmetic mean. If rounding errors caused a deviation from the target House size, the Ste-Laguë formula [Appendix 5] should be used to ensure that the target House size was reached.

8. New Rules

8.1. *Should the Rules be redrafted?*
The present Rules (Appendix 2) are formally contradictory. From a contradiction anything follows; and it is therefore imperative to revise them.

8.2. An internally consistent set of Rules was drafted by Ron Johnston, Charles Pattie, and David Rossiter in 2001. A revision of these rules is attached at the end of this Report (Appendix 3). They stand outside the Report because they would need to be carefully reviewed by Boundary Commissions, parties and parliamentary draftsmen before enactment.

9. Governance

9.1. *Is the Electoral Commission sufficiently independent from Government?*
The Electoral Commission was a novel institution when it was launched in 2001. It has established and maintained its independence. Its functions are basically advisory and fact-gathering but not executive. It is a unique body, with a unique accountability to the Speaker's Committee.

9.2. It has six members but could have nine; this increase in membership would allow for the inclusion of a member from Northern Ireland. It intends in the next few months to start the recruitment process for two new Commissioners, including one based in Northern Ireland. Since its beginning in 2001 the Electoral Commission has stayed

autonomous. It has indeed incurred criticism from M.P.s for not being sufficiently sensitive to the requirements of politics and politicians. It has been financed under the auspices of the inter-party Speaker's Committee by Vote of Parliament and not subject to the Treasury. Since the tenure of its Commissioners is assured, its independence seems reasonably secure.

9.3. The Speaker's Committee, to which the Electoral Commission reports, rules with a light hand. MPs do have a limited voice through Questions to 'the member of the Speaker's Committee accountable to parliament.' The Constitutional Affairs Committee has called the Chair of the Electoral Commission to give evidence and he has appeared before other Committees (including such committees in the National Assembly for Wales and the Scottish Parliament). But the Electoral Commission remains independent and virtually irremovable. The Speaker's Committee (which, almost uniquely, does not have a Government majority) has no power to give instructions on what it should do; effectively it only acts as an audit committee.

9.4. Accountability to a joint committee of both Houses would not be appropriate, because such a committee would, almost inevitably, have a Government majority.

9.5. Suggestions that the Commission should become more party politically sophisticated should be rejected. The Electoral Commission, like the Boundary Commissions, should maintain a strictly non-party political composition. Few observers would favour the New Zealand practice of having party representatives attached to the Boundary Commissions or the Electoral Commission.

9.6. Should there be a single body to oversee the work of the four Boundary Commissions, whether or not the function is transferred to the Electoral Commission under PPERA? Yes, to ensure consistency of approach. The choice is between having the Electoral Commission oversee the Boundary Commissions (whether or not an Order under PPERA transferring the function to the Electoral Commission is made), or creating a new non-departmental public body for the purpose. On balance, we prefer to see the function rest with the Electoral Commission regardless of transfer or non-transfer of the function.

9.7. There is probably a need to keep separate the functions of administering the Rules and commenting on them, thus maintaining a separation between Boundary Commissions and the Electoral Commission. If a transfer under *PPERA* occurs, this will have to be reflected in the internal arrangements of the Electoral Commission. It could be argued that the Electoral Commission should do either more or less with boundaries; it should not be left just with its current executive task of dealing with local government boundaries in England alone. It should retain an advisory task for the whole UK.

9.8. *Should the Commission have a more political element?*
In Britain, as in Australia, redistribution has been carried out by non-partisan commissions and they have almost completely escaped accusations of political partiality, even when their rulings have been challenged in the High Court, as in the U.K. in 1954 and 1982-3.

9.9. In New Zealand the main political parties have non-voting representation on the Boundary Commission.

9.10. In the United States most States use partisan legislative committees to draw up boundaries and, although they are constrained by strict laws on quotas and ethnicity, the results are far more partisan (and litigated about) than in any other Western democracy.

9.11. O'Leary (1962) has shown how in the nineteenth century British elections were purified by taking disputed cases away from the partisan legislature and transferring them to a non-partisan court. The same happened to boundary-drawing in the twentieth century. A very strong case would be needed for current practice to be abandoned. Faith in Electoral Commissions does seem to depend on how far they are perceived as genuinely non-partisan.

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Appendix 1. Political Parties Elections and Referendums Act, 2000

Sections of Clause 41 providing for the transfer responsibility for parliamentary and local government boundary drawing to the Electoral Commission. Section 163 is also relevant.

6.--(1) The Commission shall keep under review, and from time to time submit reports to the Secretary of State on, the following matters, namely--…
the redistribution of seats at parliamentary elections…
14.--(1) The Commission shall establish four Boundary Committees, one for each of England, Scotland, Wales and Northern Ireland….
16.--(1) The Parliamentary Constituencies Act 1986 shall have effect subject to the amendments specified in Part I of Schedule 3, by virtue of which--
the functions of each of the Boundary Commissions under section 3(1) and (3) of that Act (functions with respect to keeping under review, and reporting on, representation in the House of Commons of the part of the United Kingdom with which they are concerned) are transferred to the Electoral Commission; and
functions with respect to--
the carrying out of reviews under that Act with respect to a particular part of the United Kingdom, and
the submission to the Electoral Commission of proposed recommendations following any such review,
are conferred on the Boundary Committee established for that part of the United Kingdom under section 14 above….
18.--(1) The Secretary of State may by order make provision for and in connection with transferring (to any extent) to--
the Commission, or
the Boundary Committee for England,
any of the functions of the Local Government Commission for England (in this section referred to as "the English Commission")….
19.--(1) The Scottish Ministers may by order make provision for and in connection with transferring (to any extent) to--
the Commission, or
the Boundary Committee for Scotland,
any of the functions of the Local Government Boundary Commission for Scotland (in this section referred to as "the Scottish Commission")…..
20.--(1) The National Assembly for Wales may by order make provision for and in connection with transferring (to any extent) to--
the Commission, or
the Boundary Committee for Wales,
any of the functions of the Local Government Boundary Commission for Wales (in this section referred to as "the Welsh Commission")….

163.--(1) This Act may be cited as the Political Parties, Elections and Referendums Act 2000.
(2) Subject to subsections (3) and (4), this Act does not come into force until such day as the Secretary of State may by order appoint; and different days may be so appointed for different purposes…..

Appendix 2. The current statutory rules for redistribution of seats.

These are set out in Schedule 2 of the Parliamentary Constituencies Act [1986 c. 56].

SCHEDULE 2

RULES FOR REDISTRIBUTION OF SEATS

1.--(1) The number of constituencies in Great Britain shall not be substantially greater or less than 613.

(2) The number of constituencies in Scotland shall not be less than 71 [repealed by the *Scotland Act 1998*].

(3) The number of constituencies in Wales shall not be less than 35.

(4) The number of constituencies in Northern Ireland shall not be greater than 18 or less than 16, and shall be 17 unless it appears to the Boundary Commission for Northern Ireland that Northern Ireland should for the time being be divided into 16 or (as the case may be) into 18 constituencies.

2. Every constituency shall return a single member.

3. There shall continue to be a constituency which shall include the whole of the City of London and the name of which shall refer to the City of London.

4.--(1) So far as is practicable having regard to rules 1 to 3--

(a) in England and Wales,--

(i) no county or any part of a county shall be included in a constituency which includes the whole or part of any other county or the whole or part of a London borough,

(ii) no London borough or any part of a London borough shall be included in a constituency which includes the whole or part of any other London borough,

(b) in Scotland, regard shall be had to the boundaries of local authority areas,

(c) in Northern Ireland, no ward shall be included partly in one constituency and partly in another.

(2) In sub-paragraph (1)(b) above "area" and "local authority" have the same meanings as in the *Local Government (Scotland) Act 1973.*

5. The electorate of any constituency shall be as near the electoral quota as is practicable having regard to rules 1 to 4; and a Boundary Commission may depart from the strict application of rule 4 if it appears to them that a departure is desirable to avoid an excessive disparity between the electorate of any constituency and the electoral quota, or between the electorate of any constituency and that of neighbouring constituencies in the part of the United Kingdom with which they are concerned [amended by the *Scotland Act 1998*].

6. A Boundary Commission may depart from the strict application of rules 4 and 5 if special geographical considerations, including in particular the size, shape and accessibility of a constituency, appear to them to render a departure desirable.

General and supplementary

7. It shall not be the duty of a Boundary Commission to aim at giving full effect in all circumstances to the above rules, *but they shall take account, so far as they reasonably can—*

(a) *of the inconveniences attendant on alterations of constituencies other than alterations made for the purposes of rule 4, and*

(b) *of any local ties which would be broken by such alterations* [amended by the *Scotland Act 1998*][1].

8. In the application of rule 5 to each part of the United Kingdom for which there is a Boundary Commission—

(a) the expression "electoral quota" means a number obtained by dividing the electorate for that part of the United Kingdom by the number of constituencies in it existing on the enumeration date,

(b) the expression "electorate" means—

(i) in relation to a constituency, the number of persons whose names appear on the register of parliamentary electors in force on the enumeration date under the Representation of the People Acts for the constituency,

(ii) in relation to the part of the United Kingdom, the aggregate electorate as defined in sub-paragraph (i) above of all the constituencies in that part,

(c) the expression "enumeration date" means, in relation to any report of a Boundary Commission under this Act, the date on which the notice with respect to that report is published in accordance with section 5(1) of this Act.

9. In this Schedule, a reference to a rule followed by a number is a reference to the rule set out in the correspondingly numbered paragraph of this Schedule.

[1] Text in italics in Section 7 was labelled "the second limb" of this rule by Lord Donaldson, Master of the Rolls, in *Foot et al. 1983.*

Appendix 3. A possible new set of Rules

A proposed set of Rules and Procedures for the redistribution of seats using first-past-the-post in single-member constituencies (prepared by R. Johnston, C. Pattie, and D. Rossiter).

Rules

1. The target size of the House of Commons shall be x members.
2. The electoral quota for the allocation of seats to England, Scotland, Wales and Northern Ireland shall be the electorate of the United Kingdom on the qualifying date, divided by x. Fractional entitlements should be allocated using the Sainte Laguë method.
3. The electoral quota defined in rule 2 shall be used to define constituencies throughout the United Kingdom.
4. The number of electors in each constituency shall be as close to the electoral quota as possible, and no constituency should deviate from it by more than 10 per cent.
5. The basic local government units to be employed in allocating constituencies shall be:

(a)in England, the Shire Counties, the Metropolitan Districts, the Unitary Authorities and the London Boroughs;

(b) in Scotland and Wales, the Unitary Authorities; and

(c)in Northern Ireland, the Local Government Districts.

6. In defining constituencies, Boundary Commissions may either group or subdivide basic local government units defined in Rule 5 to meet the requirement of Rule 4. The decision whether to group adjacent units shall proceed as follows:
7. The Commission shall use the electoral quota to determine the theoretical entitlement to constituencies of each basic local government unit, using its registered electorate on the qualifying date;
8. an integer number of constituencies shall be allocated, using the Ste-Laguë rule;

If in a basic local government unit, the average electorate per
constituency that would be obtained by allocating it its theoretical
entitlement would deviate from the electoral quota by 10 per cent, the
Commission will group that unit with one or more adjacent basic local government units so that their joint theoretical entitlement meets the requirement set out in Rule 4; andonly entire basic local government units are to be grouped.

No part of a basic local government unit shall be included in a constituency which includes the whole or part of another such unit unless this is necessary to meet the requirement of Rule 4.

In sparsely-populated areas, Commissions may exceptionally recommend constituencies having electorates more than 10 per cent below the electoral quota.

Boundary Commissions shall take account of the inconveniences attendant on:
in England, the division between constituencies of Districts within the Shire Counties;
in England, Scotland and Wales, the division between constituencies of electoral wards;
in Northern Ireland, the division between constituencies of district electoral areas;
alterations of constituencies; and
local ties.

Definitions
For Rule 2, the qualifying date shall be the date on which the Commissions announce that a review has commenced.

Procedure
The Boundary Commissions shall report on periodic reviews of all constituencies within their portion of the United Kingdom no more than ten years after the date of their last report.
Each Boundary Commission shall proceed, for its portion of the UK, by:
publishing the electoral quota to be used in the review, the theoretical entitlement of each basic local government unit, and any grouping of adjacent units proposed to meet the requirements of rules 6 and 7;
publishing details of the proposed constituencies for each basic local government unit, or group of adjacent units, and inviting interested parties to make representations regarding those proposals within three months of publication;
where it considers it necessary because of the volume and nature of opposition received to its proposals for any basic local government unit or grouping of adjacent units, arranging for a Public Inquiry to be held within the area under review, to be chaired by an Assistant Commissioner, who should report to the Commission within three months of the Inquiry being held.
publishing its final proposals for constituencies in any basic local government unit or grouping of adjacent units within two months of receiving an Assistant Commissioner's report; and
when all final proposals have been determined, forwarding details of the full set of recommendations for constituencies to the relevant Secretary of State.
The relevant Secretary of State will implement the Commission's final recommendations through a draft Order in Council within one month of receiving its report.
The new constituencies will be used at the next general election following that Order being approved.
At any time, a Commission may announce that it is to undertake an interim review of constituencies in part of its portion of the UK, using the electoral quota deployed at its last periodic review; the procedure to be followed will be that set out in 2-4 above.

Appendix 4. The harmonic mean

The harmonic mean of two adjacent integers n and $n + 1$ is $n(n + 1)/(n + 0.5)$, that is the product of the two numbers divided by their average. It is so called because the ratios of musical intervals follow it. It is always smaller than the arithmetic mean, but it becomes asymptotic to it (i.e., comes to differ imperceptibly) as units get larger. Table A1 shows the harmonic and arithmetic means of a range of adjacent numbers.

Table A1. Harmonic and arithmetic means

Numbers	Harmonic mean	Arithmetic mean
1		
	1.333	1.5
2		
	2.400	2.5
3		
	3.429	3.5
4		
	4.444	4.5
5		
…		
9		
	9.474	9.5
10		
…		
49		
	49.495	49.5
50		
…		
99		
	99.497	99.5
100		

The wording of Rule 5 of the current boundary rules requires a Boundary Commission to split entitlements at the harmonic mean, not the arithmetic mean [for a proof see McLean and Mortimore 1992]. A small sub-unit (e.g., Isle of Wight) is more likely to have an entitlement in the territory above a harmonic mean and below the corresponding arithmetic mean that a large subunit (e.g., West Midlands). Therefore, as with the Dean apportionment rule for the US House of Representatives (Appendix 5), the current Rule 5 is biased in favour of small units.

Appendix 5. The Ste-Laguë (Webster) rule.

Political apportionment is the allocation of an integer number of seats to each of a number of subunits into which a legislature is divided. This general description covers two cases:

1: a country is divided into territorial units, and legislative seats must be allocated to these units without crossing their boundaries;

2: seats in a multi-seat constituency must be apportioned to political parties in proportion (measured by some criterion or other) to their votes.

Case 2 deals with proportional representation of parties in multi-member seats, and therefore does not apply to the United Kingdom Parliament, all of whose members are returned in single-member constituencies. Case 1 covers any apportionment into multi-seat districts. This includes all those covered by Case 2 (since PR requires multi-member districts) but also others, including the UK. The current Rule 4 of the Rules for the Redistribution of Seats requires the Boundary Commission for England to respect certain boundaries (currently London boroughs, shire counties, unitary authorities, and metropolitan counties) and not normally to propose constituencies which cross their boundaries. It is generally agreed that this Rule is impracticably tight. However, at a minimum, it is proposed that there should remain separate boundary drawing procedures for each of the four member countries of the UK – England, Scotland, Wales, and Northern Ireland. The arrangements described below could also be applied to any smaller units whose boundaries may not be crossed and that must therefore be assigned an integer number of seats. For example, a future authority might decide that the nine standard English regions were units whose boundaries no parliamentary constituency may cross.

It is generally thought desirable that the size of the House of Commons should be fixed at the outset of any boundary-drawing process. However, if the size of the House is first fixed at (say) 650, the obvious methods of assigning seats to the four member countries (or appropriate smaller units) are flawed.

Method 1. Give each subunit its exact share of seats to be filled, rounded to the nearest whole number.
Problem. Rounding-off may cause the size of the House to fluctuate. Suppose that the exact entitlement of the four countries of the UK to seats in a House of 650 was as shown in Table A2. Then the rounding-off process assigns 651 seats, not 650.

Table A2. Rounding errors

	Exact entitlement	Rounded entitlement
England	540.44	540
Scotland	58.51	59
Wales	33.52	34
NI	17.53	18
UK	650	651

Method 2 Give each subunit the whole number next below its exact share of seats to be filled. Assign the remainder to subunits in descending order of size until the target number of seats has been filled, then stop. This is known as the Largest-Remainder, or Hamilton method. In the example of Table A2, the four countries would first be assigned {540,58,33,17} seats, a total of 648. The first of the two remaining seats would be assigned to Northern Ireland, giving it 18, and the second to Wales, giving it 34.

Problem. The Hamilton method is non-monotonic and subject to the Alabama Paradox. In 1881 the chief clerk of the US Census Office reported to Congress that

> *if the House of Representatives were to be increased from its current size of 299 to 300, I met with the so-called "Alabama" paradox where Alabama was allotted 8 Representatives out of a total of 299, receiving but 7 when the total became 300. Such a result as this is to me conclusive proof that the [Hamilton method] does not in fact [meet the requirement of the US Constitution, which is to] "apportion Representatives among the States according to their respective numbers"*

(CW Seaton to House of Representatives, 25.10.1881, quoted by Balinski and Young 2001, p. 38).

The House agreed and the USA ceased using the Hamilton (largest-remainder) method. For the same reason, it should not be adopted in the UK. Balinski and Young's impossibility theorem shows that no modification of the method of remainders avoids this problem.

Method 3. The Ste-Laguë (Webster) method. Once all remainder methods have been ruled out, the choice must fall on a divisor method: Choose the size of the House to be apportioned. Find a divisor x so that the whole numbers nearest to the quotients of the subunits sum to the required total. Give to each subunit its whole number (adapted from Balinski and Young 2001 p.32). This is known in the USA as the Webster method, as Sen. Daniel Webster proposed it in 1832 for the apportionment of House seats to the States. Elsewhere it is known as the Sainte-Laguë method, because the French mathematician André Sainte-Laguë proposed it in 1910 for the apportionment to seats to parties in a multi-member district under proportional representation. The Webster and Ste-Laguë methods look utterly different but in fact they are mathematically identical.

Table A3 gives a worked example.

Table A3. The Webster (Ste-Laguë) method

	Exact entitlement	Electorate	Webster Entitlement	After rounding
England	540.44	33257846	540.33869	540
Scotland	58.51	3600615	58.499031	58
Wales	33.52	2062769	33.513716	34
NI	17.53	1078769	17.526714	18
UK	650	40000000	649.87815	650
Target electorate for each seat:			61538	
A suitable Webster divisor:			61550	

In table A3, the column 'electorate' is shown in order to calculate what the UK Boundary Commissions call the 'electoral quota', or target electorate for each seat (61,538 in this example). However, this number cannot be the divisor, as it would produce one seat too many (see Table A2). Therefore in this case a (slightly) larger number is chosen, with the

property that, after rounding off at ½, the entitlements of each subunit add up to the required total of 650. Any of a range of numbers would do the trick; the example given of 61,550 is just one of the numbers in this range.

Method 4. Other divisor methods, including the Dean (harmonic mean) rule. There is a rich history of other divisor rules, which have been either proposed or implemented for apportionment of seats in the US House of Representatives to the states. One of them, proposed by mathematician James Dean, of Vermont, in 1832, was identical to Webster's but it rounded off entitlements not at ½ but at the harmonic mean. The Dean method would have given an advantage to small states (such as Vermont) and it was not adopted. In fact all divisors other than Webster/Ste-Laguë either round off below ½, and give an advantage to small units, or round off above ½, and give an advantage to large units. Therefore only the Webster divisor should be used for fair apportionment.

It should be noted that the Electoral Commission itself used the Sainte-Laguë method to assign European Parliament seats to the twelve regional constituencies in the UK in 2003. The Sainte-Laguë system had not been one of its four original proposals. Representations from various academics including both of the authors of this report persuaded the Commission to take the exceptional step of rejecting all fourof its proposed methods in favour of the Sainte-Laguë method. The independent experts it consulted, including the Royal Statistical Society and the Statistics Commission, confirmed that Sainte-Laguë is the method most likely to be fair to units of all sizes, biased neither in favour of the large nor of the small, and not subject to monotonicity paradoxes.

See: *http://www.electoralcommission.org.uk/files/dms/DistributionofUKMEPsfinal_11167-8826_E_N_S_W_.pdf*

Appendix 6 Parliamentary Boundary Legislation since 1944

House of Commons (Redistribution of Seats) Act 1944. (1944 c.41)

This set up the basic framework for Boundary Commissions and regular redistribution

Representation of the People Act 1945. (1945 c.6).

This implemented most of the proposals of the Speaker's Conference of 1943-4 and set up the machinery for the 1945 election including the creation of 25 extra seats

House of Commons (Redistribution of Seats) Act 1947. (1947 c.10).

This relaxed the 25% limit to deviations from quota.

Representation of the People Act 1948. (1948 c.65).

This was a comprehensive reorganisation of franchise and election law. It also enacted the recommendations of the Boundary Commissions in the first general redistribution since 1928.

Representation of the People Act 1949. (1949 c.68).

Simply a Consolidation Act.

House of Commons (Redistribution of Seats) Act 1949. (1949 c.66.)

Simply a Consolidation Act.

House of Commons (Redistribution of Seats) Act 1958. (1958 c.26).

This changed the timing of Periodic Reviews to 10-15 years and modified Review procedures.

House of Commons (Redistribution of Seats) Act 1979. (1979 c.15)

This increased the representation of Northern Ireland from 12 to between 16 and 18.

Parliamentary Constituencies Act 1986. {1986 c.56).

This consolidated previous redistribution Acts and restated the Rules for Boundary Commissions.

Boundary Commissions Act, 1992. (1992 c.65).

This changed the timing of Periodic Reviews to 8-12 years and set a deadline for the then current (Fourth) Review

Scotland Act 1998. (1998 c.46).

This reduced the representation of Scotland to 59 or less and linked Scottish Parliament constituencies to Westminster constituencies.

Government of Wales Act 1998. (1998 c.38).

This linked National Assembly for Wales constituencies to Westminster constituencies.

Political Parties Elections and Referendums Act 2000. (2000 c.41).

This set up the Electoral Commission and included comprehensive provisions on party finance and other matters.