ISSN 1745-6231

Voting matters

To advance the understanding of preferential voting systems

published by

The McDougall Trust

Issue 24 October 2007

Contents

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The McDougall Trust is a charitable trust formed in 1948. The charity's purposes as stated in its governing scheme of 1959 are to advance knowledge of and encourage the study of and research into:

- political or economic science and functions of government and the services provided to the community by public and voluntary organisations; and
- methods of election of and the selection and government of representative organisations whether national, civic, commercial, industrial or social.

The Trust's work includes the maintenance and development of the Lakeman Library for Electoral Studies, a unique research resource, the production and publication of Representation: The Journal of Representative Democracy, and, of course, this publication **Voting matters**, that examines the technical issues of the single transferable vote and related electoral systems.
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Review

The McDougall Trustees recently asked a senior academic to undertake a review of *Voting matters*, partly due to some comments on the Internet. You may have noticed a difference to the front sheet since the subtitle has been changed from the previous text: *for the technical issues of STV*. This change reflects the actual content which is not restricted to STV.

An issue which arose from the review was a criticism of the paper by Allard in Issue 5 which gives a low figure for the number of STV elections which are non-monotonic. It is perhaps not obvious that an election can fail to be monotonic in two distinct ways. Given an election for three seats and six candidates in which A, B and C are elected and X, Y and Z fail to be elected, then increased support for C could result in C not being elected; or alternatively, reduced support for X could result in X being elected. It seems clear that a more robust estimate for the occurrence of a non-monotonic election is needed. An academic has agreed to investigate this. It would also be interesting to know if the actual STV counting rule had an impact on this issue.

Editorial

There are 4 papers in this issue, all of which are comments or reviews of other work:

- I D Hill: *STV in Northern Ireland and proportional representation*

  This paper makes two suggestions for increasing the degree of proportionality for elections. Changing the number of seats per constituency would require a legislative change, but is conceptually simple. Using the eligible votes to determine the split is more radical, but why not? What do readers think of this?

- Jonathan Lundell and I D Hill: *Notes on the Droop quota*

  The Droop quota is a key issue of STV. Note that the authors place great emphasis on DPC (see the paper for details). This criterion could be regarded as critical for STV, yet some counting methods fail this test, at least in marginal situations.

- H R Droop: *On Methods of Electing Representatives*

  In preparing the previous paper, it was clear that the original paper of Droop was not widely available. Hence it was decided to reprint it, with the approval of the original publisher (although long out of copyright). Although long by modern standards, it raises very many issues, the majority of which are still outstanding today. Thanks to the two previous authors and David Farrell in assisting with this reprinting.

- E Stensholt: *Review — Elections in split societies*

  This is a review of a book edited by Peter Emerson. The topic of the book is voting systems based upon Borda scores. Such systems are clearly related to STV in many respects and hence a comparison is surely of interest. In order to present the review, a scheme for illustrating voting profiles is used. Note that the review and the book take into account the political position of a divided society in Northern Ireland.

The Editor must correct a statement made in the last editorial which stated: *In electoral terms, Meek has the advantage that the intervention of a no-hope candidate cannot change the choice of the elected candidates — a failing of all the rules used for current hand-counting STV methods.* This is not correct in general. For instance, if a Meek count excludes candidates A, B and C (in that order), then rerunning the count without A *will* get the same result, and also without A and B, or A, B and C. However, a different result may be obtained by excluding B (without A), or by excluding A and C without B, etc. With a conventional count, if the first stage excludes a candidate, then rerunning the count without that candidate does not necessarily obtain the same result.

Readers are no doubt familiar with the problems that were encountered with the Scottish elections this spring. However, the STV elections went off smoothly. The Glasgow election area provided complete details of the voting profiles on the Internet, although it was the only area to do so. This provides a very significant addition to the STV data available for academic study.

The site `www.votingmatters.org.uk` is now working on the Internet, but bookmarks to the old site should be changed to the new one, since the old site will be removed eventually.

*Readers are reminded that views expressed in **Voting matters** by contributors do not necessarily reflect those of the McDougall Trust or its trustees.*

STV in Northern Ireland and proportional representation

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1 How many seats per constituency?

If STV is to give proportional representation, so far as can be done within the limits of practicality, it is necessary that the number of seats for each constituency should depend on the eligible electorate. In the present rules for Northern Ireland this is not done, but it is laid down that there shall be 6 seats for each constituency, and the degree of proportionality must suffer somewhat in consequence.

A reasonably good job appears to have been done in trying to equalise electorates to go with the equal numbers of seats, but the result is far from perfect. Table 1 shows the electorate sizes, as given by the Electoral Office for Northern Ireland, in March 2007 and how many seats each should have had for the Assembly election if allocation had been made by the Sainte-Laguë rule. The difference from 6 seats everywhere is not huge, and it may not have made any substantial political difference to the outcome, but there is no denying that it could have done, and any distortion may get worse over the years if no action is taken to correct it.

What any such political difference would have been we cannot tell without access to the votes. We can speculate about it, of course, but it is necessary to bear in mind that, in STV, the last seat in a multi-member constituency is nearly always marginal, and may turn out quite differently from the majority shown by the constituency. In particular, a change of the number of seats leads to an immediate change in the quota, and that alone can have an effect.

Even access to the complete voting pattern would not necessarily tell us what would have happened because, for one thing, the list of candidates might have been different if the number of seats were changed.

2 A further possibility

It could be argued, however, that it would be even better to use the number of valid votes, instead of the eligible electorate, thus making high turnout an advantage. Table 2 shows what this would have done. Compared with Table 1, East Antrim, Lagan Valley and North Down would each have lost a seat as a result of poor turnout, while Fermanagh & South Tyrone, Mid Ulster and Newry & Armagh would each have gained one for good turnout.

This would be perfectly possible. Each constituency could make its count of first preferences without knowing how many seats it would get, and report to a central point the total number of valid votes. As soon as all such reports were in, the central point would tell each constituency its number of seats and its quota, and the count could continue.

One slight disadvantage might be if voters hesitated to vote in case an extra seat were gained that they suspect might go to a disliked party, but that is probably not very likely to deter voters. It would certainly make party workers very cross if they put a lot of effort into getting a high turnout but, as a result, gained an extra seat that went to a different party.

This idea is in no way comparable to the "overhang" votes in the German electoral system. That is merely to allow for a slight difficulty in the system and it lessens proportionality by increasing the total number of seats in certain cases, whereas the present suggestion does not change the total number of seats but merely their allocation between constituencies. Those who seek to measure proportionality always seem to do so on the basis of valid votes,

not on eligible electorate, so it would be expected to improve things so far as those measures are concerned.

Party organisers might well object that it would hinder them not to know the number of seats in advance, but the aims of an electoral system should be: (1) to treat the voters well; (2) to treat the candidates well so far as possible without upsetting aim 1; (3) to treat party organisers well so far as possible without upsetting aims 1 or 2. The priorities should definitely be taken in that order.

3 What should be done?

I wish to emphasise that the suggestion in section 1 above is a standard part of STV thinking, and there seems to me to be no case for not making a change unless, in the particular circumstances of Northern Ireland, it is found to be politically impossible. The suggestion in section 2, however, is no more than a bit of "thinking aloud" in the hope that others will comment on it.

4 References

[1] The Electoral Office for Northern Ireland. www.eoni.org.uk/votes_polled_summary-2.pdf

Constituency	*Eligible Electorate*	*Seats due*
North Antrim	72814	7
South Down	71704	7
Newry & Armagh	70823	7
Upper Bann	70716	7
Lagan Valley	70101	7
Strangford	66648	6
Fermanagh & South Tyrone	65826	6
South Antrim	65654	6
Foyle	64889	6
Mid Ulster	61223	6
West Tyrone	58367	6
North Down	57525	6
East Antrim	56666	6
East Londonderry	56104	5
Belfast West	50792	5
Belfast East	49757	5
Belfast North	49372	5
Belfast South	48923	5

Table 1. Northern Ireland constituencies at the March 2007 Assembly election and the seats that each would have had if based on eligible electorate, under the Sainte-Laguë rule.

Constituency	*Valid Votes*	*Seats due*
Newry & Armagh	49619	8
Fermanagh & South Tyrone	46442	7
South Down	46110	7
North Antrim	44331	7
Mid Ulster	44277	7
Upper Bann	42882	7
Lagan Valley	41822	6
West Tyrone	41454	6
Foyle	41036	6
South Antrim	38175	6
Strangford	36019	6
East Londonderry	33922	5
Belfast West	33790	5
North Down	30707	5
Belfast South	30344	5
East Antrim	30039	5
Belfast North	29715	5
Belfast East	29629	5

Table 2. Northern Ireland constituencies at the March 2007 Assembly election and the seats that each would have had if based on valid votes, under the Sainte-Laguë rule.

Notes on the Droop quota

Jonathan Lundell & I D Hill

1 Introduction

STV methods have historically used one of two quotas: the Hare quota v/s (votes divided by seats) or the Droop quota $v/(s+1)$ (votes divided by seats plus one) [1, 2].

The Hare quota v/s is the largest quota such that s candidates can be elected. Methods employing the Hare quota typically deal in whole votes, and use the integer portion of the calculation: $\lfloor v/s \rfloor$.

With the Hare quota, it is possible for a majority bloc of voters to elect only a minority of seats, in particular when the number of seats is odd. The Droop quota, the smallest quota such that no more candidates can be elected than there are seats to fill, addresses this problem. Furthermore, the Hare quota is vulnerable to strategic voting and vote management, which the Droop quota makes much less likely to succeed. More generally, the Droop quota figures in the Droop proportionality criterion; thus Woodall [3]:

> The most important single property of STV is what I call the *Droop proportionality criterion* or *DPC*. Recall that if v votes are cast in an election to fill s seats, then the quantity $v/(s+1)$ is called the *Droop quota*.
>
> DPC. If, for some whole numbers *k* and *m* satisfying $0 < k \leq m$, more than k Droop quotas of voters put the same m candidates (not necessarily in the same order) as the top m candidates in their preference listings, then at least k of those m candidates should be elected. (In the event of a tie, this should be interpreted as saying that every outcome that is chosen with non-zero probability should include at least k of these m candidates.)

Nicolaus Tideman (after Michael Dummett) calls this "(*k*+1)-proportionality for solid coalitions", or (*k*+1)-PSC [2, p269].

The Droop quota, like the Hare quota, is often rounded to an integer. From O'Neill's description of the proposed BC STV rules [4]:

> The "Droop quota" will be the formula for calculating the number of votes required by a candidate for election in a district. The quota formula is:
>
> $$\left(\frac{\text{total number of valid ballots cast in the district}}{1 + \text{number of members to be elected}} \right) + 1$$
>
> Fractions are ignored.

More compactly: $\lfloor v/(s+1)+1 \rfloor$.

Henry Droop himself defined his quota as $mV/(n+1)+i$, where V voters have *m* votes each, the number of seats is n, and i is the number necessary to reach the smallest integer greater than $mV/(n+1)$ [5]. When *m* is 1, this gives the same result as $\lfloor v/(s+1)+1 \rfloor$, though differently expressed.

If *m* is 10^k, this is the equivalent of working to k decimal places with one vote each. Droop says that i rounds up to the next integer, not to the next multiple of m, making it quite clear that Droop himself would think that any such increment should be in the last decimal place used, not a whole integer. (It is unlikely, however, that Droop contemplated using $m > 1$ for STV elections.)

It seems to have been nearly a century before the purpose of the $+i$ was queried, when in the 1970s Frank Britton pointed out to Robert Newland that it was never needed except in the case of a tie for all remaining places and, if that happened, it did not help to resolve the tie. This led to the 1976 version of the ERS rules to replace the 1972 version.

In fact, Droop's quota does not satisfy his wish of being the smallest possible that cannot elect too many, unless it is insisted that the same quota has to

apply to all, for once the incremented quota has been applied to the first elected, a smaller quota would be safe for all the rest. It might be argued that it would be unfair to make the first elected keep a larger number, but it is no more so than filling the last places on less than a quota, as is traditional practice.

However, there is an extra point of importance when hand counting, well explained by Robert Newland (in a letter to Bernard Black, quoted with permission in ERS Technical Committee paper TC 88/2). He wrote "in earlier days I have had Droop quotas of 2.01, 3.01, 4.01, etc. If the Droop quota was, say, 4.01, and one or more candidates had 4 votes, then one was obliged to carry out the farce of transferring votes to those candidates, and then transferring away all except 0.01 of the added votes, even though those candidates already demonstrably had sufficient votes that they must be elected. Now, since 1976, the Britton quota has avoided this nonsense".

The new ERS rules avoided "this nonsense" only for quotas that could be expressed exactly in two decimal places, but, as we shall see, the principle can be extended if we can represent quotas exactly.

2 Terminology

Some sources reserve the term "Droop quota" for the rounded-up $\lfloor v/(s+1)+1 \rfloor$. Tideman calls $v/(s+1)$ the "NB quota", after Newland and Britton [2, p271], while Newland referred to it as the "Britton quota" [quoted above]. Wikipedia (as of this writing) calls $v/(s+1)$ the "Hagenbach-Bischoff quota" [6], but *Electoral System Design* glosses "Hagenbach-Bischoff Quota" as "Another term for the *Droop Quota"* [7].

A cursory survey of online literature, including *Voting matters*, suggests that the name "Droop quota" is commonly used for any quota between $\lfloor v/(s+1)+1 \rfloor$ and $v/(s+1)$. The difference can be as much as a full vote, usually insignificant in large elections, but often significant in small ones.

3 Problems

The exact (unrounded) Droop quota *v*/(*s*+1) has two potential problems.

Too many winners.

If the quota is exactly $v/(s+1)$, then $s+1$ candidates can receive exactly a quota. This problem can be addressed in several ways.

- Adjust the quota upward, typically by the nominal limit of computational precision, but in some rules as much as to the next higher integer.
- Use the exact quota, but elect on exceeding, rather than simply reaching, the quota [8].
- Use the exact quota. If there are $s+1$ winners, they must be tied; break the tie.
- Use the exact quota, as with the last case, but deferring the election of candidates with exactly a quota until s or fewer candidates remain. Break ties as required.

Limitations of numerical representation.

Typical implementations use binary or decimal arithmetic, in which a quota such as 100/(2+1) cannot be exactly represented. Again, there are several ways to address the problem.

- Adjust the quota upward to a value that can be represented, the limiting case being the integer quota $\lfloor v/(s+1)+1 \rfloor$.
- Use the exact quota if it can be exactly represented; otherwise adjust the quota upward to the smallest representable value that is greater than the exact quota.
- Use rational arithmetic, so that all values can be represented exactly. This approach is likely to be computationally expensive, and has not to our knowledge been implemented.
- Use quasi-exact fixed-point or floating-point arithmetic with guard digits (see appendix below).

ERS97, which uses two decimal digits of precision, represents 100/(3+1) exactly (as 25.00) but rounds 100/(2+1) up (to 33.34) [9]. Integer-based methods use $\lfloor v/(s+1)+1 \rfloor$, so that these two quotas become 26 and 34. OpenSTV's implementation of Meek's method uses 25.000001 and 33.333334 by default (six decimal digits of precision, always rounding up) [10]. The "Algorithm 123" implementation of Meek's method treats the underlying computational precision as exact, ignoring truncation and rounding errors, and breaks ties when too many candidates reach the quota [11].

DPC failure. STV rules such as Irish or BC STV that use a quota of $\lfloor v/(s+1)+1 \rfloor$ do not satisfy the Droop proportionality criterion (DPC), as demonstrated by this example from Robert Newland [12] (two parties, four candidates per party, seven seats to be filled).

Party A:	101	101	101	98	(Total 401)
Party B:	100	100	100	99	(Total 399)

If the quota is 100 ($v/(s+1)$), Party A takes four seats, and Party B three. If the quota is 101 ($\lfloor v/(s+1)+1 \rfloor$) or, more generally, greater than $100\frac{2}{3}$, Party A takes three seats, and Party B four, a DPC violation. (The Hare quota shares this difficulty, leading to its problems with vote management.)

Premature election. Requiring that candidates reach (rather than exceed) the exact quota $v/(s+1)$ raises an additional difficulty, as in this example due to Tideman; two to be elected:

4 A
4 B
3 C D
1 D C

The quota is 4; A and B are elected. While this case does not violate Woodall's Droop proportionality criterion (since no group has *more* than one Droop quota), the solid coalition for C & D ought to carry the same weight as those for A and B, and we should discover the A–B–C tie. This problem does not arise if the rule requires that candidates exceed the exact quota, or if it defers the election of candidates with exactly a quota until all candidates with fewer votes have been excluded.

Unintended tiebreaking (1). Methods that round the quota up have a problem with this example (two to be elected):

4 A B
2 C

The exact quota is 2. If we round that quota up to 2.01, A is elected, we transfer the surplus of 1.99 to B, so that C beats B by a vote of 2 to 1.99. In our opinion, it is clear that B and C should be regarded as tied.

Unintended tiebreaking (2). In the previous example, rounding the quota up may be seen as gratuitous. In this example, rounding up serves another purpose (five to be elected):

6 A E
4 B E
7 C D F
3 D F

A, B, C & D are elected, and E & F should tie (we have two coalitions of 10 voters each). However, the exact quota of 20/6 cannot be exactly represented in either base 2 or base 10. If the quota is rounded up, E is elected because F suffers from more rounding error than E. This problem can be resolved by using a method that employs an exact quota in all cases.

Inexact representation can also lead to the appearance of a tie when there is in fact none. Suppose that, as a consequence of surplus transfers, Candidate A has 1 + 99/100 votes, and Candidate B has $1 + \frac{1}{3} + \frac{1}{3} + \frac{1}{3}$ Candidate B should beat Candidate A, but if $\frac{1}{3}$ is represented as 0.33, they will appear to be tied at 1.99.

4 Conclusion

Should we prefer one approach to another?

The $\lfloor v/(s+1)+1 \rfloor$ integer version of the Droop quota is defensible in the context of a hand-counting rule that deals with whole-vote transfers only, so that only whole numbers are involved in the count. Such rules have other problems, though, that are beyond the scope of this paper.

Methods using fractional surplus transfers should use an exact quota and require that candidates exceed the quota, or, alternatively, require that candidates reach the quota, defer the election of candidates with exactly a quota, breaking ties as required.

If exact computation is not practical, errors resulting from the deviation can be minimized by rounding up as little as possible—for example, rounding up to the nominal precision of the specified rule.

The choice of an STV method generally has more significant implications than do the details of quota calculation, and anyone who has examined the ballots in a large election will be painfully aware that clerical errors or errors due to voter carelessness (or mischief) will generally far outweigh calculation differences in the millionths of votes. Nonetheless, it may be seen as a reasonable desideratum that our calculations not introduce unnecessary errors into our results—perhaps especially in the simple examples above, and that the Droop Proportionality Criterion be strictly observed, especially when such a result may be obtained with little additional effort.

5 Appendix: Quasi-exact arithmetic with guard digits

Here we describe a method of performing quasi-exact STV calculations with fixed-point or floating-

point arithmetic. The results are exact if the specified conditions are met.

Perform arithmetic to the precision $p + g$ digits, where p is the nominal computational precision and g is additional guard digits; when making comparisons, ignore differences less than half the nominal precision 10^{-p}, and display results rounded to p decimal places. For example, with a nominal precision p of 6 digits, perform computations to 10 digits ($g = 4$), and define ($a \approx b$) as ($|a-b| < 0.0000005$), where $\approx$ is read "essentially equal to" (Knuth's terminology [13]). For this method to succeed, the nominal precision p must be adequate to represent any "real" differences, and there must be sufficient guard digits g to absorb any accumulated truncation errors. This approach is available as an option in a forthcoming version of OpenSTV as well as in Lundell's Perl-based STV counter [14].

It has been observed that the relation $\approx$ as defined here is not transitive; that is, ($a \approx b$) and ($b \approx c$) do not imply ($a \approx c$). While this is true in general, the problem can be avoided by making p and g sufficiently large. Moreover, it may be considered that the loss of transitivity is more than compensated for by the fact that we avoid the embarrassing problem that (for example) $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} \neq 1$.

An alternative method is to define p and g as above, and to test for equality after rounding to p decimal places. This method preserves the transitivity of the equality relation at the expense of (potentially) treating arbitrarily close values as unequal, as long as they are on opposite sides of a rounding boundary. Again, this problem is avoided to the extent that p and g are sufficiently large. Ensuring that p and g are sufficiently large is not trivial. As Wichmann has observed [15], it is possible to create election examples in which very small surplus transfers can affect the outcome; in his example, a succession of two transfers results in a significant difference of 1/16 000 000 of a vote, and it would be straightforward to extend his example to require even more precision.

6 References

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[3] D R Woodall. "Properties of Preferential Election Rules", *Voting matters*, Issue 3, pp8–15.

[4] Jeffrey C O'Neill, "Comments on the STV Rules Proposed by British Columbia" *Voting matters*, Issue 22, pp14–20.

[5] H. R. Droop, "On methods of electing representatives", *Journal of the Statistical Society of London*, Vol. 44, 1881, pp141–202. Reprinted here pp7–46.

[6] <http://en.wikipedia.org/wiki/Droop_quota>; <http://en.wikipedia.org/wiki/Hagenbach-Bischoff_quota>.

[7] *Electoral System Design: The New International IDEA Handbook*, International Institute for Democracy and Electoral Assistance, 2005, p177. <http://www.idea.int/publications/esd/index.cfm>

[8] Tideman [2 p272] credits Irwin Mann with using this approach in a 1973 computer program.

[9] R A Newland and F S Britton, *How to conduct an election by the Single Transferable Vote*, ERS 3rd Edition, 1997. Available via the McDougall web site.

[10] <http://stv.sourceforge.net>

[11] I D Hill, B A Wichmann and D R Woodall, "Algorithm 123—Single Transferable Vote by Meek's method", *Computer Journal*, Vol 30, 1987, pp277–281.

[12] Robert A Newland, "The STV quota", *Representation*, 1984, 24, pp14–17.

[13] Donald E Knuth, *Seminumerical Algorithms*, 1969, 4.2.2(27).

[14] <http://lobitos.net/voting/>

[15] B A Wichmann, "The computational accuracy using the Meek algorithm", *Voting matters*, Issue 12, pp6–7.

On Methods of Electing Representatives

H.R. Droop.

Reprinted from *Journal of the Statistical Society of London*, Vol. 44, No. 2. (Jun., 1881), pp. 141-202, with the knowledge of the *Royal Statistical Society*. The page numbers of the original are marked by numbers in square brackets.

[Read before the Statistical Society, 12th April, 1881.]

THE election of representatives has become, in modern times, a most important part of all political and social machinery. Whenever a number of persons cannot conveniently meet together to determine how their common affairs should be managed; whether because they are too numerous, or for want of leisure, or for any other reason, they elect representatives to act for them. Thus, not only national assemblies like the House of Commons, and municipal bodies, such as town councils, school boards, and boards of guardians, but also boards of directors for joint stock companies, and committees of voluntary societies, consist either altogether or to a great extent of elected representatives. It is assumed that the electors have it in their power to elect such representatives as will be satisfactory substitutes for themselves, and will, by their deliberations and votes, yield substantially the same results as if all the electors met and deliberated and voted as a single body. But whether and how far this assumption may be realised, will depend to a great extent upon the mode in which these representatives are elected. Until within the last few years it was almost universally taken for granted that there was only one possible mode of electing representatives, viz., that now known as majority voting, according to which each elector may vote for as many candidates as there are representatives to be elected, but may only give one of his votes to the same candidate. It is called "majority voting" because whenever a sufficient number of electors to constitute a majority of the constituency agree to vote for the same set of candidates, they can secure the election of their whole set of candidates.

Of late years, several other methods of electing representatives have been devised as substitutes for majority voting, and some of them have been not merely discussed theoretically, but brought into practical operation. [142] Of these other methods, those best known in England are, (1) the limited vote, applied by the Reform Act of 1867 to three-cornered constituencies and the city of London, and since introduced on a much more extensive scale in Brazil, (2) cumulative voting, applied in 1870 to school board elections, and also in use in the Cape Colony (since 1853), and in Illinois and Pennsylvania; and, (3) the preferential vote of Mr. Hare's scheme, and of M. Andrae's Danish constitution. But I must abstain from further details as to these and other new methods and their comparative advantages and disadvantages, until I have laid a foundation for the investigation, by pointing out the deficiencies of majority voting. That system is still almost everywhere in possession, and neither can be nor ought to be disturbed until its defects have been proved to be so serious as to outweigh the inconveniences inseparable from change.

Obviously these different methods of electing representatives are all practical applications of the science of statistics. They all consist in collecting certain statistical data as to whom the electors wish to have as representatives, and putting together these data so as to construct these into a representative assembly.

Majority Voting.

The method of majority voting cannot claim to have originated in any scientific consideration of the problem how a representative assembly might best be formed. It has manifestly been developed gradually out of the mode in which an assembly decides upon any proposal that may be submitted to it. Until the abolition of the show of hands by the Ballot Act of 1872, the first stage in an English parliamentary election consisted in asking the electors,

For this publication, see www.votingmatters.org.uk

as to each candidate separately, whether he should be their representative. In the second stage, at the poll, when the votes of the electors were recorded systematically it was convenient to receive the votes for all the candidates at once, and then the majority vote rule was adopted, being no doubt recommended by the consideration that it would lead to the same practical result as if the electors had voted separately for or against each candidate. According to either process a majority of one more than half the voters in favour of any candidate or candidates secures his or their election. If the sole or principal object of the electors was to select the most honest, intelligent, and competent among the candidates who offer themselves, and if each elector would exercise his individual judgment as to the qualifications of the candidates, majority voting would probably not work amiss. Every successful candidate would have been separately pronounced by a majority of the electors to be superior in his qualifications to any of the rejected candidates; [143] and though the popular verdict might sometimes err in rejecting a very eligible or admitting an ineligible candidate, yet, on the whole, it would be much oftener right than wrong. But at the present day, at any rate in electing representatives for parliamentary or municipal assemblies, electors do not seek exclusively or mainly to select the most honest, intelligent, and competent of the candidates. On the contrary, with but few exceptions, the electors pay very little attention to the personal qualifications of the candidates, and look only at the views they hold and the measures they promise to support. What they aim at securing is that their views and their measures should prevail in and be carried out by the assembly. I do not blame the electors for thus looking to principles and measures rather than to personal qualifications; but it makes a great difference in the working of majority voting. Whenever the majority of the electors in a constituency have discovered that they are agreed in supporting certain views and measures, they will naturally use the power which, under majority voting, they possess, of only electing representatives who hold the same views and will support the same measures. An election thus naturally becomes a contest between two parties, each of them trying to secure the votes of the majority of the electors for its own views and measures, and for the representatives who will support them. Smaller sections of the constituency, knowing that they cannot elect any representatives of their own selection, will annex themselves to one or the other of the two principal parties.

Majority Voting may completely Exclude Minority.

It may happen that the same party has the upper hand in every constituency, and that the other party has no representative whatever in the assembly. Thus in Geneva, according to a report presented to the Grand Council in 1870, by three of its members, Messrs. Roget, Morin, and Bellamy, "the opposition has always numbered more than one-third of the electors, and we have seen it successively represented by 0, 7 deputies, and 1 deputy." This refers to the grand council, which consisted of 102 deputies, for the election of which the canton was divided into three constituencies. The same happened in Maryland in 1868, according to Mr. Simon Sterne's "Personal Representation" (Lippincott, Philadelphia, 1870), p. 71. In this election 62,356 votes were cast for democratic candidates, and 30,442 for republican, and yet this republican minority of nearly one-third of the whole body of voters, did not obtain a single representative in either the senate or the house of representatives. [144]

Majority Voting may give Minority Control of Assembly.

But as a rule the representatives are divided more or less unequally between the two parties, the proportions depending however not upon the comparative strength of the two parties in the constituencies, but on the number of constituencies in which each party happens to have the majority, and the number of representatives returned by these constituencies. This will usually exaggerate the difference between the two parties, and give the stronger party a much larger majority in the assembly than it has in the constituencies; but sometimes on the contrary it assigns the majority in the assembly to the party which is really in a minority in the constituencies. To make my meaning clearer, I will assume that each constituency has a number of representatives in exact proportion to the number of electors it comprises, an assumption which will be very nearly correct in countries where representation is in proportion to population, e.g., in the United States and in France, and which is being more nearly realised in the United Kingdom by every successive Reform Bill. I will further assume that there are 1,990,000 electors who have to elect 199 representatives, or one representative for each 10,000 electors. Suppose now that 100 of these representatives are elected by the A party by narrow majorities of 5,100 to 4,900 in constituencies returning only one member, of 10,200 to 9,800 in constituencies returning

two members, and of numbers in the same proportion of 51 to 49 for constituencies returning three or more members, while the other 99 members are elected by the B party, by unanimous constituencies of in all 990,000. Then the A party which has elected 100 representatives, and therefore has a majority in the assembly, will have only received the votes of 510,000 electors, while the B party, which has only 99 representatives, will have received the votes of 490,000 + 990,000 = 1,480,000 electors, or more than 74 per cent, i.e., very nearly three-fourths of the 1,990,000 electors.

This is, of course, an extreme and improbable case, imagined to illustrate what majority voting may possibly do in the way of putting the minority in the place of the majority, but many very much more probable distributions of votes might be suggested, which would produce substantially the same result, i.e., that the majority of representatives would correspond to the minority among the electors. Moreover, such cases are known to have repeatedly occurred in practice. In the United States the President is not elected by a direct vote of all citizens entitled by the franchise, but by a body of electors in a representative assembly, of whom a certain number, from 35 in New York to 1 in Nevada, are elected by each State, all the citizens of a State voting as a single constituency. [145] At three of the four presidential elections next preceding the civil war of 1871, * the successful candidate only received a minority of the popular vote. Thus General Taylor had only 1,362,242 votes when Cass and Van Buren had between them 1,515,173 votes. Mr. Buchanan, again, had only 1,838,229 votes, while Fremont and Fillmore had between them 2,216,789 votes. So Lincoln had only 1,866,452 votes, while Douglas, Bell, and Breckinridge, who were all opposed to him on the slavery question, obtained between them 2,813,741 votes, or nearly a million more.

The following additional instances are taken from an article, by Mr. Dudley Field, in "Putnam's Magazine" for June, 1870, p. 712: "In New York, in the Assembly, 76 republican members were elected in 1868 by 397,899 votes, while only 52 democratic members were elected by 431,510 votes." Proportionally there ought to have been 67 democrats, and 61 republicans. In the same year, "In California the republicans elected 23 members by 54,592 votes, while the democrats elected 97 members by a less number, that is by 54,078."

In Belgium, according to M. Leon Pety de Thozée, "Réforme Electorale," p. 8, Bruxelles, 1874 "In the elections of 14th June, 1870, 18,737 electors voted for the liberals, and only 14,096 for the catholics, and yet only 31 liberal members were elected, against 30 catholics, and if a very small number of votes had been changed at Charleroi, there would have been only 29 liberal members to represent 57 per cent of the electors, and 32 catholics to represent the minority of 43 per cent."

These instance show that majority voting is not always able to ensure that the majority of representatives is on the same side with the majority among the electors.

Over Representation of Majority.

Even in the more common case where the majority in the assembly is on the same side with the majority among the constituencies, it is quite uncertain what proportion they may bear to each other. An overwhelming majority in the assembly may correspond to a narrow majority among the constituencies. It may be thought by some that this is of little importance, and that when once it is settled which party has a majority in the assembly, it does not matter how large or how small this majority is. If the assembly could guide itself altogether by one or two general principles, upon which the whole of the majority party were agreed, it would not perhaps matter much whether their majority was narrow or overwhelming. [146] But instead of this, every assembly, whether parliamentary or municipal, ordinarily has to deal with a variety of more or less complicated measures, presenting numerous points for discussion, among which there will almost always be some upon which the members of the dominant party differ among themselves. By availing itself of such opportunities a strong minority is not unfrequently able to delay or modify, if not defeat, the measures proposed by their opponents. But when the one party has a very large majority in the assembly, not only the members of the minority, but even the more moderate members of the majority, are powerless to check the action of the majority party, action which sometimes goes far beyond anything in the party programme submitted to the electors at the election which conferred upon the party their majority. Moreover, the members of a party, and even their leaders, are apt to assume that its majority in the assembly correctly represents its strength in the country, and to push forward what they suppose to be a popular policy, until they are undeceived by the next general election. If a method

* See a table by Colonel Wheeler, of the Statistical Bureau, Washington, at p. 36 of a "Report of a Committee of the United States' Senate on Representative Reform," 2nd March, 1869.

of voting were introduced which would ensure that the representatives of different parties were at least roughly in proportion to the respective numbers of electors belonging to the same parties respectively in the constituencies, the real strength of each party would be known to every one from the division lists of the assembly, and we should be free from both the dangers above referred to, viz., (1) of the majority in the constituencies being misrepresented in the assembly, and (2) of its being over-represented there. That this is practicable I hope to show further on.

Instability under Majority Voting.

Moreover, when an assembly is elected by majority voting the relative strength of the different parties is much more unstable and fluctuating than it would be under such a system of proportional representation as I have just referred to. Then the fluctuations would only be in proportion to the changes of opinion which time and circumstances might produce among the electors. Under majority voting it often happens (indeed much more frequently than would be anticipated *a priori*) that elections are decided by very narrow majorities, so that if only a very few votes changed sides the representation would be transferred to the other party.

Narrow Majorities under Majority Voting.

To illustrate this, I have prepared tables showing for the last three general elections for the United Kingdom, those of 1868, 1874, and 1880, (1) how many seats were won by majorities not exceeding 100, and (2) how many seats were won by majorities not exceeding 10 per cent of the votes polled for the successful candidate. [147]

From Tables I and II it appears that in 1868 34 conservatives and 33 liberals owed their success to majorities of less than 100, while 48 conservatives and 48 liberals gained their seats by majorities less in each case than 10 per cent of the votes polled for the successful candidate. I have further calculated how many voters must change sides in order to transfer these seats to the other party. I find from Table I (of majorities under 100) that the 34 conservative seats would be transferred to the liberals if 790 voters changed sides, and that the 32 liberal seats would be transferred to the conservatives if 657 voters changed sides. *

From the Table II of majorities under 10 per cent, I find that the 48 conservative seats would be transferred to the liberals if 3,674 voters (less than 3 per cent of the conservative voters in those cases, 123,993 in all) changed sides, and that the 48 liberal seats would be transferred to the conservatives if 2,810 voters (less than 2.8 per cent of the liberal voters in those cases, 102,134 in all) changed sides.

From Tables III and IV it appears that in 1874, 32 conservatives and 32 liberals owed their success to majorities of less than 100, while 49 conservatives and 49 liberals gained or kept their seats by majorities less in each case than 10 per cent of the votes polled for the successful candidate. I have also calculated that of the seats depending on majorities of less than 100, the 32 conservative seats would be transferred to the liberals if 652 voters changed sides, while the 32 liberal seats would be transferred to the conservatives if 617 voters changed sides. Of the seats depending on majorities of less than 10 per cent, I find that the 49 conservative seats would be transferred to the liberals if 3,501 voters (less than 2.8 per cent of the conservative voters in those elections, 125,796 in all) changed sides, and that the 49 liberal seats would be transferred to the conservatives if 3,506 voters (less than 2.74 per cent of the liberal voters in those cases, 128,081 in all) had changed sides.

From Tables V and VI it appears that in 1880 33 conservatives and 58 liberals owed their success to majorities of less than 100, while 48 conservatives and 72 liberals gained or kept their seats by majorities less in each case than 10 per cent [148] of the votes polled for the successful candidate. I have also calculated that of the seats depending on majorities of less than 100, the 33 conservative seats would be transferred to the liberals if 715 voters changed sides, while the 58 liberal seats would be transferred to the conservatives if 1,214 voters changed sides. Of the seats depending upon majorities of less than 10 per cent, I find that the 48 conservative seats would be transferred to the liberals if 3,010 conservative voters changed sides, and that the 72 liberal seats would be transferred to the conservatives if 4,054 liberal voters changed sides.

In Table II, of the majorities under 10 per cent in 1868, I have marked with an * those seats which were won by the opposite party in 1874, and with a

* The number of voters who must change sides to transfer a seat to the other party, is always the next whole number greater than half the majority. Hence to calculate the total number of votes which must change sides, I have added to the sum total of the majorities one for every odd, and two for every even majority, and halved the total. In cases where two seats have been won by the same party, I have omitted the figures as to the smaller majority, because if sufficient voters change sides to transfer the other seat, that one will also be transferred.

† those which having been retained in 1874 by the same party, were won by their opponents between 1874 and 1880; and in Table IV, of the majorities under 10 per cent in 1874, I have marked with a †those seats which were won by the opposite party in 1880. I find that 11 conservative seats out of 48, and 34 liberal seats out of 48, or altogether 45 seats out of 96 in Table II were won by the opposite party in 1874, and 20 more conservative seats and 4 more liberal seats, or altogether 24 additional seats, in 1880; and that 45 conservative seats out of 49, and 8 liberal seats out of 49 in Table IV, or altogether 53 seats out of 98, were won by the opposite party in 1880. These changes, however, by no means represent all the seats that were insecure. At the general election of 1874 the conservatives gained 97 seats and lost 36,* and at the general election of 1880 they lost 134 seats and gained 25.† There was a general movement of public opinion in favour of the conservatives in 1874, and against them in 1880, but that they should have, notwithstanding, lost 36 seats in 1874 and gained 25 seats in 1880, shows by how uncertain a tenure very many parliamentary seats are held. The 10 per cent Tables II, IV, and VI comprise the names of 178 constituencies out of 419, of which 11 had extremely close contests at each of the three elections, 51 more at two of these elections, and the remaining 116 at only one general election. There have also been a certain number of close contests between two candidates belonging to the same party. These I have not included.

Table I. — Majorities under One Hundred. Election of 1868. [149]

CONSERVATIVE VICTORIES		LIBERAL VICTORIES	
Abingdon	73	Andover	71
Boston	90	Athlone	34
Brecknock	15	Ayrshire, N.	75
Bridgnorth	51	Ayrshire, S.	25
Chippenham	69	Bandon	4
Clitheroe	67	Bodmin	90
Derbyshire, N.	61	Canterbury	79
Devizes	64	Carlisle	14
Enniskillen	30	Christchurch	49
Evesham	33	Derbyshire, E.	33
Falmouth	72	Dover	48
Haddingtonshire	65	Dumfriesshire	44
Hampshire, S.	30	Durham	52
Hertford	89	Exeter	29
Kent West	55	Guildford	21
Lichfield	51	Hampshire, S.	71
Malmesbury	23	Hereford	32
Great Marlow	31	Horsham	0
Northallerton	14	Knaresborough	15
Peebles and Selkirk	3	Lewes	14
Poole	60	Limerick	74
Portarlington	18	Newry	8
Rye	14	Oldham	8
Salford	40	Oldham	56
Southampton	17	Petersfield	42
Stafford	15	Salisbury	56
Taunton	28	Sussex, E.	51
Thirsk	26	Tewkesbury	76
Wallingford	95	Wakefield	45
Warwickshire, S.	29	Wareham	13
Westbury	27	Warrington	27
Wigtownshire	67	Windsor	8
Woodstock	21	York, W.R., S.D.	8
Yorkshire, W.R., E.D.	88		

* G. F. Chambers's "Record of Parliamentary Elections," 1874.

†"Times," 20th April, 1880.

TABLE II. Majorities under Ten per Cent. Election of 1868.

CONSERVATIVE VICTORIES.

†	Ashton	2,318	
		2,104	
			214
*	Blackburn	4,826	
		4,399	
			427
*	Boston	1,119	
		1,029	
			90
*	Bolton	5,848	
		5,451	
			397
†	Brecknock	372	
		357	
			15
*	Bridgnorth	548	
		497	
			51
†	Clitheroe	760	
		693	
			67
*	Coventry	3,761	
		3,594	
			167
†	Coventry	3,781	
		3,576	
			205
	Cumberland, E.	2,620	
		2,390	
			230
†	Derbyshire, N.	2,698	
		2,637	
			61
*	Derbyshire, S.	3,582	
		3,443	
			139
	Derbyshire	3,594	
		3,375	
			219
†	Dublin	5,587	
		5,379	
			208
	Hampshire, S.	2,756	
		2,726	
			30
	Kent, E.	5,104	
		4,685	
			419
	Kent, W.	3,378	
		3,323	
			55

CONSERVATIVE VICTORIES (Contd). [150]

	Kent	3,440	
		3,196	
			244
†	Lancashire, N.E.	3,594	
		3,463	
			131
†	Lancashire	3,612	
		3,441	
			171
	Lancashire, S.W.	7,676	
		7,415	
			261
†	Leicestershire, S.	3,110	
		2,861	
			249
	Liverpool	16,222	
		15,017	
			1,205
†	Lynn Regis	1,125	
		1,012	
			113
	Malmesbury	337	
		314	
			23
	Great Marlow	345	
		314	
			31
	Northallerton	386	
		372	
			14
	Northamptonshire, S.	2,505	
		2,305	
			200
†	Norwich	4,521	
		4,364	
			157
†	Peebles and Selkirk	361	
		358	
			3
*	Poole	623	
		563	
			60
†	Rye	513	
		499	
			14
†	Salford	6,181	
		6,141	
			40
†	Salford	6,312	
		6,018	
			294
*	Southampton	2,178	
		2,161	
			17
†	Stafford	1,124	
		1,107	
			17

CONSERVATIVE VICTORIES (Contd).

*	Stockport	2,714	
		2,591	
			123
	Suffolk, E.	3,620	
		3,321	
			299
	Sussex, E.	3,581	
		3,470	
			111
*	Taunton	918	
		890	
			28
†	Warwickshire, S.	2,501	
		2,472	
			29
	Warwickshire	2,581	
		2,458	
			123
*	Westbury	492	
		465	
			27
	Wigtonshire	719	
		652	
			67
	Woodstock	502	
		481	
			21
†	Worcestershire	4,108	
		3,789	
			319
†	Yorkshire, W.R, E.D.	7,135	
		7,047	
			88
†	Yorkshire	7,437	
		6,867	
			570

LIBERAL VICTORIES. [151]

*	Ayrshire, N.	1,397	
		1,322	
			75
*	Ayrshire, S.	1,416	
		1,391	
			25
†	Bandon	141	
		137	
			4
*	Bath	2,187	
		2,024	
			163
*	Brighton	3,081	
		2,917	
			164
*	Canterbury	1,236	
		1,157	
			79
*	Cardiganshire	2,074	
		1,918	
			156
	Carlisle	1,971	
		1,957	
			14
*	Carnarvonshire	1,963	
		1,815	
			148
*	Chatham	2,042	
		1,858	
			184
*	Colchester	1,417	
		1,284	
			133
*	Derbyshire, E.	2,032	
		1,999	
			33
	Derbyshire	2,089	
		1,970	
			119
	Devonshire, N.	3,898	
		3,520	
			378
*	Devonport	1,519	
		1,370	
			149
*	Dover	1,435	
		1,387	
			48

LIBERAL VICTORIES (Contd).

	Dublin	5,586	
		5,452	
			134
*	Dumfriesshire	1,100	
		1,056	
			44
	Durham, S.	4,021	
		3,746	
			275
	Durham	784	
		732	
			52
*	Exeter	2,247	
		2,218	
			29
*	Guildford	536	
		515	
			21
†	Hampshire, S.	2,797	
		2,716	
			81
*	Hereford	1,015	
		983	
			32
*	Hertfordshire	3,625	
		3,356	
			269
*	Horsham	380	
		380	
			0
	Hull	6,874	
		6,383	
			491
*	Ipswich	2,195	
		2,044	
			151
*	Knaresborough	362	
		347	
			15
*	Lewes	601	
		587	
			14
	Limerick	794	
		720	
			74
	London omitted, because small majority due to liberals running four candidates		

LIBERAL VICTORIES (Contd).

	Macclesfield	2,509	
		2,321	
			188
†	Maidstone	1,546	
		1,412	
			134
†	Newry	387	
		379	
			8
*	Oldham	6,122	
		6,116	
			6
*	Oldham	6,140	
		6,084	
			56
*	Petersfield	363	
		321	
			42
*	Salisbury	679	
		623	
			56
	Stockport	2,658	
		2,475	
			183
*	Surrey, E.	3,941	
		3,557	
			384
*	Sussex, E.	3,611	
		3,560	
			51
*	Tower Hamlets	7,849	
		7,446	
			403
*	Wakefield	1,557	
		1,512	
			45
*	Wareham	314	
		301	
			13
*	Warrington	1,984	
		1,957	
			27
*	Windsor	803	
		795	
			8
*	Yorkshire, W.R, S. D.	7,943	
		7,935	
			8
*	Yorkshire	8,110	
		7,621	
			489

TABLE III. Majorities under One Hundred. Election of 1874. [152]

CONSERVATIVE VICTORIES		LIBERAL VICTORIES	
Ayr	14	Banbury	84
Bath	6	Bandon	5
Bedford	9	Barnstable	53
Brecknock	21	Bewdley	99
Cambridge	20	Blackburn	13
Clitheroe	92	Caithness	11
Derbyshire, E.	99	Cardiff	9
Donegal	40	Denbigh	30
Enniskillen	20	Dungannon	12
Evesham	47	Durham	33
Exeter	66	Falmouth	41
Grantham	66	Flint	4
Hereford	76	Helstone	50
Knaresborough	98	Hereford	18
Lanarkshire, S.	21	Kinsale	60
Lancashire, N. E.	80	Kirkcudbrightshire	4
Leitrim	43	Macclesfield	42
Lynn Regis	94	Maidstone	73
Maldon	42	Newark	88
Northallerton	7	Newcastle-under-Lyme	79
Norwich	47	New Ross	21
Petersfield	11	Newry	4
Portarlington	24	Oxford	83
Roxburghshire	26	Pembroke	29
Rye	58	Renfrewshire	18
Salford	60	Richmond	64
Salisbury	76	Salisbury	17
Shaftesbury	30	Stroud	31
Stirlingshire	44	Tewkesbury	27
Thirsk	1	Tiverton	24
Wight, Isle of	10	Warwick	43
Wigton	2	Westbury	22

TABLE IV. Majorities under Ten per Cent. Election of 1874. [153]

CONSERVATIVE VICTORIES.

	Antrim	4,142		
		4,009		
			133	
†	Ashton	2,612		
		2,432		
			180	
†	Ayr	1,697		
		1,683		
			14	
†	Bath	2,397		
		2,391		
			6	
†	Bedford	1,010		
		1,001		
			9	
†	Bolton	5,987		
		5,440		
			547	
†	Brecknock	374		
		353		
			21	
†	Cambridge	1,794		
		1,774		
			20	
†	Cambridge	1,856		
		1,738		
			118	
†	Chelsea	7,173		
		6,701		
			472	
†	Chester	2,356		
		2,125		
			231	
†	Colchester	1,407		
		1,279		
			128	
†	Cornwall, E.	3,276		
		2,978		
			298	
†	Coventry	3,823		
		3,662		
			161	
†	Cricklade	2,231		
		2,092		
			139	
†	Derbyshire, E.	2,116		
		2,017		
			99	
†	Donegal	1,866		
		1,826		
			40	
†	Dumfriesshire	1,452		
		1,315		
			137	

CONSERVATIVE VICTORIES (Contd).

†	Exeter	2,330	
		2,264	
			66
†	Gloucester	2,132	
		1,990	
			142
†	Grantham	965	
		899	
			66
†	Great Grimsby	1,534	
		1,393	
			141
†	Hereford	978	
		902	
			76
†	Lanarkshire, S.	1,347	
		1,326	
			21
†	Lancashire, N. E.	4,481	
		4,401	
			80
†	Lancashire	4,578	
		4,297	
			281
	Leitrim	1,098	
		1,055	
			43
†	Lynn Regis	1,093	
		999	
			94
†	Maldon	632	
		590	
			42
†	Manchester	19,649	
		18,727	
			922
	Northallerton	386	
		379	
			7
†	Norwich	5,823	
		5,776	
			47
†	Oldham	8,541	
		8,397	
			144
†	Oldham	8,582	
		8,360	
			222
†	Petersfield	372	
		361	
			11
†	Roxburghshire	789	
		763	
			26
†	Rye	597	
		539	
			58

CONSERVATIVE VICTORIES (Contd).

†	Salford	6,987	
		6,827	
			160
†	Salford	7,003	
		6,709	
			294
†	Salisbury	835	
		759	
			76
†	Shaftesbury	591	
		561	
			30
†	Southampton	2,534	
		2,345	
			189
†	Staleybridge	2,378	
		2,220	
			158
†	Stirlingshire	1,171	
		1,127	
			44
	Thirsk	410	
		409	
			1
†	Warrington	2,381	
		2,201	
			180
†	Wight, Isle of	1,614	
		1,604	
			10
†	Wigton	522	
		520	
			2
†	Yorkshire, W.R, E.D.	8,077	
		7,285	
			792

LIBERAL VICTORIES. [154]

†	Bandon	180	
		175	
			5
	Bath	2,520	
		2,348	
			172
†	Barnstaple	675	
		622	
			53
	Blackburn	5,338	
		5,325	
			13
	Bolton	5,782	
		5,650	
			132
	Bristol	8,732	
		8,522	
			210
	Caithness	450	
		439	
			11
	Cardiff	2,780	
		2,771	
			9
	Cornwall, E.	3,395	
		3,099	
			296
	Coventry	3,799	
		3,628	
			171
	Denbigh	1,238	
		1,208	
			30
	Derbyshire, E.	2,206	
		2,067	
			139
	Derbyshire, S.	3,773	
		3,572	
			201
†	Down	4,814	
		4,683	
			131
	Dungannon	121	
		109	
			12

LIBERAL VICTORIES (Contd).

	Durham, N.	4,327	
		4,011	
			316
	Durham	879	
		846	
			33
	Falmouth	784	
		743	
			41
	Flint	1,076	
		1,074	
			2
	Gloucester	2,070	
		1,865	
			205
†	Greenwich	5,968	
		5,561	
			407
	Hackney	6,893	
		6,310	
			583
	Hereford	921	
		903	
			18
	Hull	8,499	
		7,705	
			794
	Kirkcudbrightshire	835	
		831	
			4
	Lambeth	11,788	
		11,201	
			587
	Macclesfield	2,792	
		2,750	
			42
†	Maidstone	1,491	
		1,414	
			77
†	Newark	912	
		824	
			88
	Newcastle-under-Lyme	1,116	
		1,037	
			79
†	Newry	459	
		455	
			4
	Northampton	2,310	
		2,175	
			135

LIBERAL VICTORIES (Contd). [155]

	Oxford	2,281	
		2,198	
			83
	Pembroke	1,339	
		1,310	
			29
	Reading	1,790	
		1,652	
			138
	Reading	1,794	
		1,631	
			163
	Renfrewshire	1,921	
		1,903	
			18
	Salisbury	800	
		783	
			17
	Shrewsbury	1,533	
		1,382	
			151
	Stockport	3,528	
		3,406	
			122
	Stockport	3,628	
		3,372	
			256
	Stroud	2,794	
		2,763	
			31
	Stroud	2,798	
		2,667	
			131
	Tewkesbury	350	
		323	
			27
	Tiverton	629	
		605	
			24
	Warwick	783	
		740	
			43
†	Westbury	540	
		518	
			22
	Worcester	2,164	
		1,958	
			206
	Yorkshire, W.R, N. D.	8,598	
		7,820	
			778

TABLE V. Majorities under One Hundred. Election of 1880.

CONSERVATIVE VICTORIES		LIBERAL VICTORIES	
Ayrshire, N	55	Abingdon	42
Bandon	15	Andover	41
Bridport	13	Berwick	62
Carrickfergus	37	Bewdley	68
Chippenham	23	Bodmin	43
Coleraine	29	Boston	17
Devizes	58	Brecknock	59
Dorchester	42	Buckingham	8
Dover	94	Buteshire	17
Down	20	Carlow	4
Downpatrick	77	Cheltenham	21
Dumbartonshire	9	Christchurch	18
Enniskillen	21	Colchester	2
Eye	62	Coventry	97
Haddingtonshire	44	Denbigh	15
Harwich	58	Donegal	61
Helston	40	Dumfriesshire	73
Inverness-shire	29	Dungannon	2
Lichfield	16	Durham	94
Londonderry	88	Edinburgh University	74
Newark	11	Evesham	9
Newry	30	Huntingdonshire	21
Nottinghamshire, N.	10	Ipswich	97
Plymouth	40	King's Lynn	93
Poole	6	Kinsale	70
Rochester	99	Kirkcudbrightshire	21
Sheffield	40	Knaresborough	16
Shropshire, N.	67	Macclesfield	66
Thirsk	63	Maldon	18
Westbury	54	Monmouth	61
Wigan	33	Newark	88
Wigtownshire	44	Newport	58
Wilts, N.	50		

LIBERAL (contd) VICTORIES		LIBERAL(contd) VICTORIES	
New Ross	88	Stamford	50
Norfolk, S.	1	Taunton	40
Northumberland, S.	72	Tewkesbury	9
Oxford	10	Tralee	52
Peebles	32	Tyrone	48
Pembroke	33	Wallingford	41
Petersfield	86	Wareham	35
Plymouth	22	Warwickshire, S.	43
Roxburghshire	10	Wigtown	12
Rye	8	Wicklow	7
St. Ives	48	Wight. Isle of	13
Shaftesbury	34	Worcester	9
Southampton	51	Youghal	13

TABLE VI. Majorities under Ten per Cent. Election of 1880. [156]

CONSERVATIVE VICTORIES.

Antrim	4,936	
	4,789	
		147
Ayrshire, N.	1,636	
	1,581	
		55
Bandon	200	
	185	
		15
Birkenhead	4,025	
	3,658	
		367
Blackburn	6,207	
	5,760	
		447
Bridport	478	
	465	
		13
Canterbury	1,425	
	1,294	
		131
Carrickfergus	591	
	554	
		37
Chatham	2,499	
	2,398	
		101
Cheshire, Mid.	3,700	
	3,374	
		326
Chippenham	478	
	455	
		23
Cumberland, E.	3,161	
	3,039	
		122
Dover	1,701	
	1,607	
		94
Down	5,599	
	5,579	
		20

CONSERVATIVE VICTORIES (Contd). [157]

Dumbartonshire	1,333	
	1,324	
		9
Essex, E	2,561	
	2,369	
		192
Essex, S.	4,726	
	4,324	
		402
Haddingtonshire	469	
	425	
		44
Hastings	1,873	
	1,702	
		171
Helston	461	
	421	
		40
Inverness-shire	808	
	779	
		29
Ipswich	3,142	
	3,025	
		117
Kent, E.	5,473	
	4,959	
		514
King’s Lynn	1,252	
	1,143	
		109
Lichfield	553	
	537	
		16
Londonderry	964	
	876	
		88
Maidstone	1,832	
	1,725	
		107
Monmouthshire	3,294	
	3,019	
		275

CONSERVATIVE VICTORIES (Contd).

Newark	993	
	982	
		11
Newry	587	
	557	
		30
Norfolk, W.	2,433	
	2,304	
		129
Nottinghamshire, N.	2,745	
	2,735	
		10
Plymouth	2,442	
	2,402	
		40
Poole	854	
	848	
		6
Portsmouth	6,683	
(two seats)	6,030	
		653
Preston	5,641	
	5,355	
		286
Rochester	1,393	
	1,294	
		99
Sheffield	16,546	
	16,506	
		40
Shoreham	2,195	
	2,095	
		100
Shropshire, S.	2,216	
	2,149	
		67
Somerset, W.	3,136	
	2,967	
		169
Suffolk, E.	3,618	
	3,504	
		114
Westbury	559	
	505	
		54
Wigan	2,946	
(two seats)	2,655	
		291
Wigtonshire	768	
	722	
		46
Wiltshire, N.	2,833	
	2,783	
		50

LIBERAL VICTORIES.

Abingdon	428	
	386	
		42
Andover	405	
	364	
		41
Blackburn	6,349	
	6,088	
		261
Bolton	6,965	
(two seats)	6,415	
		550
Boston	1,367	
	1,350	
		17
Brighton	4,913	
(two seats)	4,664	
		249
Bristol	10,070	
	9,375	
		695
Buckingham	528	
	520	
		8
Buteshire	568	
	551	
		17
Cardiff	3,831	
	3,488	
		343
Carlow	149	
	145	
		4
Cheltenham	2,318	
	2,297	
		21
Christchurch	1,185	
	1,117	
		68
Colchester	1,650	
	1,648	
		2
Coventry	4,105	
	4,008	
		97
Denbigh	1,424	
	1,409	
		15
Derbyshire, N.	3,183	
	2,936	
		247
Donegal	2,015	
	1,954	
		61

LIBERAL VICTORIES (Contd). [158]

Dublin	5,647	
	5,446	
		201
Dumfriesshire	1,577	
	1,505	
		72
Dungannon	128	
	126	
		2
Durham	1,152	
	1,058	
		94
Edinburgh University	2,522	
	2,448	
		74
Evesham	382	
	373	
		9
Gravesend	1,544	
	1,422	
		122
Huntingdonshire	1,617	
	1,596	
		21
Ipswich	3,074	
	2,979	
		95
King’s Lynn	1,281	
	1,188	
		93
Kirkcudbrightshire	982	
	961	
		21
Knaresborough	357	
	341	
		16
Lancashire, S. E.	11,313	
(two seats)	10,419	
		894
Lincolnshire, N.	4,159	
	3,865	
		894
Macclesfield	2,744	
	2,678	
		66
Maldon	679	
	661	
		18
Monmouth	2,258	
	2,197	
		61
Montgomeryshire	2,232	
	2,041	
		191
Newark	1,073	
	985	
		88

LIBERAL VICTORIES (Contd).

Newport	618	
	560	
		58
Norfolk, S.	2,906	
	2,905	
		1
Northamptonshire, N.	2,425	
	2,316	
		109
Northumberland, S.	3,694	
	3,622	
		72
Nottingham, N.	2,813	
	2,646	
		167
Oxford	2,669	
	2,659	
		10
Peebles and Selkirk	516	
	484	
		32
Pembroke	1,462	
	1,429	
		33
Plymouth	2,406	
	2,384	
		22
Reading	2,286	
	2,067	
		219
Roxburghshire	859	
	849	
		10
Rye	626	
	618	
		8
St. Ives	487	
	439	
		48
Shaftesbury	652	
	618	
		34
Southampton	3,051	
(two seats)	2,902	
		149
Staleybridge	2,706	
	2,542	
		164
Stamford	601	
	551	
		50
Stockport	4,103	
	3,873	
		230

LIBERAL VICTORIES (Contd). [159]

Stroud	3,081	
	2,810	
		271
Taunton	1,000	
	960	
		40
Tewkesbury	350	
	341	
		9
Tyrone	3,500	
	3,452	
		48
Wallingford	582	
	541	
		41
Wareham	451	
	416	
		35
Warwickshire, S.	2,550	
	2,507	
		43
Wigtown	650	
	638	
		12
Wicklow	1,240	
	1,233	
		7
Wight, Isle of	1,986	
	1,973	
		13
Worcester	2,511	
	2,502	
		9
Yorkshire. W.R., S.D.	11,181	
	10,391	
		790
Youghal	133	
	120	
		13

The great changes produced in the British Parliament by the general elections of 1874 and 1880 were exceeded in the Canadian elections of September, 1879. These gave the opposition a majority of at least 66 in a house of only 206, while throughout the whole of the preceding parliament the opposition had never been in a smaller minority than 39 ("Times," 4th October, 1879). Therefore at least 105 seats out of 206 had been transferred from the one party to the other.

In Victoria there were two general elections in 1880. In the first ("Times," 13th April, 1880) Mr. Berry's ministry only secured 37 supporters against 49 supporters of Mr. Service. In the second ("Times," 9th September, 1880) Mr. Service's supporters only numbered 35 against 44 opponents, supporters of Mr. Berry, and 7 neutrals. This is attributed to the Roman Catholic vote having been thrown at the first election against Mr. Berry, and at the second against Mr. Service, because neither minister would consent to give them separate denominational schools. If Irish be substituted for Roman Catholic, the explanation would apply to a considerable part of the recent fluctuations in the parliamentary representation of English voters. [160]

At the United States' presidential election for 1864, Mr. Lincoln was elected by a majority of 184 electors against 21 for General MacClellan; but this overwhelming majority only corresponded to a majority of 2,223,035 to 1,811,754, or 411,281 among the primary electors; and according to a calculation made by Colonel Wheeler, of the United States' statistical bureau, in the paper already quoted from the report of the Senate Committee on representative reform, it would only have required 36,000 voters, i.e. less than 2 per cent of Lincoln's voters, to change sides, to transfer 100 electors from Lincoln to MacClellan, thus giving the latter a majority of 121 votes against 84. In 1852, according to a table appended to Mr. James Garth Marshall's "Minorities and Majorities" (Ridgway, 1853), President Pierce, democrat, was elected by a majority of 278 votes against 18 for General Scott, whig; but this only corresponded to a majority of 178,900 among the primary electors; and according to a calculation I have made from Mr. Marshall's figures, it would only have required 28,200 electors to change sides, to transfer 133 electors from Pierce to Scott, giving the latter a majority of 151 votes to 145.

From the electoral statistics published by the Italian government ("Statistica Elettorale Politica," Roma, 1876, and the same, 1880), I have ascertained that the number of elections won by less than 10 per cent of the majority was:—

In	1861	50	out of	443
In	1865-66	69	out of	493
In	1867	73	out of	493
In	1870	43	out of	508
In	1874	49	out of	508
In	1880	47	out of	508

For the elections of 1870, 1874, and 1880 these figures were ascertained in the same manner as for the elections of the United Kingdom, by counting the cases in which the votes polled for the highest candidate did not exceed by more than 10 per cent those polled for the second candidate. For the elections of 1861, 1865-66, and 1867, I had no tables

showing the votes polled for the second candidate, and therefore I have counted the cases where the votes polled for the highest candidate do not exceed $52\frac{1}{2}$ per cent of the total votes polled. This would include cases where the remaining votes were divided among two or more unsuccessful candidates.

Taking the three last * Italian elections alone, they give an average of 9 per cent of cases in which the majority is less than 10 per cent of the successful candidates' votes, while the three last English elections give $12\frac{1}{2}$ per cent of such cases. [161] The difference may perhaps be due, wholly or in part, to the Italians having a ballotage or second election if the first candidate does not obtain an absolute majority of the votes polled. This enables several candidates of the same party to compete against each other at the first election, and thus prevents the managers of the party from forcing an unpopular candidate upon it, and thus causing a certain number of abstentions or desertions, and converting a secure victory into a closely balanced contest.

Instability Resulting from Narrow Majorities.

From the figures given above, it is easy to understand how a slight change in political opinion among the electors may produce a very considerable change in the balance of parties among their representatives. The political system is in fact always in a state of unstable equilibrium, liable to be turned upside down by anything that may make the one party popular or the other unpopular at the time of a general election. This makes the leaders of parties extremely sensitive to fluctuations of public opinion, and unwilling to risk even a slight amount of temporary unpopularity; while on the other hand it makes popular agitators much more influential than they would be if the elections did not so often depend upon small majorities, and thus come to be decided by that class among the electors whose votes are most readily affected by temporary fluctuations of opinion.

If the representatives were elected so as to represent the different parties among the electors according to their real strength, the fluctuations in the strength of parties in the assembly would be only in proportion to the actual changes of opinion among the electors. If a party had a decided majority, its leaders would be able to risk incurring a certain amount of unpopularity among the class of electors to which I have referred, provided they still retained the confidence of their regular supporters in the assembly and among the electors.

Corruption Due to Narrow Majorities.

The tables of narrow majorities (Nos. I to VI) will also explain why electors under majority voting are so liable to be influenced by bribery, treating, intimidation, and other undue influences. The bulk of the electors in a constituency may be too honest to be bribed or corrupted, and too independent to be intimidated, but there will always be some few who are accessible to such influences, and whenever the honest and independent electors are divided into two nearly equal parties, supporting two rival candidates, or sets of candidates, the election is really left in the hands of the corrupt or dependent residue. [162] If the constituencies which now return together five or seven representatives, were united into a single constituency with the same number of representatives, and these representatives were elected in such a manner as to represent the different parties among the electors proportionally, the corrupt or dependent residues, which had enjoyed such great influence under majority voting, would only be able to influence the election of, at the utmost, one representative out of the five or the seven. This has been practically verified in the school board elections with cumulative voting.

It occasionally happens, as election investigations have shown, that not only a small residue, but a considerable fraction, perhaps a majority, of a constituency has become corrupt. But in these cases it will usually be found that the corruption has gradually increased from small beginnings. A few voters having been bribed to turn an election, gradually more and more insist on being paid. If the election managers had not been tempted at first to bribe a few, the constituency would have remained pure.

Majority voting is also responsible for a great part of the expenditure incurred by candidates in retaining election agents, having committee rooms, advertising, and bringing voters to the poll. Within certain limits, expenditure for these purposes is legitimate, as contributing to make the views and claims of the candidates known to the electors: but, unquestionably, a very large portion of this expenditure is only incurred because elections depend upon narrow majorities, and it is, therefore, worth while to incur a very considerable expenditure for the chance of securing a few additional votes.

Personation also is not resorted to, at least not systematically, except when it is supposed that parties are nearly equally divided in the constituency, and that, therefore, success depends upon a small number of votes.

* There was a general election in 1876, the statistics of which I have not seen.

Gerrymandering.

There is another mode in which the circumstance that under majority voting elections frequently depend upon a small balance of votes, may be used to transfer seats from the one party to the other. This is by altering the constituency, and either adding or taking away some class of electors which is supposed to be much more favourable to the one party than to the other. This may be done either by altering the boundaries of the electoral districts or by enfranchising or disfranchising a particular set of electors. The alteration of boundaries for this purpose is extensively practised in the United States, under the name of gerrymandering,and it was also common in France under Napoleon III, where large towns which, if left undivided, would probably have elected opposition candidates, were divided into several portions, each of which was united with a sufficiently large rural district to secure a majority for the government. [163] (See Mr. Ware's "Machinery of Politics ;" "American Law Review" for January, 1872, vol. vi, p. 283; Baron de Layre, "Les Minorités." Dentu. Paris, 1868, p. 23.) In England, fortunately, the boundaries of constituencies and the conditions of the franchise have only been altered twice, viz., in 1832 and in 1867-78; and the circumstances under which the last Reform Bills of 1867-78 were passed, the official influence of the ministry being on one side, and the majority of the House of Commons on the other, were calculated to check any such proceedings, and they are not yet recognised as legitimate party manoeuvres. But we cannot reckon upon this continuing, if majority voting be maintained, and it remain possible by slight alterations in the conditions of the franchise to transfer a whole set of constituencies from the one party to the other. If proportional representation were substituted for majority voting, the provisions of a Reform Bill, whether as to the conditions of the franchise or as to the alterations in the constituencies, would have much less influence on the balance of parties, and would have a much fairer chance of being considered on their merits.

Division into Two Parties.

Thus far I have reasoned on the assumption that the division into two, and only two parties, which is found almost everywhere under majority voting, will not be affected by the change to another mode of voting. But in fact, as I believe, this limitation of electoral contests to only two parties is due mainly to majority voting, and would be more or less broken in upon if any method of voting were substituted which enabled smaller sections of the electors to obtain separately their respective shares of the representation without being compelled to combine together to form a majority party. That majority voting by thus compelling smaller sections to combine together, on pain of being left unrepresented, tends to limit to only two the number of parties competing at an election, I have shown in a previous part of this paper. It may be thought, however, that this, though an adequate cause, may not be the only possible cause. It is a prevailing opinion among those who confine their attention to English party divisions, that though the creeds of the liberal and conservative parties may vary from time to time in their details, they correspond substantially to two opposite tendencies of thought, which produce naturally two opposite sets of opinions and two opposing parties. But even without going outside English politics, anyone who examines carefully the opinions from time to time advocated by these two parties on those questions of domestic and foreign policy which from time to time prominently occupy public attention, will, I think, come to the conclusion that not unfrequently the members of each party are kept in agreement with each other far more by reluctance to separate from their common organisation (which under majority voting is the condition of their exercising any political influence) than by any of the principles which they hold in common. [164] And when we look beyond the United Kingdom to other countries where representative government with majority voting has been for a long time in operation, to the United States, to Switzerland, or to Belgium, we shall find everywhere * the same division into two and only two parties, but the character of the party division varying in different countries. In the United States the distinguishing characteristics of the rival parties have nothing whatever in common with those of our Liberals and Conservatives, and this is also true of the Independents and Radicals of Geneva. We find, moreover, that the same party divisions usually run through all elections, whether federal, State, or municipal, or, as the case may be, national or municipal, though there is no connection between the questions to be dealt with by the different sets of representatives. These phenomena I cannot explain by any theory of a natural division between opposing tendencies of thought, and the only explanation

* That this is not true at present of France or Germany, or Italy, may be due partly to representative government having only been for a short period in free operation there, and partly to the ballotage (or second election, if no absolute majority) allowing more than two parties to contend against each other at the first voting.

which seems to me to account for them is that the two opposing parties into which we find politicians divided in each of these countries have been formed and are kept together by majority voting.

I am far from imagining that the substitution of proportional representation for majority voting would prevent the bulk of the members of such a representative assembly as the House of Commons from being still divided, ordinarily into two principal parties. The House of Commons will still decide all questions submitted to it by majorities, and there will still be a responsible ministry whose continuance in office will depend upon its receiving a certain support from the majority of the House, and therefore there will usually be another party aspiring to replace this ministry. But if the electors were free to choose not merely between the two parties and their respective sets of candidates, but between the individual candidates of each party, and all other candidates who might be nominated (and this they would be able to do freely under some of the systems of proportional representation to be described further on in this paper), the representatives thus elected, though probably usually members of the one or the other of these two principal parties, would be much more free to act either independently or in smaller sections, either combining with other sections of their party, or separating themselves, according to their own opinions and those of their constituents, upon the particular questions voted on. [165] They would not be always trying to keep up the appearance of a single harmonious party, with a view to the next elections. Provided they voted in accordance with the opinions to represent which they had been elected, they would be pretty safe of re-election, although they had not always adhered to the same party. Thus the individual representatives, and through them the electors, would be able to exercise a more continuous and effective influence on the proceedings of parliament, than they can do under the present strict party organisation. At present the same party must remain in office from one general election to the next; at least the only alternative is a ministry in a minority. Then it will be possible for parties to combine and recombine in the house, and if one ministry be overthrown, to substitute another with a majority behind it. It will then no longer be necessary that a ministry should rely for support exclusively upon one of the two parties. I have no apprehension that this change will injuriously affect our system of ministerial responsibility and party government. In fact this grew up and matured itself during the century and a half previous to the Reform Bill of 1832, when nothing was known of the strict party organisation which majority voting acting on numerous large constituencies has since produced, and when a considerable proportion of the members were either independent of, or very loosely attached to, either of the principal parties.

The Caucus or Nominating Convention.

The so-called "caucus" system for selecting candidates is also entitled to a place among the evils of majority voting, when we are dealing with countries like the United States and Great Britain, where secret voting has been introduced without any provision for ballotage. This caucus system has for many years been firmly established in the United States, and the experience of a single general election under the Ballot Act of 1872 led to its introduction into 67 English constituencies (Mr. Chamberlain, "Times," 13th April 1880), and I expect before long to see it much more extensively adopted. In fact the caucus or nominating convention offers a plausible solution in a popular form of a difficulty which the introduction of secret voting has not, indeed, created, but greatly increased, viz., the difficulty of ascertaining which of several candidates proposed to a party is most popular with the party. [166] With the English or American form of ballot it must be decided beforehand for which candidates the party is to vote. So long as there was open voting, a party with a considerable majority did not run much risk of being defeated, even if two rival sections of the party insisted on each bringing its candidate to the poll, for the voting of the first two or three hours would usually show which candidate was likely to succeed, and then the other would withdraw while the party had still sufficient votes unpolled to secure the election for its remaining candidate. But under the ballot there is no indisputable mode of ascertaining how the election is going on, and therefore nothing to induce one of two rival candidates to retire. The "caucus" remedy for this is to entrust the selection of the candidates to a representative body, elected by the electors of the party. This looks at first sight like a fair and equitable arrangement, but two obstacles to its satisfactory working have been found to exist in the United States. (1) These elections to nominating conventions are outside the law, and there is nothing but public opinion and lynch law to check bribery, corruption, and all kinds of trickery and violence. (2) A large proportion of the electors would not, under any circumstances, trouble themselves to vote at any additional elections besides those authorised by law, and the remainder of the respectable electors have found that it is on the one hand useless,

and on the other unpleasant, and even dangerous, to take part in the elections to these nominating conventions. These elections have thus fallen altogether into the hands of the party-managers and their tools, and in consequence, as Mr. Simon Sterne, of New York, testifies ("Personal Representation," p. 88), "The far greater number of members of the convention are either directly bought with money, or with promises of office. As a matter of accident, an honest man may be returned to a nominating convention, but as a general rule they are of the most pliant and corrupt of party tools." As these conventions nominate the party candidates, it is not surprising that there should be in state legislatures, and even in congress, a considerable number of members accessible to corruption.*

As yet the caucus system in England has had no time to develop the evil characteristics of its American prototype, but I can see nothing likely to prevent like causes from producing like effects in the course of another twenty or thirty years, unless something is done to enable individual electors to decide independently of the caucus between the rival candidates of their party, without giving up majority voting. [167] This might be done by adopting the French, Italian, and German practice of having a second election whenever an absolute majority of the votes polled has not been obtained at the first election, and only allowing the candidates highest in the poll to compete at this second election. This enables separate sections of a party to run separate candidates at the first election, and try their strength against each other, and then unite at the second election to support whichever of their candidates is still left in the competition.

The following table, compiled from the "Statistica Elettorale Politica," published by the Italian Government in 1876 and 1880, shows how extensively these facilities for running more than two candidates against each other are made use of:—

Date	Constituencies	Number of candidates who obtained more than ten votes								Elected at First Voting	Ballotage	Reversals of First Election
		1	2	3	4	5	6	7	8			
1870	508	53	222	116	71	34	10	1	1	165	343	67
1874	508	68	252	131	37	17	3	-	-	271	237	37
1880	508	69	332	81	21	5	-	-	-	358	150	29

No Italian constituency returns more than one member.

The ballotage column includes cases where a sufficient proportion of the electors did not vote, as well as cases where no candidate obtained an absolute majority.

The last column comprises the cases in which the candidate who was highest at the first voting is unsuccessful at the ballotage, a result which would be usually, though not always, due to the party ultimately successful having divided their votes between several candidates at the first voting, and combined upon a single candidate on the second election.

When the Ballot Act of 1870 was passing through the House of Commons, Sir Charles Dilke gave notice of an amendment introducing the ballotage, but, owing to the anxiety of the ministry and the bulk of the liberal party to pass this Bill without delay, this amendment was not discussed, any more than another amendment put forward by Mr. Walter Morrison, and which proposed to secure to the electors individual liberty of choice, without a second election, by a modification of Mr. Hare's preferential vote. Mr. Ashton Dilke has this session introduced a Bill providing for a ballotage, whenever a seat is not filled by an absolute majority at the first election.

Before selecting any system of minority representation or proportional representation for adoption instead of majority voting, it will be necessary to make sure that it does secure individual liberty of choice to the electors, and will not compel them to put themselves into the hands of the party managers, and vote as they are directed. [168]

Limited Voting.

I shall now proceed to describe some of the other methods of voting which it has been proposed to substitute for majority voting. Among these it is convenient to begin with limited voting, because that

* See Sterne, "Personal Representation," p. 91; Sydney G. Fisher, "Trial of the Constitution," Lippincott, Philadelphia, 1862, p. 348; Ezra Seaman, "American System of Government," p. 63.

method differs much less from majority voting than any of the others I have to notice. The only difference is that while in majority voting an elector may vote for as many candidates as there are representatives to be elected, in limited voting he is only allowed to vote for a smaller number, say for two out of three, three out of four, or fourteen out of twenty. This will enable the minority party to secure one or more representatives, provided it is not much inferior in numbers to the majority. In limited voting, as in majority voting, an elector may not give more than one of his votes to the same candidate.

By the Reform Bill of 1867 limited voting was applied, the city of London returning four representatives, and to four boroughs and seven counties, each returning seven members, to which the Scotch Reform Bill of 1868 added Glasgow. Thus it is applied altogether to 40 members out of 658. This same method of limited voting was introduced into Brazil in 1875 on a much more extensive scale. According to an account which M. Ernest Naville has given of the new Brazil law, in "Les Progrès de la Réforme Electorale en 1874 et 1875," pp. 5 and 6, limited voting is applied alike to municipal, provincial, and national elections, with the exception of the senate. Whenever a constituency has more than two representatives, each elector may only vote for two-thirds of the representatives to be elected. Out of 20 provinces 7 return only two members apiece to the National Chamber, but the other 13 return from 3 to 20 members apiece. For the elections to provincial assemblies the number of representatives varies from 20 to 45. The elections are at present by two stages, as had been the case before the introduction of limited voting, the limited voting being applied to both stages of the election. M. Naville mentions that there was much opposition to these two stages, and according to a telegram published in the "Times" of 6th May, 1880, the Government was bringing in a Bill substituting direct election for election by two stages, and creating electoral districts, each returning a single member. If this Bill passes it would of course do away with limited voting. I have not heard of limited voting being applied to the election of deliberative assemblies except in England and Brazil. In New York it has been applied to the election of judges, and in Pennsylvania and other North American States, and also in Switzerland, to the election of officers to superintend elections and see that both parties had fair play. [169]

In England limited voting has been tried at three general elections. The same causes which render an election by majority voting usually a contest between only two parties, apply also to limited voting, and therefore none of the evils I have shown to result from this, and from these contests being frequently decided by narrow majorities, are cured by substituting limited voting. The chief recommendation of limited voting is that instead of all the representatives of a constituency being assigned to the majority, the minority can secure a share, provided it be not much inferior in numbers to the majority. This giving the minority a share of the representation has, I consider, had a beneficial effect by counteracting the tendency of each of our two political parties to become specially connected with particular kinds of constituencies and to almost exclude from other kinds. For many years previously to 1867 the liberals used almost to monopolise the larger boroughs, and the conservatives the agricultural counties. The introduction of limited voting permanently secured to the conservatives a certain though limited number of representatives of large boroughs, and to the liberals a limited number of representatives of agricultural counties. Few as these representatives are, they are able in two different ways to do a great deal to strengthen the position of their party in the kind of constituencies which have returned them as minority members: (1) Their speeches in parliament and to their constituents will naturally present the views of their party in the form best calculated to be understood by and to win the approval of their own and similar constituencies; (2) In the councils of their own party they will be able to insist upon much greater respect being paid to the interests of their own and similar constituencies and to the views prevalent there, than would be paid to these constituencies if they were without representatives.

This tendency of different political parties to become specially connected with particular kind of constituencies, and to be excluded from the representation of and altogether silenced and crushed in other kinds of constituencies, assumes a much more dangerous form when these constituencies instead of being locally interspersed and mutually dependent, are situated in different parts of the country, as was the case in the United States before the civil war of 1861. If the republicans instead of being an exclusively northern party, had comprised a certain number of minority representatives from the south; and the democrats, on the other hand had included a much larger number of northern members than actually were comprised in it, the opposition between the two parties would never have developed into a civil war. [170] The southern democrats would not have been driven into rebellion through distrust of the republicans, if they had seen in the republican ranks a number of their own neighbours and friends;

while, on the other hand, if the republican members of congress had comprised a certain number of southerners, the whole party would have been disposed to deal with slavery with very much greater respect for the vested interests of the slave owners.

The opposition between Buenos Ayres and the other provinces of the Argentine Republic, which has repeatedly broken out into civil war, and that between the Roman Catholic provinces of Ireland and the rest of the United Kingdom have, I feel no doubt, been very much aggravated by the exclusive representation of majorities.

On the other hand, limited voting has some serious defects :—

(1). It does not give the minority anything like its fair share of the representation. If there are three representatives to be elected, the majority can secure them all, unless the minority amounts to two-fifths of the voters, while, under cumulative voting and other proportional methods, as will be shown further on, any minority exceeding one-fourth can secure one seat out of three. With limited voting and four representatives, the minority must amount to three-sevenths of the voters to get one representative, while, under the proportional methods, one-fifth of the voters would be sufficient.

(2). When the majority is sufficiently strong to secure all the three or four seats, provided its votes are properly distributed among its candidates, it is tempted to establish a very thorough organisation to secure that these votes be equally distributed, although each elector can only vote for two out of the three candidates of the party, or for three out of the four. Moreover, there is always a risk of the party's strength having been miscalculated, in which case the party would probably only obtain one representative for its majority, the other two or three going to the minority.

(3). When each party runs two candidates for three seats, only one of the defeated party's candidates will be elected. Which candidate this will be will depend upon one candidate getting split voters from the other side, or else from his receiving plumpers from some of his special friends, or from some electors who dislike his colleague. By however much one candidate may be more popular than the other, the bulk of the party cannot secure that he should be the one elected, nor can the candidates make any arrangement to secure this. At least, they can only do this by arranging that the one candidate should receive a certain number of plumpers, and this would greatly diminish whatever chance the party might have of carrying both candidates.

(4). [171] Limited voting does not work satisfactorily where, as sometimes happens even in England, an election is not a simple contest between two parties. The last election for Berkshire is an instance of this. It was a contest between Mr. Walter and another liberal for the minority seat.

Cumulative Voting.

I next come to cumulative voting, which is well known from being employed in England for the election of school boards under Mr. Forster's Education Act of 1870. In the previous year, 1869, it was introduced into Illinois for the election both of the State house of representatives and the governing bodies of municipalities and joint stock companies. It was subsequently, in 1871, applied in Pennsylvania to the election of municipal councils. In 1867 the English advocates of minority representation originally attempted to apply cumulative voting to the city of London and the three cornered constituencies, but Mr. Lowe's amendment in favour of cumulative voting was rejected in the House of Commons, and the provision for minority representation, which was subsequently introduced in the House or Lords, took the form of limited voting.

Many years previously to this cumulative voting had been introduced into a constitution granted to the Cape Colony in 1853.* From 1853 to 1874 the legislative council was elected by cumulative voting by two districts returning respectively eight and seven representatives. Since 1874 it has been elected by seven districts, each returning three representatives. The report of the committee of council mentioned in the footnote, has been frequently referred to, owing, I believe, to its being quoted in Mr. Garth Marshall's pamphlet in favour of cumulative voting ("Minorities and Majorities," Ridgway, 1853), but the fact that this report has been acted upon, and that cumulative voting was in operation at the Cape, was altogether lost sight of during the frequent discussions on minority representation between 1866 and 1871. I have no information as to the working of cumulative voting at the Cape beyond the fact that, although the law of 1874 altering the constituencies for the legislative council was under discussion for two sessions, the only proposal to abolish the cumulative vote, one made in the legislative assembly 10th May, 1873, was negatived without a division.

* See the Cape Constitution of 1853, an ordinance confirmed by the Privy Council, House of Commons Papers, 1852-53, vol. lxvi, p. 371. This was done in pursuance of the recommendation of a Committee of the Privy Council, whose report is to be found in the House of Commons Papers for 1850, vol. xxxviii, p. 216; p. 105 of Correspondence.

This I have ascertained from the proceedings of the Cape legislature for 1873 and 1874.

[172] In cumulative voting an elector may either give all his votes to the same candidate or divide them among several. Usually, in cumulative voting, each elector has as many votes as there are representatives to be voted for, but this is not essential. The method of voting remains substantially the same whether the electors have a larger or smaller number of votes to distribute, or even if each elector has only one vote.

Best Number of Votes under Cumulative Voting.

The number of votes assigned to each elector to distribute is of importance for only one reason, viz., because it is more convenient for a party which is supporting several candidates, that each elector should be able to divide his votes equally between the candidates of the party. If the electors have each 13 votes, or 11, or 7, or 5, as is the case in many of the school board elections, a party which runs two or three candidates cannot without a somewhat elaborate organisation secure that the votes of its adherents will be equally divided between its candidates. But if twelve votes had been assigned to each elector, a party running two, three, four, or six candidates, would be able with the utmost ease to secure that its voting strength was divided equally between them. It would only have to request each of its adherents to divide his twelve votes equally between the two, three, four, or six candidates. Twelve seems the best number to select for this purpose, as 60 and 120 are the only numbers which recommend themselves as having additional divisors, and they are both of them inconveniently large.

How few Electors can obtain a Share of the Representation.

In cumulative voting the choice of the representatives for a constituency is not limited to a single party, as in majority voting; nor to two parties, as in limited voting. Cumulative voting enables any number of electors who may combine together and exceed a certain fraction of the constituency, viz. :—

$\frac{1}{4}$	where there are 3 representatives.
$\frac{1}{5}$	where there are 4 representatives.
$\frac{1}{n+1}$	where there are n representatives.

to obtain a share of the representation approximately proportional to their number. This admits of being easily proved.

Suppose that a constituency has to elect n representatives, that V electors vote at the election, and that each elector has m votes.

Let $\frac{mV}{n+1} + i$ be the next whole number greater than $\frac{mV}{n+1}$, then $\frac{mV}{n+1} + i$ votes will be sufficient to elect one representative.

[173] For if $\frac{mV}{n+1} + i$ votes be given for each of n candidates, the votes remaining undisposed of will amount to—

$$mV - n(\frac{mV}{n+1} + i)$$

$$= mV - \frac{nmV}{n+1} - ni$$

$$= \frac{mV}{n+1} - ni$$

which is manifestly less than $\frac{mV}{n+1} + i$, and therefore the votes remaining undisposed of could not (even if all concentrated on the same candidate) displace any candidate who had obtained $\frac{mV}{n+1} + i$ votes. Consequently $\frac{mV}{n+1} + i$ votes are sufficient to secure the election of one representative, and obviously twice as many votes will be sufficient to elect two representatives, and generally the number of votes required to secure the election of r representatives will be $r(\frac{mV}{n+1} + i)$.

$\frac{mV}{n+1} + i$, i.e., the whole number next greater than the quotient obtained by dividing mV, the number of votes, by $n + 1$, will be called the quota.

To make this important proposition more intelligible to those who do not readily understand mathematical symbols, I will apply the same reasoning to a numerical example.

Suppose that the constituency has to elect 9 representatives, and that 10,000 electors vote, each of whom has 12 votes, then 12,001 votes will be sufficient to elect one representative, 12,001 being the next whole number greater than $\frac{12\times10{,}000}{9+1}$ or $\frac{120{,}000}{10}$ i.e., greater than

$$\frac{\text{the total number of votes polled}}{\text{one more than the number of candidates to be elected}}$$

For if 12,001 votes be given to each of 9 candidates, the votes remaining undisposed of will be—

$$\begin{aligned}&12 \text{ times } 10,000 - 9 \text{ times } 12{,}001\\ &= 120,000 - 108,009\\ &= 11,991\end{aligned}$$

and as this is manifestly less than 12,001, the votes left undisposed of could not, even if all concentrated on the same candidate, displace any candidate who had obtained 12,001 votes.

[174] Consequently 12,001 votes (12,001 being the next whole number greater than $\frac{1}{9+1}$, i.e., one tenth of the whole number of votes) are sufficient to secure the election of one representative.

Also 12,001 votes is the smallest number of votes which will do this. For, if the 9 candidates had only 12,000 votes apiece instead of 12,001, there would be 12,000 votes left, and if these were all concentrated on the same candidate, he would "tie" the others, and the result of the election would be uncertain.

In ordinary cumulative voting owing to the irregular manner in which (owing to a cause to be hereafter explained) the votes are usually distributed among the successful and unsuccessful candidates a number of votes considerably less than my theoretical quota $\frac{mV}{n+1} + i$ will usually be sufficient to make a candidate practically safe of getting in somewhere among the successful candidates. But the hypothesis upon which I have proceeded of all the successful candidates obtaining only just enough votes to secure their election, and of the remaining votes being all concentrated on one other candidate, will be practically realised under the transfer methods to be described in a subsequent part of this paper, and the formula I have obtained, $\frac{mV}{n+1} + i$, will then give the quota of votes which it is necessary to retain for each successful candidate when transferring those he does not require. However even for ordinary cumulative voting my quota is of use as giving the least number of votes that will make a candidate *absolutely* safe. From the preceding calculations it is manifest that under cumulative voting any number of electors who may combine together to support one or more candidates will be able to secure their election if the votes they command are equal to or greater than the number required for electing so many representatives, provided the two following conditions are fulfilled, i.e., provided (1) the combining electors or their leaders know their own strength, and put forward no more candidates than they can expect to carry, and provided (2) they are able to arrange that all the votes of the party shall be distributed equally between their candidates.

Subject to these conditions, not only *the* minority, but every minority of a certain size, will be able to obtain a share of the representation. The size of the smallest minority which can obtain a separate representation for itself will be limited by the number of representatives to be elected by the constituency.

It must be always greater than $\frac{mV}{n+1} + i$, V being the number of electors, i.e., [175]

for 3 representatives it must exceed $\frac{V}{4}$

for 7 representatives it must exceed $\frac{V}{8}$

for 15 representatives it must exceed $\frac{V}{16}$

For the school board elections the number of representatives to be elected varies from 4 in some of the London districts to 15 in some of the largest boroughs. The Illinois house of representatives and the Cape of Good Hope legislative council are elected by districts each returning 3 representatives. From 1853 until 1874 the Cape legislative council had been elected by two districts, returning respectively 8 and 7 representatives.

Cumulative Voting, where Defective.

The weak point of ordinary cumulative voting is that no body of electors holding particular views can make absolutely sure of obtaining the share of the representation to which their numbers entitle them, without establishing an elaborate and expensive party organisation. In order that they may secure as many representatives of their views as possible, they must combine into a party and ascertain by a general canvass how many votes they are likely to command, and thence determine how many candidates they should run, and select their candidates. They must also arrange that the voters of their party shall distribute their votes equally among the candidates of the party.

In the absence of such an organisation as I have described, an election under ordinary cumulative voting becomes, to a great extent, a matter of chance. Candidates come forward independently holding nearly the same views, and it is impossible for an individual elector to find out upon which of them his votes may be most advantageously bestowed, so as to secure for the opinions he favours as large a share of the representation as possible. Even when all the candidates for a party co-operate, party managers can, in the absence of a sufficient organisation, only guess at the proper directions to be given to their party.

In most parliamentary boroughs outside the metropolis, electoral organisations have been formed by the two parliamentary parties, for conducting parliamentary and municipal elections, and in consequence, the school board elections in such boroughs have usually become almost entirely contests between the lists of these two parties. The Roman Catholics bring forward their own candidates whenever they are sufficiently numerous to have a chance of securing one or more representatives; but it does not often happen that other sections of the electors bring forward independent candidates. [176]

One reason for this is, that it would involve the trouble and expense of separate organisation. Another is, that even if an independent section succeeded in electing its own candidates, the parliamentary party of which they formed part would probably obtain altogether fewer representatives than it was entitled to, owing to the confusion produced through the party being canvassed by rival sets of candidates.

In the metropolitan boroughs, on the other hand, where party organisations are much less developed, they take but little part in the school board elections; and altogether very little is done to organise the electors into parties, or to direct them how they may most advantageously employ their votes so as to secure for their respective views as many representatives as possible. Many candidates who prove successful, come forward independently and merely try to secure as many votes as possible for themselves, while, if several candidates try to cooperate, they are liable to find their calculations upset through some independent candidate with nearly the same views, attracting away the votes they had reckoned upon. In many of the metropolitan school board elections, more than half the votes given have been plumpers in favour of a single candidate.

Constituency	No.	Date	Plumpers	Total Votes
Lambeth	5	1870	59,920	117,264
Marylebone	7	1873	63,175	125,822
Southwark	4	1870	21,488	34,243
Southwark	4	1873	17,756	26,961
Tower Hamlets	5	1873	74,186	123,891
Tower Hamlets	5	1876	52,010	93,940
Chelsea	5	1879	22,372	38,386

In the proceedings of the Cape of Good Hope legislature for 1874, I found the details of an election of eight members of the legislative council of that colony by a constituency comprising half the Colony. I found that more than half the voters concentrated all their votes on single candidates. This election took place in 1873, after the electors had been using cumulative voting for nineteen years, when it may be reasonably supposed that they had learnt the best mode of using their votes. The record of this election was part of the materials laid before the legislature of the Cape Colony in 1874, when the two constituencies electing eight and seven members, were replaced by seven constituencies each electing three members.

The independent selection of individual candidates by the voters, is more favourable to the election of the best candidates, than if the bulk of the electors vote according to party lists, but it becomes very much a matter of chance whether the holders of any particular set of views obtain as many representatives as they are entitled to. [177] Moreover, under this *régime* of independent selection, there is always considerable uncertainty about the success of even the most popular candidate. He may lose votes he requires through his friends supposing that he is safe, and that they can employ their electoral power more advantageously in endeavouring to give him a colleague with similar views. For instance, in the Tower Hamlets, Mr. Pearce was second on the poll in 1870, with 20,867; in 1873 he was defeated with only 10,682 votes, and in 1876 he was first with 22,470 votes. Similarly, Professor Gladstone and Mr. Mills, who had both been defeated in 1870 for Chelsea and Marylebone, were at the head of the poll for those constituencies in 1873, Mr. Mills having three times as many votes as any unsuccessful candidate. So again, Sir Charles Reed was at the head of the poll at Hackney in 1870 and 1876, with twice as many votes as he wanted, but at the intermediate election of 1873 he was the lowest successful candidate.

If cumulative voting were extended to parliamentary elections, in England, neither the candidates who are now ready to spend from £5,000 to £10,000 for the chance of a seat, nor the partisans who are deeply interested in the victory of their party, would be content to leave the electors to vote independently without organisation. They would no doubt establish in every constituency organisations capable of ascertaining approximately how every elector was likely to vote, and of giving adequate directions to the voters of each party as to how they might secure for themselves the largest number of representatives; and the electors would soon learn by experience that by implicit obedience to their organisations, they were likely to secure the largest number of representatives for their party. In this way parliamentary elections by cumulative voting would, I am afraid, fall as much under the control of party caucuses as elections by majority voting have done in the United States, and probably will soon do in England.

Beneficial Effects of Cumulative Voting.

In some respects cumulative voting has worked very satisfactorily at the school board elections. There have been few if any attempts at bribery or treating, common as these malpractices are at municipal as well as parliamentary elections. This may fairly be attributed to a great extent to these elections not being contests between two nearly equal parties, when success depends upon attaching a small balance of indifferent voters to the one side rather than the other. Moreover, the successful candidates are

a superior class to those elected at elections of the same class by majority voting. [178] Thus the members of the London School Board are on the average decidedly superior to the members of the Metropolitan Board of Works. This will in part be due to the higher interest of educational work to religious and philanthropic persons as compared with building and sanitary works. But school board members also compare very favourably with elected guardians of the poor, whose work ought to be equally attractive to the religious and philanthropic, and I believe the superiority of members of school boards to be to a great extent due to a mode of election which enables a suitable person to come forward independently with a confident expectation of being elected, provided he has become known to, and secured the confidence of, a comparatively small section of the constituency.

But, owing to the weak point I have already referred to, viz., the inability of ordinary electors to ascertain how they may use their votes most advantageously, ordinary cumulative voting fails to realise a great deal of what I expect from a more perfect method of proportional representation.

Transfer Methods.

I shall therefore now proceed to describe methods of voting which are free from this defect, and which I believe to be the best forms of proportional representation that have yet been discovered. One of these, preferential voting, is a thoroughly scientific and complete solution to the problem, but as it involves a considerable amount of sorting and re-sorting of the voting papers, its employment for large constituencies with from 50,000 to 60,000 electors, such as we should necessarily have in England, seems to me beset with somewhat serious practical difficulties. The other of these two methods, which I shall call limited transfer by lists, though theoretically less perfect, would I believe, arrive in practice at a result very nearly as satisfactory, while involving very little more trouble than ordinary cumulative voting.

Both these methods are based on the principle of using for each candidate only as many votes as are wanted to secure his election, and transferring to other candidates all superfluous votes which candidates may have received beyond what they require, and also all votes given to candidates who are found to have no chance of being elected. In the first method (preferential voting) each elector is allowed to designate on his voting paper the other candidates to whom in succession his vote is to be transferred. According to the simplest form of the other method (limited transfer by lists) all the votes which a candidate does not want or cannot use, are transferred together according to a list prepared by the candidate and published before the election.

Preferential Voting.

[179] Preferential voting was devised by Mr. Hare, as part of his well-known scheme of personal representation. It was also independently invented by Mr. Andrae, a Danish minister, for the 1855 constitution for Denmark, Schleswig and Holstein, and has ever since that date been in use in Denmark. At first it was used for the election of the Rigsraad or council of the empire, and after 1863 for that of the Landthing or upper house of the kingdom of Denmark.*

In 1872 Mr. Walter Morrison, in conjunction with Professor Fawcett and other members, introduced into the English parliament a Bill providing for the election of members for England and Wales by preferential voting in constituencies electing from 3 to 16 members apiece.

According to preferential voting, each elector has only one vote, but he may on his voting paper designate any number of candidates to have successively the benefit of this vote. Each voting paper is to be reckoned in the first instance to the first candidate named upon it, but if, when all the votes have been so distributed, it is found that any candidate has more votes than are sufficient to secure his election, the surplus of his voting papers will be redistributed and be given to the candidates next in order of preference thereon, excluding of course those who have already obtained sufficient votes. The result of the first redistribution of votes will be that no candidate retains more votes than are sufficient to secure his election, all superfluous voting papers having been transferred to other candidates and thus utilised. In M. Andrae's method the transfer of votes ceases here, and those candidates who have obtained most votes are at once declared elected. Mr. Hare, however, and this is a great improvement, proceeds to exclude from further competition one by one the candidates who have the fewest votes, and redistribute their voting papers, each voting paper being transferred to the next candidate in order of preference thereon, who remains in the competition. This

* The present Lord Lytton's very able report on the Danish method, House of Commons Papers 1864, vol. 61, p. 24 of No.7, relates to the Rigsraad as it existed up to 1863. The law now in force as to the election of the Landthing, dates from 1866, and has been translated into French. (Leon de Thozée, "Réforme Electorale." Bruxelles, 1874.)

process of exclusion and redistribution is continued until there is only one candidate remaining beyond the number of representatives to be elected; then obviously the candidate with fewest votes among those remaining must be excluded, and the others will be elected.

Under this method of preferential voting (provided no more votes are retained for a successful candidate than are sufficient to secure his election) it will be immaterial if a party runs too many candidates, or divides its votes unequally between its candidates. [180] If too many votes are in the first instance accumulated upon one candidate, he will only keep as many as are required to secure his election, and the rest will be distributed among the other candidates of the party, and through the successive exclusion of the candidates with fewest votes, will be ultimately concentrated upon as many of them as the voting strength of the party is sufficient to elect. To ensure this, it is only necessary that every elector of the party should designate on his voting paper, in some order or other, all the candidates of the party.

Proper Value of Quota.

It is however essential to the complete success of the method, that no more votes should be retained for a successful candidate than are required to secure his election. I have shown *ante*, p. 29, [=172] that if mV be the number of votes, and n the number of representatives to be elected, $\frac{mV}{n+1} + i$, the next whole number greater than $\frac{mV}{n+1}$, will always be a sufficient number of votes to secure a candidate's election. Mr. Hare and M. Andrae, however, both fixed upon a larger number viz., $\frac{mV}{n}$, as the number of votes to be retained for each successful candidate. As $n = 658$ in the scheme to which Mr. Hare applies his method, the difference between $\frac{V}{n}$ and $\frac{V}{n+1}$ is too small to be of any practical importance; but when constituencies return from 3 to 8 representatives apiece, as is the case in Denmark, and would probably be so in England if proportional representation were introduced here, the difference becomes considerable. Suppose, for instance, that the election is a contest between two parties of which one commands 360 votes and the other 340, and that each party runs 4 candidates for seven seats; then M. Andrae's quota will be $\frac{360+340}{7} = \frac{700}{7} = 100$, while mine will be $\frac{700}{8} + i = 88$. Consequently, if the 360 voters should divide their first votes so as to give originally to each of three candidates 100 or more votes, say 110, 104, and 100, their fourth candidate will originally have only 46 votes, and will obtain by transfer with M. Andrae's quota only 14 additional votes, and thus he will not get altogether more than 60 votes, and therefore if the 340 can by organisation arrange to divide their first votes so that each of their four candidates has originally more than 60 votes (which would not be difficult, as an equal division would give each of them 85 votes) they will carry the odd candidate. [181] On the other hand, with my quota, the fourth candidate will get by transfer (however the votes may be originally distributed) $360 - 3 \times 88 = 360 - 264 = 96$ votes, and it will be impossible for the 340 to place all their four candidates ahead of those of the 360. Therefore, with my quota, nothing can be gained by dividing the votes equally, or lost by dividing them unequally, while with Mr. Andrae's and Mr. Hare's quota there will always be a possibility of gaining by this, and therefore it may be worth while in an important election, to organise and ascertain how many candidates the party's votes can carry, and arrange for such votes being divided equally between these candidates, the very thing which preferential voting is intended to render unnecessary. I have been told by more than one Danish gentleman that in Denmark, when the electors meet there is a great deal of calculation and arrangement as to how they should distribute their votes among the candidates. In Denmark the electors who vote according to this method I believe rarely if ever exceed three or four hundred (these being secondary electors, elected for the purpose by the primary electors), and they are all assembled in one place. Consequently these arrangements do not involve any great amount of trouble, nor interfere materially with the liberty of the individual electors. But with constituencies of 30,000 or 60,000, such as we at present have in England in our large boroughs, and should probably retain undivided under proportional representation, any such arrangements would be very expensive and troublesome, and would throw a great deal of power into the hands of the organising committees.

Selection of Votes to be Redistributed.

In preferential voting (as I have already mentioned) after the voting papers have been distributed in the first instance according to the first candidate upon each, the surplus voting papers of any candidate who has more than he requires are redistributed. But how is it to be determined which of his voting papers are to be redistributed? The electors whose voting papers are so redistributed have the privilege of influencing the electors to a greater extent than those whose voting papers are retained for the first candidate. After the first candidate has been

declared elected, their voting papers contribute towards determining which other candidates should be elected. Suppose that A's name stands first on 10,000 voting papers, of which he only requires 9,000, and therefore there is a surplus of 1,000 to be redistributed; and suppose further that out of these 10,000 voting papers, 6,000 have B in the second place, while 4,000 have C there. Then B's election might easily depend upon how many of the 1,000 surplus votes to be redistributed were taken out of the 6,000 which had B's name second. [182] If it were practicable it would obviously be the fairest plan to divide all A's voting papers into sets, according to the different names upon them, and take the surplus votes proportionally from the different sets. In the case supposed above, this would be to take 600 voting papers out of the 6,000 which B stands second, and 400 out of the 4,000 on which C stands second. But the number of different sets of names upon A's voting papers would usually be far too great to allow of this being done. Probably they would contain the names of almost all the other candidates in every possible order, according to the caprices of individual electors. If there were only five such other candidates, their names would admit of being arranged in 120 different ways. The only satisfactory mode of dealing practically * with this difficulty is to let chance determine which of the voting papers appropriated in the first instance to a particular candidate are to be redistributed. According to a well known theorem in the mathematical theory of probabilities, and one which is constantly acted upon in every day life, there is a strong probability that the number of voting papers of each different set which find their way into the surplus by chance, will be very nearly proportional to the total number of voting papers of the same set. In the case supposed above the odds are more than 199 to 1 that of 1,000 voting papers taken by chance out of 6,000 A B, and 4,000 A C voting papers, there will be between 650 and 550 A B voting papers.

The selection of the surplus voting papers by chance may be effected in two ways. According to M. Andrae's Danish law all the voting papers are mixed in an urn, and drawn out one by one, and when as many voting papers have been appropriated to a particular candidate as are sufficient to secure his election, any voting paper which may subsequently be drawn with that candidate's name first, is transferred to the next candidate named therein who has not obtained sufficient votes. One drawback to this method is that possibly some of the later voting papers may contain only the names of candidates who have already obtained sufficient votes, and may thus be lost, but this might be remedied by exchanging any voting papers which are thus liable to be lost for some of the voting papers which had been previously appropriated to the same first candidates, but contain other names to which they can be redistributed. [183] The second method, the one I have adopted in this paper in describing preferential voting, is to distribute all the voting papers in the first instance according to the first candidate named on each, and then as a subsequent process to take away and redistribute as many of the voting papers belonging to each candidate as he does not require, going through his voting papers in some order fixed by chance, but passing over any votes which cannot be transferred to some other candidate. If this plan be adopted, it is necessary to distribute the surplus votes of the different candidates one by one, and I consider the best plan to be to take them in order according to the number of surplus votes each has to redistribute, beginning with the largest number of surplus votes. As the redistribution proceeds the proportion of votes which cannot be transferred to any other candidate, because all the candidates named upon them have obtained the quota, will increase; and therefore it is best to leave to the last the sets in which the surplus votes to be redistributed form the smallest proportion of the votes out of which they are to be taken. Where the whole number of voting papers to be distributed is small, M. Andrae's method will probably be found most convenient, but where there is a large number of votes to be distributed, the second method will be found to occupy much less time. With M. Andrae's method the whole of the voting papers must be distributed one after another in order by the same set of officials, and therefore distributing 50,000 voting papers would take one hundred times as long as 500. With the second method the original sorting of the voting papers according to the first candidate named upon each may be divided among several different sets of clerks, and the portion of the process which

* Professor E. J. Nanson, in a paper read before the Royal Society of Victoria on 8th July, 1880, proposed an ingenious scheme for distributing votes under preferential voting, without allowing the element of chance to intervene. But the directions he gives seem to me far too complicated for an election which is to be managed by ordinary retaining officers, and if challenged, investigated before election judges. Moreover, his method does not seem to me equitable. Instead of taking the votes to be retained for the successful candidate proportionally out of all the groups of votes upon which his name stands first, but with different second names, he takes them altogether out of the larger groups, allowing the smaller groups to be transferred undiminished to the second candidates. To take the votes proportionally out of all the groups would make the process even more complicated than it is.

must all be done by one set of officials need not at any rate begin before the redistribution of the surplus votes not required by the first candidate named upon them.

Whichever of these two methods be adopted, the order in which the voting papers are taken must depend entirely upon chance, and not upon the officials who distribute the votes, as by altering the order they might cause one candidate to be elected instead of another. Also the voting papers ought to be numbered so as to show the order in which they are taken, so that it may be possible to repeat the whole process if there should be a scrutiny. If on a scrutiny the votes might be taken in different order, the scrutiny would be no real check on the officials. Also candidates defeated by a few votes would be tempted to try whether they might not have better luck on a fresh redistribution. [184] It would also be desirable to mark each voting paper to indicate to whom it was appropriated, and how it was transferred. If so, upon the process being repeated on a scrutiny, any particular mistake that had been committed would at once be discovered. It seems to me very important that the whole process of distribution and redistribution should be capable of being subsequently checked; otherwise the result would, to a considerable extent, be placed in the hands of the officials who distribute and redistribute the voting papers. The other persons present as representatives of the different candidates, could only imperfectly check such a complicated process as the distribution of voting papers would be, and if no exact repetition of the whole process on a scrutiny were possible, any objections they might take would have to be summarily decided by the returning officer.

When is Preferential Voting Practicable?.

More than thirty years of experience in Denmark, as well as certain experiments in the United States, Belgium, and Italy, have established that with an educated constituency not exceeding a few hundred electors, the working of the preferential vote does not present any serious difficulties. I say an educated constituency, because all the experiments I am acquainted with, with two exceptions, viz., a working man's bank and a co-operation society, both established at Sampierdarena, in Italy (E. Naville, "Les Progrès de la Réform Electorale en 1874 et 1875." Georg. Geneva, 1876, p. 48; "4th Bulletin of the Italian Proportional Representation Association," p. 460), have been made with educated constituencies, but I do not anticipate that want of education on the part of the electors will interfere materially, provided their minds are not confused by having more than eight or ten candidates to choose between, and provided that the limited area of the constituency gives the electors opportunities of seeing and hearing these candidates, and reading and hearing discussions about their respective merits. No doubt many of the electors will adopt lists prepared by others, but as no one list would have such an advantage over all others as the lists recommended by the party managers have under majority voting, there will usually be a considerable number of competing lists, and choosing among these lists will sufficiently elicit the independent views of the electors. As for the mechanical act of voting, if the names of the candidates proposed were printed on the voting papers, and each elector had merely to add numbers indicating for which candidate his vote was to be used first, for which second, and so on, every elector who could read and write, as well as a large proportion of those who could not, could be readily taught to mark the voting paper according to a list. [185] There would be no more difficulty in this than in marking the ballot papers with other numbers in cumulative voting.

Preferential Voting Difficult with Large Constituencies.

But it is a much more doubtful question whether the results of experiments with a few hundred voters can be relied upon as proving that preferential voting can be worked satisfactorily in large constituencies containing 50,000 voters apiece. According to the registration for 1879 there were four British boroughs which had more than 57,000 electors apiece, and five more which had more than 40,000 ("Times," 29th April, 1880)—

Liverpool	63,946
Birmingham	63,398
Manchester	61,234
Glasgow	57,920
Leeds	49,000
Finsbury	44,955
Hackney	43,773
Sheffield	42,794
Tower Hamlets	41,042

The difficulty arises from the time which the distribution of such a large number of votes is likely to occupy, assuming it to be effected altogether by one set of officials. To give some rough idea of how long this would take, I shall assume that of the 50,000 electors in the constituency, 45,000 vote, and that the votes of nearly half, or say 20,000, require to be distributed. If the favourite candidate of each side got 16,000 instead of the 6,250 votes which would

be required to secure his election, assuming that there are seven candidates to be elected, the surplus votes of these two candidates alone would amount to very nearly 20,000. I shall also assume that three voting papers can be redistributed in a minute.. Each has to be taken up, examined, appropriated to a particular candidate, and marked to denote that it has been so appropriated, and although these different processes will probably be performed by different persons who hand the voting papers from one to another, the speed is limited by the necessity of their waiting for each other; besides which, they will all be doing work with which they are not familiar, and the agents of the different candidates will be entitled to superintend each process, and to object if anything is done that they do not at once see to be fair and correct.

Upon these hypotheses, and supposing that the whole of the redistribution of the voting papers for a constituency of 50,000 electors is conducted by one set of persons, it would take

$$\frac{20{,}000}{3\times 60} \text{ hours} = 110\tfrac{8}{9} \text{ hours.}$$

or more than eleven days of ten hours each.

This calculation is founded on somewhat rough guesses, but unless they are extremely wide of the mark, it shows that the returning officer and his officials will be occupied nearly a fortnight with a single election, unless the work of redistribution can be accelerated by being divided among several sets of clerks. [186] It is not easy to arrange for such a division without giving up the, in my opinion, very essential condition that the voting papers should be distributed in some regular order, independent of any choice by the officials, and that this order should be recorded upon the voting papers, in such a manner that it may be possible to repeat the whole process exactly on a scrutiny. I think, however, that the following arrangement would enable the greater part of the redistribution to be conducted by several sets of clerks without giving up this essential condition, though it is unquestionably rather complicated.

The voting papers to be redistributed may be divided into lots of, say, fifty each, and marked with different letters of the alphabet, and then it may be arranged that in the redistribution the first, second, third, &c., voting papers of the A lot should theoretically precede the corresponding numbers of the other lots, to be next followed by the corresponding numbers of the B lot, and so on. Practically the different sets of clerks would be able to proceed with the redistribution to a great extent independently, unless when any candidate was just obtaining the *quota* or number of votes sufficient to secure his election. At these junctures the different lots must all be brought to the same level, in order that this candidate may receive the voting papers earliest in theoretical order among those transferable to him, and those later in order may be reserved for distribution after he has obtained the quota. At all times the voting papers assigned to the same candidate must be ultimately arranged according to their theoretical order, but except when a candidate is just about to obtain the quota, this need not be done at once, and therefore it will not matter if one set of clerks should work rather faster than another set. By employing a sufficient staff of clerks, the distribution of 50,000 voting papers might, I believe, be completed within two days, if not one.* However, it is manifest that not only the time occupied and the number of clerks employed, but also the mere number and bulk of the voting papers render an election by preferential voting for a constituency of 50,000 electors very much more complicated and troublesome than a similar election with 500 electors, or than any election by majority or cumulative voting. [187] It may perhaps be worth while to incur all this trouble for electing a parliament which has very important functions to perform, but for other elections at any rate, e.g., those of school boards, town councils, and boards of guardians, a simpler and more expeditious process is required, and this the other method I have already partially described seems to me fitted to supply, even if it be not also preferable for parliamentary elections.

Limited Transfer by Lists.

This method of limited transfer by lists was originally proposed by Mr. Walter Baily, formerly Fellow of St. John's College, Cambridge, in 1869, in a pamphlet, entitled "A Scheme for Proportional Representation" (Ridgway), and it was recommended by M. Ernest Naville, in his "Representation Proportionelle pour la France" (Didier, Paris, 1871). According to this method, every candidate is, during the interval between the nomination and the election, to make out a list of the other candidates whom he wishes to have the benefit of the votes he may not himself be able to use, showing the order in which

* All these calculations as to the time which the distribution may occupy proceed on the assumption that it will be so managed that a scrutiny may be possible, which involves that the voting papers should be taken in some regular order, and that this order should be recorded. If it be thought advisable to trust the distribution of the voting papers to the returning officer and his assistants without any appeal or check, the distribution might be managed much more quickly.

they are successively to have the benefit of these votes. These lists are to be published sufficiently long before the polling day for every elector to be able to know how the votes he may give to a particular candidate are liable to be transferred.

When the polling day arrives, the electors vote by cumulative voting, either plumping for single candidates, or dividing their votes among several. When the votes polled for each candidate have been counted, and the quota required to secure a candidate's election ($\frac{mV}{n+1} + i$; see *ante*) has been calculated, the surpluses of those candidates who have obtained more votes than the quota are distributed among the other candidates, each candidate's surplus votes being distributed according to his transfer list.* As it is necessary to lay down a rule as to which candidate's surplus should be distributed first, Mr. Baily begins with the candidate who has the smallest surplus to distribute; and I have followed him in this, as in transfer by lists it is not material whether one begins with the smallest or the largest. The surplus votes of each candidate are first transferred to the first candidate upon his transfer list who has not obtained the quota; [188] but if they are more than sufficient to raise this candidate to the quota, the remainder not wanted for that purpose are transferred to the next candidate on the original owner's transfer list who has not obtained the quota. When all the surpluses have been thus distributed, the candidate who has fewest votes is to be excluded from the competition, and the votes which can no longer be of use to him are to be distributed among the other candidates. The original votes of each candidate are to be transferred according to his own transfer list, while the votes which he has acquired by transfer are to be distributed according to the transfer list of the candidates to whom they were originally given. Of the batches of votes becoming transferable at the same time, the smallest is to be transferred first. When these distributions have been completed, the candidate who has next fewest votes is to be excluded and his votes distributed, and so on, until there is only one more candidate left in the competition than there are representatives to be elected.

Example of Limited Transfer by Lists.

The actual working of this method may be exhibited in a numerical example.

Let the annexed Table (VII) show the number ef representatives to be elected in a given constituency, the candidates, and their respective transfer lists, and the votes polled by each.

Then, as the total number of votes polled is 22,040, and there are 5 representatives to be elected, the quota is $\frac{22,040}{6} + i = 3,674$.

As A and B have each more votes than the quota, they are declared elected, and their surpluses are ascertained, and as B's surplus is the smallest, it is transferred first, and the whole of it (698) is transferred to E. Next, out of A's surplus, 1,921 votes are transferred to F, and, with his original votes, raise F's total to the quota, and he is declared elected. The remainder of A's surplus (1,143) is transferred to G,. The surpluses have now all been transferred, and as C has now 3,587 votes, D 2,456, E 2,748 and G 2,327, G has fewest votes, and is therefore to be excluded from the competition, and his votes transferred. The 1,143 votes transferred from A are to be retransferred, and then G's remaining 1,084 votes are to be transferred before A's 1,143. G's 1,084 are transferred to D, and then out of A's 1,143, 87 are transferred to C, raising him to the quota, and 134 more of A's votes are transferred to D, giving him also the quota. Then A, B, F, C, and D, will be the five candidates elected.

[189] The upper part of Table VII shows how these transfers may be practically made.* All the calculations required may be made in half-an-hour on a single sheet of paper, and may be printed and published, so that anyone can test their correctness. This method is therefore much more expeditious than preferential voting, and also very much less troublesome.

* Mr. Archibald E. Dobbs in 1879 published an able pamphlet on "Representative Reform in Ireland" (Spottiswoode), in which he advocated electing 105 members by the electors for Ireland united into a single constituency, by a method similar in principle to Mr. Baily's, but with some ingenious modifications adapted to facilitate electing such a large number of representatives by a single constituency.

* I have taken from Mr. Baily's pamphlet the example he originally gave, but have worked it out somewhat differently.

Table VII — Five Representatives to be elected by Limited Transfer by Lists.

General Election

Candidate	A	B	C	D	E	F	G
Transfer Lists	F G C D	E C	D A F G	C A G F	B D C	A G C	A F
Votes polled	6,738 elected	4,372 elected	3,587	2,456	2,050	1,753	1,084
Quota	3,674	3,674					
	3,064	698			698 fr. B		
		698 to E			2,748		
		0					
	1,921 to F					1,921 fr. A	
	1,143					3,674 elected	1,143 fr. A
	1,143 to G						
	1,143 fr. G			1,084 fr. G			2,227 excluded
	87 to C		87 fr. A	3,530			1,143 to A
	1,056		3,674 elected				1,084
	134 to D			134 fr. A			1,084 to D
	922			3,674 elected			0

Filling up C's vacancy

Candidate	A	B	C	D	E	F	G
Votes unrepresented when C vacates his seat	922		3,674		2,748		
	87 fr. C		87 to A				
	1,009		3,587				1,009 fr. A
	1,009 to G		2,665 to G				2,665 fr. C
	0		922				3,674 elected

Does this give Popular Candidates too much Power?

The only difference between the two methods to the disadvantage of limited transfer by lists, is that, instead of each elector determining to whom his votes are to be transferred, this is determined by the transfer lists of the candidates to whom they are originally given. [190] Mr. Baily originally proposed that each elector should only vote for one candidate, and in that form his method was more open to the objection that it gave too much power to the most popular candidates than it is when associated with cumulative voting. When an elector can only vote for one candidate, the most popular candidates of each party will probably get a disproportionately large number of votes, if the party makes no arrangement to prevent this; and as it would not be worth while to make such arrangements when the transfer by lists method secured that all votes given to one candidate of a party would be utilised to the utmost for the rest, it might easily happen that a popular candidate's surplus votes were by themselves sufficient to elect the first or first and second candidates on his transfer list. But with cumulative voting it is not likely that even the most popular candidates will get a large number of surplus votes. Most electors will prefer to divide their votes, giving the most popular candidate of their party only as many votes as he is likely to want, and distributing the remainder according to their own preferences, instead of allowing them to devolve according to that candidate's transfer list. Even if each elector had only a single vote, distributing votes according to the transfer lists of the candidates would not really give the candidates, as individuals, any great influence on the election. The electors who voted for a particular candidate would know beforehand how his surplus votes will be distributed, and if they were dissatisfied with his transfer list, they would probably vote instead for another candidate of their party whose transfer list was more to their taste. Moreover, a candidate in making up his transfer list would bear in mind that he had not only himself to please but his supporters, and would probably consult his committee as to what transfer list was likely to secure him the largest number of votes; just as a prime minister in forming a cabinet is not influenced so much by his own personal preferences as by the opinions of different sections of his party. Under majority voting popular candidates frequently exercise very considerable influence on the selection of the other candidate or candidates who are to stand with them.

Limited Transfer with Additional Lists.

To meet the objections taken to his plan, on account of the distribution of surplus and useless votes being regulated altogether by lists prepared by the candidates, Mr. Baily subsequently proposed to allow a certain number of electors to propose an additional transfer list for any candidate, so that the electors, when voting for a candidate, might give their votes either to his original transfer list, or to that proposed by these electors. [191] Mr. Baily described the process he recommended for this purpose in a second pamphlet ("Proportional Representation in Large Constituencies." Ridgway. 1871). Table VIII represents what I consider the best mode of carrying out this process. The candidates and the number of votes each obtains are the same as in Table VII. The only difference is that additional lists marked with asterisks have been proposed for three candidates, A, C, and G, and have received part of the votes given to those candidates. The upper half of the table contains the lists and the votes given for them, and the mode in which they are redistributed, and the lower half records how many votes each candidate has obtained, with references to the columns from which they came to him.

The quota is found as before to be 3,674.

As A and B are the only candidates with surpluses, and B's surplus is the smallest, it is distributed first, and 698 E in column (3) denotes that it is transferred to E, and 698 (3) in E's column of votes denotes that 698 votes are come to E from column (3). Next A's surplus is divided proportionally between the two A lists, as the votes belonging to one list are to be transferred to F, and those belonging to the other list to G. Out of the 1,403 votes in column (1) 683 are to be redistributed, and out of the 5,335 in column (2) 2,381, because—

$$\frac{683}{1403} = \frac{2381}{5335} = \frac{3064\ \mathrm{A's\ surplus}}{6738\ \mathrm{A's\ total\ votes}}$$

Table VIII [192]

Columns	1	2	3	4	5	6	7	8	9	10
Candidates	A	A*	B	C	C*	D	E	F	F*	G
Transfer Lists	F G C D	G F D C	E C D	D A F	G D A	C A G	B D C	A G C	A D G	A F D
Votes polled	1,403	5,335	4,372	2,580	1,007	2,456	2,050	1,003	750	1,084
B's superfluous			698 698 to E 0							
A's superfluous	683 683 to F 0	2,381 2,381 to G 0								
F excluded	683 209 to G 474 87 to C 387 387 to D 0							lost	750 to D 0	

Quota	A	B	C	D	E	F	G
6,738	1,403(1	4,372(3	2,580(4	2,456(6	2,050(7	1,003(8	1,084(10
4,372	5,335(2		1,007(5			750(9	
3,587							
2,456	6,738		3,587			1,753	
2,050	3,674 Q	3,674 Q					
1,753							
1,084	3,064 S	698 S					
6)22,040	683(1S						
	2,381(2S						
$3{,}673\ \frac{2}{6}$							
3,674 Q							
			87(1	387 (1	698(3	683(1	2,381(2
				2,843	2,748	2,436	3,465
				750(9			209(1
				3,593			3,674
	elected(2	elected(1	elected(4	elected(5 by majority		excluded(1	elected(3

The 683 votes are distributed before the 2,381 in accordance with the rule for distributing the smallest lots of votes first. When the 683 votes have been transferred to F, and the 2,381 to G, F is excluded as having fewest votes; and of the votes thus set free, the 683 retransferred to A are distributed first; of these, 209 are transferred to G, and 87 to C, raising each of these to the quota, and the remainder to D. [193] When the 750 votes in column 9 have been transferred to D, there are no more votes to transfer. As D has 3,593 votes, and E only 2,748, D is declared elected. The result, as compared with Table VII, is that G is elected instead of F in consequence of a large majority of A's voters having preferred the transfer list (2) which placed G above F. The increased trouble caused by the additional lists, consists, (1) in having to deal with some additional columns; and, (2) in distributing proportionally the superfluous votes of candidates who have obtained more than the quota, and have more than a single transfer list. Any undue multiplication of lists might be checked, (1) by requiring that the proposers of an additional list should contribute a certain sum towards the expenses of the election; and, (2) by providing that if any additional transfer list did not obtain a certain minimum of votes (say half the quota), what votes it had obtained should be assigned altogether to the first candidate named therein, instead of a proportionate share of them being distributed as superfluous.*

If under either of these transfer by lists methods a candidate should be proposed in his absence, or should for any reason omit to lodge a transfer list, his proposer and seconder might be allowed to lodge a transfer list for him.

Results of Preferential Voting and the Transfer by Lists Method.

Either with preferential voting, or under either of these transfer by lists methods, every individual elector will be safe of having his vote or votes employed to the best advantage to carry out his wishes, and every party or section of a party will be able to obtain a share of the representation in proportion to its numbers without any previous arrangement or organisation. Moreover, all these methods are free from the various evils produced by majority voting. We shall have an approximately proportional representation of all parties, and the relative strength of these parties in the representative assembly will only fluctuate in proportion to the changes of opinion in the constituencies instead of very much exaggerating them. [194] Elections will but seldom turn on narrow majorities, and as it will be very difficult to foresee their doing so, there will be little or no temptation to corruption, extravagant expenditure, or gerrymandering. Whatever is artificial in our present division into two parties will disappear, and members will be much more free to act according to their individual opinions, instead of suppressing them when they differ from those of the leaders of their party.

Filling up Vacancies.

One of the minor difficulties connected with proportional or any minority representation, is the filling up of vacancies. If a minority member dies or vacates his seat, as happened in London in 1869 in the case of Mr. Bell, and in 1880 in the case of Lord Ramsay, a fresh voting for a single member leads necessarily to the election of an additional representative of the majority. Mr. Baily's plans include a solution of this difficulty. When a representative vacates his seat, the table in which the distribution of votes at the general election was recorded is taken out, and it is ascertained what votes are unrepresented. Suppose for instance that Table VII, above the thick black line, represents the distribution of votes at the general election, and that C's seat has become vacant, then the votes unrepresented will be 3,587 original votes of C, 87 votes transferred from A, 922 other votes of A, 2,050 original votes of E. and 698 votes transferred from B, and as the A and C votes are all transferable to G, G will have transferred to him sufficient votes to make up the quota, and will be elected in C's stead. The new member is almost certain to belong to the same party as his predecessor, and usually he will be the first unsuccessful candidate on his predecessor's list. The same mode of filling up vacancies might be employed with preferential voting, provided the voting papers have been preserved, but it would, of course, involve a fresh sorting of all the voting papers which were unrepresented.

If this mode of filling up vacancies were adopted, the candidates under the limited transfer by lists

* Mr. Baily thought that distributing the superfluous votes proportionally among the different lists, would make the whole process too complicated, and therefore he proposed that of the several lots of votes given for different transfer lists headed by the same candidate, the smallest lot should be first applied to make up the first candidate's quota, and then the next smallest lot and so on, leaving the largest lot or lots to be distributed as superfluous. But this does not seem to me fair. The electors are invited to choose between several transfer lists headed by the same candidate, but whichever list they may select, their votes will really go according to that transfer list which obtains the largest number of votes. Moreover, if any advantage is given to the list with the larger number of votes, there will be a temptation to manoeuvre to obtain this advantage.

method, or with preferential voting the electors, would usually add some additional names to guard against the possibility of their lists being found exhausted when a vacancy occurred.

I have said nothing in this paper about the method of free lists which has been for the last fifteen years advocated by the Geneva Association for Electoral Reform, and has been greatly altered, and on the whole improved, by M. Morin, M. Naville, M. Gfeller of Lausanne, and others, because this method has never become at all popular in England, and it seems to me, even in its most improved state, very inferior in accurate fairness, as well as in facility of employment by both electors and party managers, to either preferential voting or limited transfer by lists. [195]

Size of Constituencies.

Before concluding I must say a few words upon the mode in which these proportional representation methods should be applied to the formation of a representative assembly. I consider that almost all the evils incident to majority voting are traceable entirely to elections being contests between only two parties and left to be decided by small margins of voters, and would be cured as completely with constituencies each returning seven or even five representatives, as with any larger number. The only advantages so far as I am aware to be anticipated from an increased number of representatives being elected by the same constituency, or even from Mr. Hare's scheme for uniting all the electors of the United Kingdom into one constituency, are (1) that it would probably render the representation of different parties and sections of parties more accurately proportional; and (2) that it would enable some small scattered minorities to obtain representatives. But the same fortuitous causes which under majority voting usually prevent one party from making a clean sweep of the constituencies, and frequently procure parliamentary spokesmen for insignificant minorities would continue in operation under proportional representation with five-member or seven-member constituencies. At the first two trials of cumulative voting in Illinois in 1872 and 1874 the representatives elected were divided between the two parties almost exactly in proportion to the voters supporting those parties respectively, and this was with constituencies each returning only three members.* It is moreover very questionable whether more than a very limited number of highly educated electors would be competent to make a good use of the greater liberty of choice afforded through the constituency having an increased number of representatives. If a limited number of candidates are proposed for a constituency with a limited area, the less educated electors have opportunities of seeing their candidates and hearing them speak, and they also hear and read discussions about them among their neighbours and in the local papers. [196] But if they should be perplexed by having too many representatives to elect, they would be afraid of choosing for themselves, and would adopt blindly any list of candidates that might be recommended to them by their party leaders. But while I submit that constituencies with seven or even with five representatives are sufficiently large to secure the benefits to be anticipated from proportional representation, I should not object to increasing the number of representatives to anything not exceeding (say) fifteen, with the view of uniting in the same constituency the whole of a borough or county the leading members of which have common interests and common places of meeting. In 1871 Mr. Walter Morrison, Professor Fawcett, and Mr. Hughes, introduced into the House of Commons a proportional representation Bill for England and Wales, the schedule to which gives a good idea of how constituencies for proportional representation might be formed, though some of the county constituencies seem to me too large, having regard to the scattered population and the difficulties of communication in rural districts.

Present Importance of Subject.

In conclusion I would submit that this question of proportional representation has special claims to consideration at the present time, when a further extension of the suffrage in counties and a further redistribution of seats are impending within the next two or three years; and this for several reasons :— (1) It will be much easier to introduce proportional representation, when an extensive redistribution of seats is demanded on other grounds; (2) the difference between the borough and the county suffrage

* In 1872 the republicans obtained 85 representatives out of 153 and the democrats, or, as they called themselves in Illinois, the liberals, 68. At the simultaneous presidential election Grant, republican, obtained 240,387 votes, and Greely, democrat, 183,669, which would correspond to 86.7 republicans to 66.3 democrats. In 1874 the republicans obtained 69 representatives with 164,184 votes, and the other party 84 with 196,473 votes. The exact proportional division would be 69.7 to 83.3. If the election had been by majority voting the republicans would have had 99 representatives to 54 in 1872, and 54 to 99 in 1874 ("Chicago Times," 20th November, 1872; "Chicago Tribune," 21st November, 1872, 24th November, 1874). Both in 1872 and 1874 there were about seven cases of individual constituencies getting misrepresented, through the defects of cumulative voting, but in both years these compensated each other almost completely.

has ever since 1832 been the chief obstacle to one party sweeping the constituencies and obtaining an overwhelming majority; (3) the larger the proportion of uneducated electors admitted to the franchise the more important it becomes to make the instrument with which the electors are supposed to control the government of the country easy to use and difficult to abuse.

DISCUSSION *on* MR. DROOP'S PAPER. [197]

THE CHAIRMAN (Mr. R. Biddulph Martin, M.P.) thought the paper which had been read by Mr. Droop was one of great interest, but it required very considerable study before it could be thoroughly appreciated, and as he had not had an opportunity of reading it before coming to the meeting, he hoped to be excused if he abstained from going into a critical discussion of the subject, which was undoubtedly one of great national interest, and could not be too often discussed in such a Society as the Statistical Society of London. The statement made in the paper with regard to the fact of majority voting at Geneva completely excluding the minority ought to be thoroughly digested, as well as that respecting the election of the presidents of the United States. There was another important fact brought out, in respect to the general elections of 1874 and 1880, which was worthy of special notice, inasmuch as it showed the great uncertainty of parliamentary elections. The tables given he thought would be perused by all interested in the question of elections with considerable interest; whilst Mr. Droop had given them a little insight into a subject that must at no distant time occupy the attention of the country, namely, the instability resulting from and the corruption due to narrow majorities. The disclosures made in several parts of the kingdom of late were simply disgraceful. It was of the greatest importance, he thought, whether the electors wished the affairs of the country to be carried on by men of liberal or conservative opinions, that they should know that the men they elected to send to parliament were men elected by a thinking and intelligent body of electors, instead of by persons who neither cared for nor knew the value and privilege of a voice in the representation of the country, as had been too often the case in recent times. By the means set forth in the paper that Mr. Droop had read, he thought it would be possible practically to get rid of these anomalies in elections, and to that extent the paper would be rendering a considerable service to the country. It was a subject worthy of their consideration. The following statement was made in the paper:— "This giving the minority a share of the representation has, I consider, had a beneficial effect by counteracting the tendency of each of our two political parties to become specially connected with particular kinds of constituencies and to almost exclude from other kinds." He (the speaker) thought this to be a very important circumstance. He fancied there was a tendency, to which he had never seen any particular attention drawn, election after

election, to seek for candidates disassociated from the particular constituencies which they proposed to represent. It was almost universally the custom in olden days that a candidate having some local connection was returned; that was to say, that he was either introduced by the patron of the borough, or was known to his constituents by residence or some other local tie. [198] He might now say this custom was gradually being broken through. At the last election there were more candidates, not only for boroughs but for counties, totally unconnected with the places they contested than on any previous occasion. That tendency seemed to be increasing, and if it did so, he need hardly say it would remove one of the greatest objections raised to electoral divisions, and at once give occasion for the creation of electoral divisions rather than local centres, where every constituency puts forward as its representative a man who might be supposed to represent its own particular opinions, irrespectively of the views of the same class of people in another part of the country, or indeed in another part of the same county. There would then be no reason why a man coming from Cornwall should not be elected as member of parliament for some borough in Cumberland, or any other part of the north of England, or why he would not serve the interests of his constituents as well as a man having local ties and interests. In conclusion, he would say that the paper was an admirable one, and the Society must feel indebted to Mr. Droop for the trouble and pains he had taken in bringing the question of electing representatives so ably and comprehensively under its notice, and in the name of the Society he ventured to tender Mr. Droop its most hearty thanks.

Mr. THOMAS HARE next addressed the meeting. He said he had had the honour of reading a paper on the present subject before the Society twenty years ago, which would be found in the record of its transactions.* In that paper, as well as in one read at the Manchester Congress of the Social Science Association in 1879,† he had pointed out briefly the nature and degree of change which his proposed system of election would effect both in action and result, first, in regard to the election individually and collectively, secondly, in all local and other constituencies, and thirdly, as regards the candidates for seats in Parliament. The proportional system of election left the laws which conferred the suffrage entirely unaffected, its object being to give the voter a more extensive choice of candidates, whilst every voter in the kingdom would have the same political right and power— a power of joining with others of the same opinions to elect the member who was to represent them, nothing being required from the voter above the capacity of anyone who could now vote. The system would give an impulse to every upright and patriotic sentiment, both of the individual voter and the borough or other constituency. After explaining the nature of the voting papers, Mr. Hare went on to say that the mode of computing and appropriating the votes would not prove a more complicated process than that of sorting and distributing the letters at the post office, and far less so than the work daily gone through at the bankers' and railway companies' clearing houses. What they wanted in an alteration of the present system of elections was to put an end to the utterly unjust inequalities of the present distribution of electoral power by rendering it in every district the same, and at the same time to cause every thoughtful voter to feel it to be his absolute duty to record his vote, as the vote would be certain to have its effect, and not as now, to be often useless or thrown away. [199] At the same time, corruption, at present fostered and promoted by the unnecessary and artificial value given to the votes within a limited area, would be sapped at its very root. It was not necessary to go into a critical analysis of Mr. Droop's paper, which they could not possibly deal with in the time at their disposal. The details of the system might be varied. Different forms of application had been suggested. He had shown in the paper printed in the transactions of this Society that the system of cumulative voting could be universally applied preferentially, and that it would not be more difficult to compute the votes and ascertain their result at the end of every election than it is to manage the affairs of other departments of the State.

Mr. WALTER BAILY did not concur with Mr. Hare in his view of the possibility of carrying out on a large scale the work of electing representatives. Mr. Hare had compared it to the work of the post office, but there was a great difference between duties performed day after day in the same way and duties performed at intervals of several years. When they had to deal with great numbers it was absolutely essential, he thought, that what each individual had to do should be made as simple as possible, because people were very apt to make mistakes. Even in the present system of the ballot there was considerable difficulty in sorting the papers, although each member had only to put down two or three crosses on his paper. In a scheme which he ventured to suggest some years ago, he pointed out that less labour would be involved and greater accuracy would be at-

* Vol. xxiii of the Society's Journal, p. 337.

†"Distribution of Seats," & c., published by the Political Tract Society, 31, Tavistock Street.

tained by the adoption of lists, giving to the voter as many lists as there were candidates, so that he would simply have to put his cross on the list of the candidate he desired to vote for, which the enumerator would consign to its proper heap; and he ventured to think that such a plan would not entail much labour, and would be sufficiently accurate for practical purposes.

Mr. JASPER MORE thought, in regard to Mr. Hare's statement, that it would be as simple a matter to carry out what seemed at first sight to be a complicated piece of machinery as it was to carry out the postal arrangements of the country; that there was this difference between the two questions; whereas in the one case the postal system was conducted from day to day by officials trained in their several duties, the question of dealing with election matters would arise, as a rule, only once in the course of four or five years, and it was doubtful whether the same efficiency could be attained in the one case as in the other. The gentleman who had read the paper had touched upon many points connected with electioneering which were certainly most interesting, especially the question of corruption and instability resulting from narrow majorities. One of the most trying things was to find a constituency evenly balanced. [200] It became absolutely certain that if one side were guilty of bribery and the other not, the bribing side was sure to get in; and, therefore, there was no such thing as a fair vote. That being the case, he thought, was a strong argument for supporting Mr. Hare's view being carried into effect. Further, the partial use of three-cornered constituencies necessitated some change. If you were the adopted candidate of the Liberal party in Herefordshire or Oxfordshire your return was inexpensive and safe. If you lived in any county adjoining you had to spend £5,000 a week on solicitors and public houses, and had to lose the election if you would not sink to much lower expedients. Mr. Hare seemed to think the House of Commons was as anxious to make men virtuous and high-minded as he was, but unless Sir Henry James's Bill gave new courage, no member could hitherto vote against solicitors and public houses if he ever wanted to sit in the House again. He must confess, however, with regard to the present state of parliamentary elections, that there was an amount of ignorance among country constituencies, without any further reduction of the franchise, which people living in London or other large centres of thought and enterprise could hardly be aware of. By way of illustrating this fact, he might mention a circumstance that came within his own knowledge, and closely concerned himself. He was a candidate for a county constituency at the time when the disestablishment of the Irish Church was one of the questions before the country, and on that occasion 140 voters were taken in three parties to vote against him, because he had once voted for that measure. In all their houses there was a picture hung up representing Mr. Gladstone in the act of burning the Protestants, whilst he (the speaker) was represented as standing by calmly looking on. And on the polling day these people took up their place in the churchyard, where they stood for about three hours, and on one of his supporters going to ask them what they were waiting for, they replied they were waiting for the end of the election, believing that he should be returned, to see which way the spire of the parish church would fall, because they said they had been told that he was going to destroy the church, by which they understood their own parish church. With such material as that to deal with it would be rather a difficult matter to carry out a complicated system of election.

Mr. ROWLAND HAMILTON thought the last speaker had given an illustration very much to the point, of the ignorance prevailing among some constituencies. It was a very old subject of complaint that the great difficulty in election matters was that very many voters really had no view of their own, or any access to information likely to bring home to them the merits of the choice which they had to make. Certainly this would not be remedied by throwing the whole country into one great constituency. He apprehended that if there had been an election some years ago contested on the one hand by the Prime Minister, and on the other by "the gentleman lately languishing at Dartmoor," the latter might have commanded the largest number of votes. [201] Writers of eminence would always command the suffrages of many, but the question was whether they would not exercise more and better influence through the press, than they could do by attempting to engage in the rough practical work of legislation in the House of Commons. The history of the last two or three decades showed some striking instances of this. After all, we had to bear in mind that the House of Commons was and ought to be necessarily an extremely practical body, and therefore was not the best and most appropriate arena for the discussion of speculative politics. He considered that they could not dispense with the local element in representation, but notwithstanding all the bitter arguments that had been urged against the representation of minorities, he was in favour of those expedients by which substantial majorities in large constituencies should be able to secure the return of a

member of their own choice. The minority of a large town was not represented efficiently or satisfactorily by the member for a small rural town, even though nominally on the same side of politics. It seemed more reasonable to expect that voters could be led to take a true interest in public affairs through the training afforded by the local election of their own representatives, than by treating the whole kingdom as one large constituency.

Mr. W. J. BOVILL, Q.C., thought the Society was much indebted to Mr. Droop, and particularly for this, that he had shown that voting by majorities was the only real mode of voting. Notwithstanding the high authority of his friend Mr. Hare, he (the speaker) was of opinion that the whole question must finally resolve itself into one of majorities. If a man said he preferred first A, and next B, and then C, and so on, it simply was a question of majorities. It really appeared to him, that reviewing the whole thing, Mr. Droop conclusively proved that representation by majorities was the only substantial and practical representation that they could have in the election of members to the House of Commons.

Mr. DROOP briefly replied to the various speakers. He pointed out that he had said in his paper that the methods for having minorities represented might well be limited to constituencies with five or seven representatives. He was not at all in favour of having one constituency for the whole kingdom; or to use words which would not clash with Mr. Hare's different use of the word "constituency," of having the votes of the whole kingdom distributed together and treated in a lump. A great deal had been said about the difficulties of applying the different methods of voting described, but this was to a great extent founded on misconceptions. As regards cumulative voting, he presumed it was settled by experience that individual electors had no real difficulty in voting according to that method. The only difficulty was the uncertainty how a party should vote to bring about the best result. In his friend Mr. Baily's plan, all the elector had to do was to vote as in cumulative voting, whilst the calculations for distributing the votes could be done in half-an-hour on a sheet of paper. [202] In Mr. Hare's plan, all an elector had to do was to select a certain number out of the candidates and put them in order of preference, or else supposing that the names of all the proposed candidates were printed on the ballot papers, he would only have to mark them 1, 2, 3, 4, according to the order of his preference. It would be the same thing as marking the votes he gave to each candidate in cumulative voting. But the distribution of a large number of votes, according to Mr. Hare's plan, did seem to him to involve serious difficulties. For the individual elector, however, these new methods were much easier than majority voting. It was much easier for an ignorant elector to find out some one or two persons whom he could trust to represent him and judge and vote for him than to decide between two candidates, or three proposed by rival parties, candidates who were really not going to act according to their own opinions, but so as to be in harmony with great parties of the kingdom. It was very difficult indeed for an uneducated man to judge aright for which of these parties he should vote. It would be much better for him to choose a candidate whom he knew and trusted, and who would be free to act according to his individual opinions. In conclusion, he would just say, in reply to a question put to him with respect to the filling up of vacancies, that he had fully dealt with that subject in his paper.

Editor: This reprinting uses modern typographical conventions.

Review — Elections in split societies

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1 Confrontation or cooperation?

Plurality election in a single seat constituency ("first-past-the-post") is the common election method both in USA and Britain. In their presentation and promotion of various methods of preferential election, i.e. of methods based on a ranking of the candidates from each voter, most American and British writers choose the Plurality election as the target for their first shots. It is considered to be too competitive, confrontational and "majoritarian". Democracy should be cooperational and all-inclusive. This is also a basic attitude behind "Designing an All-Inclusive Democracy" by Peter Emerson *et al* [1].

Seeing it from the outside, this writer still thinks that the Plurality election serves democracy at least tolerably well. After a series of elections, the mechanism behind "Duverger's law" has a noticeable effect. Two dominating parties emerge, a ruling party and a serious challenger. Then the Plurality method does in fact work like a majority method. As main criterion for an election method serving tolerably well, I have in mind that elections occasionally lead to a transfer of power. Lord Acton's words, that "Power tends to corrupt; absolute power corrupts absolutely", may be over-quoted, but they contain a basic truth. Election methods that, perhaps in the name of consensus, leave the power with a slowly changing coalition in the political center, should be compared to methods that occasionally let a fresh wind blow through the offices of power.

Where plurality elections seem to work tolerably well, the political landscape has one important feature: There is a "median segment" of voters that are not permanently committed to any of the two major parties. Since the main purpose of an election campaign then is to obtain support from the median segment, this purpose is likely to impose bounds on a ruling majority's abuse of power. But of course, seen from the outside, over the fence, both the grass and the political system may look greener than when seen from the inside. Moreover, significant improvements that also preserve the best sides of the election methods in use may well be possible.

Emerson is primarily concerned with societies that are deeply split politically along ethnical, cultural, or religious lines. There is no median voter segment, and some parts of the society are in reality never included in political decisions. The book is dedicated "To the victims of majoritarianism, everywhere, and especially to those who died in such conflicts in Northern Ireland 1969-94, Rwanda 1994, and the former Yugoslavia, 1991-99". May suitable methods of voting and election create an "all-inclusive democracy" which harnesses the democratic forces from all parts of the society and avoids conflicts or handles them in a non-violent way? Peter Emerson *et al* are optimistic enough to think so. Their search for methods that will work in split societies deserves to be taken seriously.

2 Some criteria for assessing election methods

In order to discuss the proposals of Emerson *et al*, I will refer to some facts and viewpoints concerning

- what preference profiles are realistic;
- how some main voting/election procedures behave under straightforward (i.e. non-strategic) voting when an extra candidate is nominated;
- how annoying the most common methods of strategic voting really are.

2.1 What is a realistic profile?

Choose 3 candidates, A, B, and C in a real preference profile. The sizes of the 6 ranking categories ABC, ACB, CAB, CBA, BCA, BAC are usually quite well described with a spatial "pie-sharing"

For this publication, see www.votingmatters.org.uk

model. In Figure 1a, imagine 10000 voters are uniformly distributed inside the unit circle, and let the candidates be represented by their "ideal points", the corners in the "candidate triangle":

A: (-0.15, 0.30), B: (0.1, 0.55), C: (-0.15, -0.40).

The voters rank the candidates according to distance, which means that e.g. the mid-normal between A and C separates the AC-voters from the CA-voters. In Figure 1a) the profile is
ABC=1630, ACB=0862, CAB=4284, CBA=0275, BCA=0123, BAC=2826:

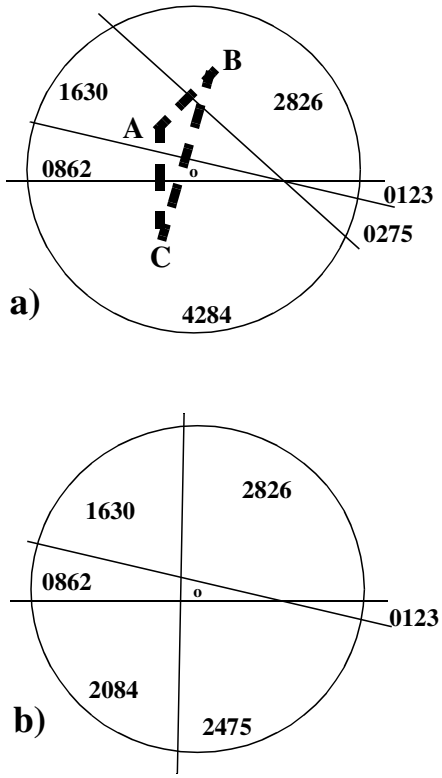


Figure 1 The pie-sharing model fits well in a) with a clearly shaped candidate triangle $\triangle$. It does not fit so well in b) with a relatively large triangle T without voters (and a Condorcet cycle).

A unique "pictogram" may always be fitted exactly when 3 secants are used without the restriction that they be concurrent like the mid-normals [5]. In Figure 1b) 2200 voters have moved from CAB to CBA, and in the pictogram the secants form a triangle T covering 1.44% of the circle area.

In the exact pictogram of the profile in Figure 1a) T covers 3×10^{-9} of the circle area; because of the roundoff to integers, the pie-sharing model does not fit exactly.

In real election profiles with straightforward voting from a large number of independent voters, we should expect a much smaller T than in Figure 1b). There T also contains the circle center, which is a necessary condition for a Condorcet cycle. Generally T is small and the pie-sharing model fits quite well. Therefore Condorcet cycles are very rare in elections with many independent voters.

The single-peak condition, e.g. that no voter ranks A last, means perfect pie-sharing with the secants intersecting on the circle periphery. In Figure 1a) the profile is reasonably close to single-peak, with very small voter groups ranking BCA or CBA. Only a major change of the profile may make it cyclic.

When T shrinks to a point, i.e. under perfect pie-sharing, the shape of the *"candidate triangle"* $\triangle$ in Figure 1a) is uniquely determined by the profile, but $\triangle$ may be scaled up or down. For a meaningful interpretation of the location of the ideal points of A, B, and C, we therefore need more information from the voters than what is conveyed by their ballot rankings. Given adequate additional information, $\triangle$ is an average of the voters' perceptions of the political landscape, and thereby itself a feature of the landscape.

If the candidate triangle $\triangle$ is chosen so that the mid-normals intersect outside the circle, the figure is not a "pictogram" according to the definition [5]. However, the profile still allows a unique pictogram with secants intersecting on the circle, i.e. perfect pie-sharing, but with a differently shaped $\triangle$.

In the profiles considered above, there are no cases of equal preference or incomplete ballots. I agree with Emerson *et al* that it is too strict to demand all ballot rankings to be both complete and antisymmetric. All voting methods considered here may well be extended to include all transitive ballot rankings through the principle of symmetric completion; candidates not mentioned are then considered as sharing last rank, and the ballot is counted as N miniballots of weight 1/N, one miniballot for each possible consistent extension of the submitted ballot ranking to a linear ranking.

2.2 What happens to A and C when B enters the election?

To explore the properties of an election method we pick 3 candidates A, B, and C, fix the ideal points of A and C, and let the ideal point of B vary over the unit circle. Based on the empirical fact that profiles from real elections are pretty close to perfect

pie-sharing, we focus on cases like Figure 1a), and determine the profile by drawing the 3 mid-normals.

In Figure 2abcd) the ideal points of A and C are as in Figure 1a). Thus in an A vs C contest A always wins 5318 - 4682. We look at how the location of the ideal point of B influences this outcome in an election with the rules of

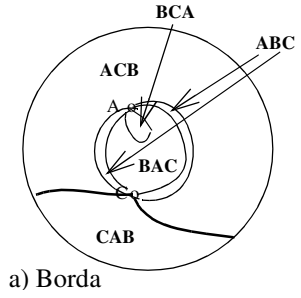
a) Borda; b) Condorcet; c) AV (=Instant Runoff); d) Plurality (=First past the post).

Compare first Borda and Plurality. The CAB area of Figure 2a) shows that if B enters the race in the "South", then C becomes Borda-winner instead of A. The CAB- and CBA-areas of Figure 2d) shows the opposite effect. By entering in the "North", B becomes a "spoiler" for A, turning C into Plurality winner instead of A. Figure 1a) is an example: the ideal point of B is chosen in the CBA-area of Figure 2d). With the chosen ideal points for A and C, no location of the ideal point for B can turn B into a Plurality winner.

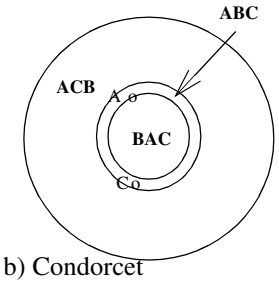
Figure 2b) shows Condorcet's relation. (In order to get an election method, one needs a rule to straighten out cycles. A cyclic triple instead of a winner is a rare event in real election profiles, Several overlapping cyclic triples will be extremely rare.) In a pairwise contest the winner is the candidate with ideal point closest to the circle center; thus the ideal point of a third candidate is irrelevant for a pairwise contest. The Condorcet winner [loser] changes when the ideal point of B crosses the circle through A [C].

Figure 2c) shows what happens in AV. The candidate who is last in Plurality (i.e. has the smallest number of first ranks) is eliminated and given third place. The critical curves are the closed curves through the ideal points of A and C in Figure 2d). Location inside the CBA-area means that A becomes eliminated, and B may win, but there is still an area in the North where C wins. Figure 1a) is an example of C becoming AV-winner.

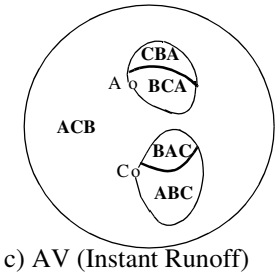
Choosing other ideal points for A and C may lead to more complicated graphs in 2c) and 2d), but one main feature is common: In Borda it is an advantage for a side to have two or more candidates. In Plurality the spoiler effect makes it dangerous for a party to have two or more candidates; in AV the danger is reduced but not completely eliminated.



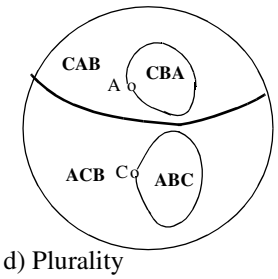
a) Borda



b) Condorcet



c) AV (Instant Runoff)



d) Plurality

Figure 2 The ideal points of A and C are fixed. If B does not enter, A beats C 5318 - 4682. The figures show the rankings under 4 election methods according to the location of B's ideal point. Thus, in Figure 1a) it is at (0.1, 0.55) and belongs to the ACB-regions in Figures 2a) and 2b) and to the CBA-regions in Figures 2c) and 2d); A is then Borda-winner and Condorcet-winner but Plurality-loser, and after elimination of A, C becomes AV-winner.

Borda and Condorcet elections may be arranged with matrix ballots that are added. In a 3 candidate election a voter may choose between 6 3×3 matrices. In Figure 1a) the profile has 1630, 0862, 4284, 0275, 0123, 2826 respectively of the following matrix ballots

	A	B	C
A	**0**	1	1
B	0	**0**	1
C	0	0	**0**

	A	B	C
A	**0**	1	1
B	0	**0**	0
C	0	1	**0**

	A	B	C
A	**0**	1	0
B	0	**0**	0
C	1	1	**0**

	A	B	C
A	**0**	0	0
B	1	**0**	0
C	1	1	**0**

	A	B	C
A	**0**	0	0
B	1	**0**	1
C	1	0	**0**

	A	B	C
A	**0**	0	1
B	1	**0**	1
C	0	0	**0**

Adding them together, we get the totals for all pairwise contests. The matrix sum is all the information that is needed for a Condorcet or Borda tally. From Figures 1a) and 1b) we get respectively the two following matrix sums in Table 1:

a)	A	B	C	Borda
A	**0**	6776	5318	12094
B	3224	**0**	4579	07803
C	4682	5421	**0**	10103

b)	A	B	C	Borda
A	**0**	4576	5318	09894
B	5424	**0**	4579	10003
C	4682	5421	**0**	10103

Table 1 Borda and Condorcet counts with the profiles of Figures 1ab). The Borda sums are the row sums; each of the 1630 ABC-voters in Figures 1ab) contributing 2 points to A and 1 point to B etc.

Borda and Condorcet elections may both be arranged as a series of pairwise elections in a round-robin tournament. Both methods also include two cyclic ballots ("ABCA" or "ACBA") in their natural domain, but noncyclic ballots may of course be prohibited by an ad-hoc rule. A cyclic preference is not necessarily irrational: consider e.g. a TV-station arranging a round-robin tournament of pairwise discussions between party leaders and inviting the viewers to vote each time on who was best! It is different if I am asked to measure the candidates by a common "yardstick", e.g. how good I think each one would be as a president. Then I should be able to submit a transitive ballot preference.

The 3×3 matrix sums do not reflect whether the ballot rankings are transitive or not. The high aggregation level of Borda makes it so insensitive to profile structure that it would give a transitive result even if a majority should have voted cyclically "ABCA".

In an AV election it is essential for the tally (counting process) that each ballot ranks the candidates, because when the (current) top candidate of a ballot is eliminated, the ballot must tell what candidate the voter's support should be transferred to. Because of the reduced spoiler effect, AV is visibly an improved version of Plurality. There is also a trace of the Condorcet in Figure 2c): the areas CBA and ABC from Figure 2d) are cut in two by circles from Figure 2b).

Both Borda and Condorcet are in fact based on pairwise comparisons. A Condorcet method chooses the Condorcet winner when one exists, and is otherwise characterized by how it handles the rare event of cycles. It will favor the candidate closest to the political center. In a deeply split society, say in groups of 40% and 60%, the real competition is between the majority candidates, but if candidate X is more acceptable to the minority than Y, X will get a huge lead on Y even before the majority votes are considered. This creates an incentive for majority politicians to appear as tolerable to the minority. That appears to me as an argument for Condorcet, i.e. for any Condorcet method. Borda may have a similar effect but distorts it in favor of clusters of candidates that are politically close, and it is wide open to strategic voting (cf section 2.3 below).

I think Condorcet is not the best choice in a society with a large median voter segment. It discourages diversity by picking the most central candidate, thus giving all candidates an incentive to ap-

pear noncontroversial by avoiding difficult topics. However, Condorcet may be useful in split societies where diversity is firmly established.

AV (Instant runoff) is based on the voters' rankings and works through eliminations, gradually concentrating the voter support on candidates that are central to a growing section of the electorate, until one candidate obtains 50% support. Figures 2cd) show that a central candidate has a much better chance to win with AV than with Plurality. To win with AV it is important to be a balanced candidate who attracts a primary following large enough to avoid elimination but who also is considered tolerable enough to obtain subsidiary support from other parties; B may be eliminated for being too central or too peripheral!

With AV in a deeply split society, the minority voters support their own candidates until they are all eliminated, and in the meantime the most tolerable majority candidates may also have been eliminated. AV in itself appears neutral with respect to bringing the two sides together or taking them further apart. The prevailing attitudes in the majority will decide: If the transfer of votes within the majority is generally towards candidates more acceptable to the minority, AV should serve unification better than Plurality. Similar considerations apply to STV (multi-seat), where both sides may influence the outcome.

2.3 Strategies

Figure 2a) shows how the outcome of a Borda election with two candidates, where A would win over C, can be turned into a win for C by "strategic" agenda manipulation from C's party: The recipe is to introduce a third candidate B in the South, so that there will be a large number of CBA-votes but few ABC-votes. Dummett [3] considered modifications of the Borda Count in order to neutralize this effect. If one could move the curve separating ACB and CAB in Figure 2a) so that ACB grows and CAB is reduced one would get closer to Figure 2b). It is natural to ask why such modification of Borda should have any advantage over Condorcet.

Here the voters are supposed to vote in a straightforward way, according to their own assessment of their "political distance" to the candidates. However, inside the Arrovian framework of a fixed voter set and a fixed candidate set, voting strategies may be available to a voter or voter group: according to Table 2, straightforward voting causes OW to win, but by deviating suitably from the straightforward ballot preference, a voter group may cause NW to win, although NW is preferred to OW in the group's straightforward preference.

The debate on strategic voting often concerns three particular types of such voting strategy. In a 3-candidate election they are as follows:

	Straightforward vote	OW	Strategic vote	NW
Strategy 1	XYZ	Z	YXZ	Y
Strategy 2	XYZ	Y	XZY	X
Strategy 3	XYZ	Z	YXZ	X

Table 2 Three voting strategies that all exploit a violation of Arrow's IIA-axiom: the original winner OW is replaced by the new winner NW without NW passing OW in any ballot.

Among the strategies in Table 2, only strategy 1 is available in Plurality elections. The voter's problem in a Plurality election is often whether to vote "expressively" for X, who has no chance to win, or to vote "instrumentally" for Y, who has a chance to beat Z. The choice may be difficult. Two popular names for strategy 1, "favorite betrayal" and "compromising" indicate what cross-pressures many voters are exposed to.

For XYZ-preferrers who actually vote YXZ there is no clear distinction between straightforwardness and strategic behaviour since they vote YXZ in an attempt to get Y elected. Thus strategy 1 is very different from strategies 2 and 3. Strategy 1 counts as a strategy because of a very wide definition of the term "strategic voting". The Gibbard-Satterthwaite impossibility theorem rests on this wide definition.

Preferential methods are intended to remove, or at least reduce, the incentives for strategy 1. However, the main benefit of a preferential method may be the changed incentives for the parties involved: In an election campaign mutual charges of "spoiling" may be replaced by mutual appeals for second ranks. Some of the hidden intra-party struggle over platforms and nominations may be replaced by an open inter-party discussion. It is then important to reassure voters that they cannot harm their top candidate with their choices in the rest of the ballot.

For an XYZ-preferrer it will be natural to vote XYZ if it is clear that the preferential method "respects ballot rankings" in the sense that voting XYZ and XZY would have exactly the same consequence for X, i.e. that strategy 2 is not possible. In theory, every Condorcet method allows strategy 2 in some profiles, but there are practical difficulties. If straightforward voting leads to a Condorcet ranking XYZ, it is Y who may vote strategically, and that involves creating a cycle.

Thus in the profile of Figure 1a), 2200 C-

supporters move from CAB to CBA, and create a cycle of 3 candidates in Figure 1b). Many Condorcet methods break the cycle where the pairwise defeat is smallest; in that case A's win over B is ignored and B wins the cycle-break. In the profile of Figure 1a) the same strategy works with a Borda Count. But a strategy campaign that requires massive moves of voters will be hard to organize.

In profiles with two strong candidates (A and C), and one chanceless candidate (B), the Borda strongly urges the A- and C-parties to use strategy 2. Consider e.g. the ideal point of B along the border between ACB and CAB in Figure 2a). Small transitions from ACB to ABC (or from CAB to CBA) are then important, and small-scale campaigns to apply strategy 2 may escalate until B becomes the winner.

With the Condorcet, a small-scale campaign for applying strategy 2 may work only if all pairwise contests are quite close to 50-50. Moreover, in that case an attempt at strategy 2 is probably too risky because of the inevitable stochasticity in any election result: The triangle T (cf Figure 1b)) is more likely to miss the circle center than to cover it, and a strategy attempt is more likely to harm than to help.

In AV (Instant runoff), strategy 2 is simply never available, because an XYZ-voter can be assured that only the ballot's top rank to X is used in the tally until X either wins or is eliminated. The unfortunate price is that strategy 3 becomes available in some profiles.

As an example, choose the ideal point of B at (0.1, 0.65), just North of the CBA-area in Figure 2c). In the CBA-area A is eliminated and C beats B in the second round. But now the profile is
ABC=1633, ACB=1085, CAB=4594,
CBA=0057, BCA=0031, BAC=2600;
thus B is eliminated, and the Condorcet winner A also becomes AV-winner. However, C still has a huge lead on B, and can well afford to sacrifice a few votes to keep B as opponent in second round. B needs 88 more top ranks to pass A. Clearly C has enough voters in the CAB- category: we may decompose the transition of voters first from CAB into CBA and then into BCA; the first step cannot help C, so it is the second step (strategy 3) that works. Since C has a large lead on B (5736-4264), which even will grow when the ideal point of B moves further North, C can afford this strategy for a while. However, the BAC-preferrers may avoid C by applying strategy 1 and vote ABC.

The possibility of strategy 3, called non-monotonicity, is perhaps mainly theoretical. An attempt to use it may backfire because of the profile stochasticity or because of counter-strategic measures. But it may well happen that a post-election analysis finds that a strategic opportunity was missed. Perhaps that does not sound too bad, but the same reality may be phrased differently. Suppose that some XYZ-voters could have voted YXZ and changed the winner from Z to X. Then those who actually did change from YXZ to XYZ because of X's great speech on the last campaign day may feel victimized. It is upsetting that they have harmed X by moving X upwards.

How often will this happen? That depends on what is a realistic distribution of the election profiles. In a political landscape shaped according to Duverger's law by a series of Plurality elections and election campaigns, the possibility may well be disregarded. But if small parties are left to grow under better conditions, i.e. reduced pressure to apply strategy 1, this may change. With 3 candidates, the danger signals that strategy 3 is available to the X-party, are: There is a clear plurality winner X, a Condorcet winner Z, and a clear Condorcet loser Y just after Z in top-ranks. Then the X-party may let some of their supporters vote YXZ in order to get Z eliminated instead of Y.

Both strategies 2 and 3 may be avoided completely with "conditional AV": With 3 candidates, number 2 in Plurality must qualify for round 2 by meeting another condition, i.e. having $> 1/3$ of the top-ranks. In general, it suffices to be closer to the Plurality winner than to number 3 in terms of top-ranks. Then there is an instant runoff between the two best, but if number 2 does not qualify, the Plurality winner is declared as winner of the conditional AV.

Profiles of non-monotonicity will certainly occur also in the multi-seat STV. I don't know of any convincing studies, but I believe that generally, it has less severe effect for the victims since their votes are likely to help elect some tolerable candidates anyway.

3 Election methods for deeply split societies

For readers of *Voting matters*, the technical topics are probably the most interesting parts of "Designing an All-Inclusive Democracy" [1]. In chapters 1, 2, 3 Emerson describes three voting methods particularly intended to promote cooperation between the segments of deeply split societies. The presentations should have been both clearer and shorter. In chapter 4 he discusses some aspects of manipulation. Various experts have written the "Critique" of chapters

5-8; from the technical point of view chapter 5 by Maurice Salles and chapter 6 by Hannu Nurmi are the most important. There is also a foreword by Sir Michael Dummett.

3.1 The modified Borda Count (MBC)

For voting over proposals in a national assembly, Emerson suggests a Borda Count where incompleteness is allowed. If there are 6 proposals, A-F, and a member just ranks ABC, the general idea of symmetric completion would let D, E, and F share $2 + 1 + 0$ points, and give 5, 4, 3, 1, 1, 1 Borda points to A, B, C, D, E, F. In MBC Emerson gives 3, 2, 1, 0, 0, 0 points to A, B, C, D, E, F. The first method does open for strategic use of an incomplete ballot in some situations, here by making a 2 point gap between A, B, C and all the rest. MBC may give an extra incentive to submit a complete ranking, and thus distinguish between proposals from the "other side". These are arguments in favor of MBC, but both MBC and Borda with symmetric completion share all the weaknesses of the Borda Count described above.

Emerson's own discussion of MBC in chapter 4 ("The Art or Science of Manipulation") is, in my opinion, not thorough enough. Agenda manipulation is discussed on p. 90. In a voting with proposals A, B, C, D, E, a new alternative F is entered, and every voter ranks it immediately after E. F is then a *"clone"* of E [6] and ranked immediately after E by every voter. That of course helps E, and even more so if another *"clone"* G of F is entered etc. If everybody ranks X before Y, Emerson calls Y an *"irrelevant alternative"*, an unfortunate choice since that term for 50 years has been associated with Arrows IIA-axiom, in a very different meaning.

Emerson claims that, provided some *"consensors are doing a good job"*, then *"-there will not be any irrelevant alternatives on the ballot paper"* (p.91). My objection is that this argument is irrelevant. *"Irrelevant alternatives"* in Emerson's sense will hardly ever occur. Inserting a *"clone"* F just after E in every ballot is an extreme case of similarity, giving a theoretical bound to the effect of entering an alternative similar to E. Figure 2a) shows how entering B in a large area South of C can help C even though the effect never is the maximal effect obtainable with a *"clone"*. There will always be some voters with B on top, and in most cases there will even be a few BAC-voters. Emerson's argument is based on the description of an unrealistic case, and the correct claim that it is unrealistic. Thus the effect of similarity is conjured away by an invalid argument. Dummett [3] was, with good reason, concerned about the similarity effect, but in Emerson's book the general and undemocratic advantage which Borda gives to a cluster of similar proposals has not been discussed.

Then comes possible use of strategy 2, which in my mind is an even more serious objection to both ordinary Borda and MBC. Emerson (p.89) points out that *".. if the persons voting are MPs, their preferences should all be in the public domain, not least via the pages of Hansard, and if there are signs that someone has been voting tactically - for whatever reason - then the press and others may ask why"*. I am sure that awareness of the public eye may have a dampening effect on the most obvious use of strategy 2, but we can only expect that really gross cases will raise public concern. If a genuine XYZ-preferring MP votes strategically XZY and it is not obvious to everybody that Y is much closer to X than to Z, who can criticize it? Most likely, somebody would have XZY as their straightforward ranking. Who can prove that an MP should consider his/her own position as being closer to that of Y than to that of Z? But in a deeply split society with lots of distrust, an MP may easily be suspected by the other side for using strategy 2.

In most cases one of the proposals will be a Condorcet winner, and most parliaments use one of two voting methods that then almost always end up with the Condorcet winner. The system of pairwise comparisons and eliminations (by Emerson called serial voting) may be the most reliable, especially if it is possible always to match the two among remaining alternatives that are most dissimilar. It is also important that the matched alternatives are mutually exclusive. The other system takes the proposals one by one and the MPs votes "Aye" or "No" until "Aye" wins; it is then important in the "Aye-No"-method that the Condorcet winner does not come too early and thereby run the risk of being prematurely eliminated.

In my opinion, Emerson has not given valid reason to expect that MBC is more likely to produce better consensus than any of these two established methods. Because of the serious defects of Borda, favoring similarity and urging the use of strategy 2, I am afraid the opposite is true.

3.2 The Quota Borda System (QBS)

For elections to legislative assemblies, Emerson suggests to use QBS, first proposed by Dummett [2]. Emerson remarks on p.39 that *"... the two main systems which do this without direct resort to party*

or any other labels are PR-STV [multi-seat Single Transferable Vote] *and QBS"*. The goal for QBS is to achieve a proportional representation without using eliminations like STV.

The complete rules of QBS are rather complicated, but should have been explained more briefly and clearly. QBS adopts the Droop quota q used in STV [q = the nearest integer above $v/(e+1)$ when v voters are to elect e candidates]. QBS does not work with eliminations, but the tally pays particular attention to 1st ranks, first and second ranks etc. On p. 41 is stated *"When there are $5+$ candidates, any candidate gaining 1 quota of first preferences wins that 1 seat; any pair of candidates gaining two quotas wins those 2 seats; and any triplet of candidates gaining 3 quotas wins those 3 seats; any triplet of candidates gaining 2 quotas wins those 2 seats, the actual seats going to those 2 candidates of the triplet with the highest MBC scores"*.

A pair may gain the two quotas on first and second ranks etc.: On p. 113 is stated: *"In constituencies sending 3/4 representatives, any pair of candidates which has been ranked first or second by at least 2q voters is elected"*. [In this case $2q$ voters have the pair in the first two ranks, so at least one candidate gets q top-ranks.] A pair gaining 1 quota on first and second ranks may get 1 seat, which is awarded according to MBC-score. Etc.

QBS deviates radically from the Borda Count; in the latter a vote starting with "1:X, 2:Y, ..." has the same influence inside $\{$X, Y$\}$ as a vote ending with "... n-1:X, n:Y" (n candidates). That the B in QBS stands for "Borda", is therefore misleading; QBS must be very far from the Borda/Condorcet family.

In QBS there is an emphasis on first, second, third, ... ranks (in that order), which reminds much more about STV. However, in STV the elimination institute gives a certain flexibility: elimination of a candidate with few top-ranks channels a voter's support to the next-in-line who thereby may gain the quota. Some aspects of QBS are discussed by Schulze [4].

I miss a discussion of the properties of QBS in the book and a demonstration of how and why the QBS should function better than the STV. At least there should be a reference to an impartial discussion (Dummett is in the book's reference list, but not Schulze.)

The many STV variations that have been or may be devised are based on principles that have been developed by many contributors over many years. Many countries and organizations have collected experience with STV over a long time. I have seen no evidence that QBS would serve any declared purpose, e.g. proportionality without party-lists, in any better way than the existing STV variations.

In order to convince the countries Emerson *et al* particularly have in mind, that a certain election method may be a valuable tool in the efforts to improve unity, I think that it would be very helpful to point out that the method has been tested thoroughly in practice and studied in theory.

However, as mentioned in section 2.2 above, a Condorcet method in single-seat constituencies may be a more radical device in split societies with its strong urge for the minority to vote across the divide and really modify the majority's choice; there must be a related urge for the majority candidates to pay attention to the minority voters.

3.3 The Matrix Vote

Here Emerson considers situations where a national assembly appoints a cabinet consisting of e of the assembly's members, office by office. In order to elect e cabinet members, each MP fills in candidate names in e positions in an $e \times e$-matrix, one in each row (for office), one in each column (for rank). The e MPs in the cabinet are first elected by means of QBS, after that various MBC-scores (for each candidate to each post, for each candidate, and for each ministerial post) decide the distribution. For the QBS-step, the relevant comparison must be with STV, cf the remarks above.

Emerson does not inform how common it is that legislative assemblies compose a cabinet with full office specification. Anyway if the cabinet depends on the assembly's support, the problem of how to compose the cabinet seems less important than how the MPs are elected to the assembly in the first place.

3.4 The "Critique"

Chapter 5 is "The Theory of Voting and the Borda System" by Maurice Salles and chapter 6 is "Assessing Borda's Rule and its Modification" by Hannu Nurmi.

Chapter 5 (10 pages) is a well written general survey of relevant voting theory, explaining *"... why Arrow's independence condition [IIA], the Condorcet winner property and majority rule (and more generally pairwise voting) were so important and successful"*. Over the last half page the author concludes *"by mentioning when and how things began to change"*. Some papers and books by Young, Dummett, and Saari are then mentioned, but I would have liked to see the author follow up with a tech-

nical discussion of the voting methods proposed by Emerson.

Chapter 6 (11 pages) is more concentrated on QBS and the Borda/Condorcet family, but is still quite general on these topics. Based on a constructed profile, a comparison between QBS and Borda (p. 117) points out a difference due to the fact that QBS is designed as a proportional system (while Borda, even with straightforward voting, of course may allow a 51% majority to take all seats). The comparison is unfavorable to QBS: *"It seems, then, that QBS is considerably more majoritarian in spirit than BC* [Borda]". However, in the example QBS picks the same candidates as STV, and I am convinced that a comparison based on realistic profiles will show that both QBS and STV after all are much less *"majoritarian"* than Borda. Here I should have liked to see a comparison between QBS and STV.

Some properties of Emerson's *"Matrix Vote"* are also described, but without comparison with any realistic alternative. But I do not see any strong democratic need for a single voting procedure doing all the things that Emerson wants his *"Matrix Vote"* to do.

There are two more chapters in "Critique": chapter 7 ("Human Rights and Voting Procedures in Plural Societies" by Christine Bell of the Transitional Justice Institute, University of Ulster) and chapter 8 ("Inclusive Decision-making in Mediation and Politics" by Phil Kearney and Aileen Tierney, both of the Clanwilliam Institute). Their contributions do not directly concern election technicalities, but are based on an assumption that the voting procedures suggested in the book really will function as claimed; I am in doubt that this assumption holds.

4 Conclusion

The book concludes in chapter 9, "The *Realpolitik* of Consensus Voting" by Emerson with assistance from Elisabeth Mechan of Queen's University Belfast. It summarizes arguments for "non-majoritarian" election rules, and mentions many obstacles on the way to have new rules adopted.

Certainly there is a natural wish from politicians not to run the risk of an unpredictable outcome of a formal vote or election. In most formal voting in a legislative assembly the result is quite predictable after preparatory work; if need be one may enforce some party discipline. Elections or decision-making with new rules will themselves appear unpredictable to many people.

(Party discipline may also cause cycling. I consider that party discipline extended to subsidiary voting in the "Aye-No"-voting sequence over the location of Oslo airport 1992 was the main cause of a well documented Condorcet paradox. This is perhaps most likely to happen in cases of localization: it was not practical to create a compromise proposal and build the airport in the middle of the triangle formed by the proposed sites!)

It is important that people get used to preferential methods and their properties, and that the methods introduced are suited for their purpose (e.g. proportional representation, or a compromise decision). One should perhaps start in other places than high level politics, like internal elections of representatives at the universities, churches, companies or private organizations. As it is stated in the book's conclusion p. 142: *"Maybe the academic and the journalist will study decision-making in greater depth, when society at large has taken further steps in this direction"*.

The book must be seen as part of a project to promote "non-majoritarian" methods, especially in deeply split societies. (However, I do not always accept all of the authors' remarks about "majoritarian" methods in established democracies, although I think that proportional methods like STV will be an improvement compared to Plurality elections.) The participation of election theorists and law specialists in the book, and the book's acceptance by a major publisher show a serious commitment from Emerson *et al*. My main objection is with the particular methods suggested, especially the MBC for decision making in assemblies. I also think that one of the well tested STV-methods will serve better, and will be more easily accepted, than the less known QBS.

5 References

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[2] Dummett, M. (1984) *Voting Procedures*, Clarendon Press, Oxford.

[3] Dummett, M. (1998), The Borda count and agenda manipulation, *Social Choice and Welfare* vol 15, 289-296.

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