

Voting in University elections and on policy and legislative proposals: evidence submitted to the Review Committee

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April 30, 2004

Summary

This document considers the issues relevant to the remit of the Review Committee on Voting. Whilst of course the document should be read in its entirety in order for the issues fully to be comprehended, the Conclusions on p.5 provide a concise summary of the author's views and recommendations. [Appendix B](#) may also be of particular interest to members of the Committee.

1 Introduction

The University of Cambridge currently operates a Single Transferable Vote system for both elections of candidates to central committees (the Council and the Board of Scrutiny) and for voting on legislative matters whenever there should happen to be more than one option, other than maintenance of the status quo, to choose between.

The latter situation has, on occasion, given rise to some concern; most notably at the time of the straw polls on some of the Wass Syndicate's proposals in 1991 and, more recently, in 2002–2003 at the time of voting on the proposed reforms to the governance of the University of Cambridge. Because of this, the author undertook some investigation, both of the results of the disputed Graces, and of a variety of other voting systems, in order better to understand whether there were indeed problems. The conclusions are presented and discussed in this document.

Section 2 discusses the points to be considered when selecting a voting system, both for single winner and multiple winner situations, and makes appropriate recommendations. Section 3 considers the various other terms of reference of the Review Committee. Section 4 provides a summary of the author's conclusions and recommendations. [Appendix A](#) is the relevant section of the Report of the Syndicate on elections to the Council of the Senate, produced in 1985 when last voting regulations were considered seriously; [Appendix B](#) is a comprehensive exposition of the reasons the author believes that the results of Graces 5 and 6 of 20 November, 2002 misrepresented the wishes of the electorate.

2 Choice of voting system

The first of the two areas of particular concern and interest to the Review Committee is ‘whether any changes should be made to the present Single Transferable Vote arrangements (Statutes and Ordinances, p. 124) in respect of elections’¹.

The naïve bystander could be forgiven for imagining that this is a fairly simple matter, and that procedures for selecting one choice from several, or more than one from several, would be similar. As will be demonstrated in the following two subsections, this is unfortunately not the case.

The goal, therefore, must be to come up with a system that requires voters always to fill in their ballot papers in the same manner, whereas the underlying mechanisms used for tallying the votes and determining the results, whilst always selecting the ‘best’ winner(s), may be very different in the two cases. The differences in underlying system *must not* be permitted to seep through to the level of the voter, as this would engender confusion in an already complicated and difficult-to-understand area. Even in a community of intelligent individuals such as the Regent House of the University of Cambridge, there have been repeated complaints about the complexity of the regulations².

2.1 Cases in which it is necessary to select m from n choices ($m > 1$): Elections to the Council of the Senate and to the Board of Scrutiny

The rationale for picking a voting method for this case should be that as many voters as possible feel that their votes have been effective³. If each voter were to have m votes, then there is a danger that a considerable minority of the electorate could be completely disenfranchised⁴. On the other hand, when using the current method, the Single Transferable Vote (STV), it is possible for the candidate who is ranked first by the smallest number of voters, and is thus eliminated at the first hurdle, to be the second-most favoured candidate of all the remainder. Whether it therefore makes sense for them to be eliminated at this point is a matter for debate; the central question of this debate is as to which of the following two models for constructing a committee is preferred:

1. Do we seek to have as wide a range of views as possible represented? (STV is probably the best system to achieve this aim.)
2. Do we seek to have many compromise candidates, who are likely to be found unobjectionable by the greatest number? (Cardinal Ratings⁵ is probably the best system to achieve this aim.)

There are arguments against both of these models: the former is likely to lead to the committee being governed by current, potentially transient, interests; whilst the latter is likely to tend towards maintenance of the *status quo* with few imaginative and sweeping reforms being proposed or considered. However in elections to both the Council and the Board of Scrutiny, where only a fraction of the committee is elected in any one year, the problems of the former are considerably less worrying than they might normally be, and STV is probably as good a system as any, particularly noting the concern mentioned earlier that the

¹Reporter, 24 March, 2004, p. 570.

²Paradoxically, perhaps, such complaints have decreased in number since the new, much more complicated, STV Regulations were introduced in 1985; perhaps this is because people have ceased even to attempt to comprehend them!

³An effective vote is one which helps to secure the election of a candidate.

⁴This problem was considered at some length by the Syndicate on elections to the Council of the Senate in their Report published in the Reporter of 20 March, 1985, p.415. The relevant paragraphs are reproduced in [Appendix A](#).

⁵Described on <http://www.electionmethods.org/Cardinal.htm>

system *as presented to the electorate on the ballot paper* should be the same in all cases, whatever the underlying mechanisms involved in tallying the results.

2.2 Cases in which it is necessary to select 1 from n choices: Bye-elections, election of the Chancellor, ballots on Graces

Having thus dealt with the case where there are multiple winners, it is now necessary to consider the case where there is a single winner. Logically, one might extrapolate from STV being considered an appropriate system for the multiple winner case to imagine that its single winner version, known variously as the Alternative Vote or the Instant Runoff Vote (IRV)⁶, would be the most appropriate system to choose one from several choices. However, as intimated earlier, this is not the case.

In order to understand why this might be, it is necessary to consider once more the two possible models outlined in the previous section: do we seek to have as wide a range of views represented as possible; or do we prefer instead to try to reach a compromise? In a case where only one choice can be adopted, it will be *impossible* to give appropriate representation to the broad spectrum of most-favoured views that will be held by the electorate. The best that can be hoped for is that the minimum number of people will find themselves totally dissatisfied with the outcome; thus a compromise solution should be sought. This is vital in the election by the Senate of a new Chancellor, and when the Regent House vote on legislative matters (Graces); it is perhaps less important when seeking to fill a position on the Council or Board of Scrutiny occasioned by the resignation of a member, as the remainder of that body will remain in office and so the single new member is unlikely to have much effect⁷. However, for the sake of simplicity, it is preferable to have a single method for determining the winners of *all* types of single winner ballot.

It is now necessary to propose a method that is likely to be able to select the best compromise winner. Given the choice of STV for the multiple winner case, the natural favoured candidate would be IRV. Unfortunately, just as STV is not a good method for making compromises, neither is IRV. A good example of this is the results of Graces 5 and 6 of 20 November, 2002, where a very small swing in voter opinions and numbers caused a considerable change in the option chosen⁸.

Other reasons why IRV is not generally considered an appropriate system by which the results of single winner elections may be tallied have been given by many; a relevant exposition of the problems was given by the author in a speech delivered at the Discussion of 11 March, 2003⁹. The problem noted in 1985 by the Syndicate on elections to the Council of the Senate – that all voting systems ‘are vulnerable to criticism on one ground or another’ – also applies in the present case. The aim, therefore, must be to seek to implement a system whose failings are as few in number, and as non-catastrophic, as possible.

With the additional requirements that the chosen system be indistinguishable from STV by the voter filling in their ballot paper, and that the system should attempt to find the best compromise winner, there is one voting system that stands head-and-shoulders above the rest: the Condorcet system¹⁰, as amended by the Clone-proof Schwartz Sequential Dropping cycle resolution method¹¹. It is not proposed to rehearse

⁶The latter term appears to be preferred by many of the more vocal adherents of electoral system and is therefore adopted in this paper. It is described on <http://www.electionmethods.org/IRVexample.htm>

⁷Unless they are particularly vocal and energetic; at this point a more mainstream, compromise, candidate would most likely be more representative of the electorate’s views.

⁸This subject is considered further in section 3, and the evidence for why these results were almost certainly unrepresentative of the wishes of the electorate is presented in [Appendix B](#).

⁹*Reporter*, 19 March, 2003, pp. 755–757.

¹⁰The system is explained on <http://www.electionmethods.org/CondorcetEx.htm>

¹¹Probably the fairest method of resolving edge-cases where the electorate appears divided or confused; this is the kind of situation in which **all** voting systems will have problems in picking a winner. Condorcet makes it particularly apparent, whereas

here the arguments in favour of this method – they are extremely technical and have been well presented by others, for example [1] – but merely to comment that considerable effort and research has gone into establishing this as the optimal method for such situations.

3 Other matters related to voting

The second area of interest to the Review Committee concerns ‘the statutory and other provisions for voting on matters of policy and legislation, and in particular how possible amendments and alternatives to legislative and policy matters should be placed before the Regent House in order to obtain clear decisions’¹².

3.1 Drafting issues and the incorporation of amendments

This issue became of particular concern following the ballots on the governance reforms, and specifically on Graces 5 and 6 of 20 November 2002. These two Graces proposed to increase the numbers of signatures required to call for a Discussion on a Topic of Concern, and for a Ballot, from ten to fifty. Two amendments were proposed: one suggesting a compromise number of twenty-five, and the second suggesting that signatures be allowed to be sent by email, as well as in writing or by fax.

When the ballot papers came out, there were six options: of fifty, twenty-five and ten signatures, each available in both email and non-email flavours. The order of presentation of these options left a considerable amount to be desired, but that was but a minor issue compared with the fact that two fundamentally different issues had been conflated into one ballot. Had the voting system used been one that sought a compromise solution this might not have been too bad; as it was the results were frankly bizarre and illogical. Despite the fact that the numbers of people in favour of each option were broadly similar in both ballots, the result in the case of the number of signatures required to call a Discussion on a Topic of Concern was ten, email permitted, whilst in the case of the number required to call for a vote on a policy matter was twenty-five, email not permitted.

Other matters of potential significance here are that fifteen fewer voters voted in the ballot on Grace 6 than did on Grace 5 (why? did the ballot papers appear sufficiently similar that they thought it was a duplicate paper that had been included by mistake?) – and that is almost enough to have caused the results to be the same in both cases. This is definitely a situation in which a compromise solution would have been more sensible.

It has been suggested of late that it might be preferable to conduct a ‘straw poll’, with no legislative effect, amongst any suggested options, with a Grace proposing the winner of that straw poll then being put to the Regent House. There would be no need for this were a system seeking the compromise solution to be used; in the absence of such (which absence one may hope will not persist), whilst it would require further effort and some delay in enacting legislative change, it might be a good idea in order to prevent injustices occurring.

methods such as IRV is are likely to sweep it under the table rather than presenting it as a problem in need of solution.

¹²*Reporter*, 24 March, 2004, p. 570.

4 Conclusions

In summary, the author recommends

1. That the current Single Transferable Vote system be retained for multiple-winner elections;
2. That the current system for single-winner elections, and votes on legislative matters where there are amendments, be abolished and replaced with a system more suited to finding compromise, the best such system being Condorcet with Clone-proof Schwartz Sequential Dropping;
3. That unrelated issues not be conflated in a single ballot, as the results tend to be misleading;
4. That, in the absence of the more sweeping reforms that the author considers are required, 'straw polls' be conducted whenever a matter is more complicated than simple acceptance or rejection of a proposed policy.

Appendix A: Report of the Syndicate on elections to the Council of the Senate

In the Report of the Syndicate on elections to the Council of the Senate¹³ the current version of the STV regulations used for picking m from n candidates was proposed for the first time. The following paragraphs, taken from that Report, discuss the reasoning behind their adoption; the current author is in broad agreement with their conclusions for this type of election.

6. *The Syndicate have noted that great simplicity in electoral procedure is not compatible with fairness. By fairness they mean the election of those candidates who have the greatest amount of support among the voters. Indeed they mean the representation of the largest possible number of voters¹⁴. Any procedure that is fair on that definition is necessarily complex. If, for example, the particularly simple system were used of giving each voter a number of votes equal to the number of places to be filled and of determining the results on the basis of the aggregates of votes obtained by each candidate, then it would be possible for a small majority, or even a cohesive minority, of like-minded voters to win every place, leaving all other voters unrepresented.*

7. *The Syndicate have agreed that they favour a system of proportional voting. It is sometimes argued against such a system that, although fair in the sense given in the preceding paragraph, it may lead to a weak and divided government. In the present case such an argument is irrelevant. The Council of the Senate are not the governing body of the University¹⁵, and there is no reason why the Regent House, who are the governing body, should not make elections to the Council by a procedure which affords the best opportunity of enabling the Council to reflect the opinions of the Regent House as a whole.*

8. *The Syndicate have consulted the Electoral Reform Society about possible proportional systems. It appears that all such systems are vulnerable to criticism on one ground or another. Some, such as the Multiple Alternative Vote¹⁶ or the Repeated Alternative Vote¹⁷, are an efficient instrument for denying all representation to any minority up to half of those who vote. Others such as the Limited Vote¹⁸, allow representation to large enough minorities only if the numbers of candidates of those minorities are suitably restricted, and a majority, to safeguard its position, has to instruct its supporters for whom they should vote. The Society considers the STV to be the best available system. The Syndicate have accepted the Society's advice, and they have been the more ready to do so because the University already uses STV and has long experience of it.*

¹³Reporter, 20 March, 1985, pp.415–416.

¹⁴Current author's note: This is approximately equivalent to stating that they wish the votes of as much of the electorate as is possible to be effective.

¹⁵Current author's note: With the increasing tendency of the Council to consider itself the principal governing body of the University, the relevance of such statements may need to be reconsidered in the future.

¹⁶Described in *Comparative Election Methods*, Robert A. Newland, 1982.

¹⁷Described in *Comparative Election Methods*, Robert A. Newland, 1982.

¹⁸Described in *Comparative Election Methods*, Robert A. Newland, 1982.

Appendix B: When IRV gets it wrong – a case study

It is rare that it is possible to obtain clear evidence to back up suspicions that the results of an election or a referendum may not have accurately represented the wishes of the electorate. In the absence of the details of the numbers of different rankings of options, it is normally extremely difficult to wag a finger in anything more certain than a slightly accusatory fashion. There may be suspicions, but that is the level at which they will generally remain. However in a situation where *two* referendums are conducted, on very similar issues, with identical choices, and only a small percentage swing in the way the votes are cast, and yet the final outcomes are very different, the suspicions must necessarily escalate into concerns. At this point it is reasonable that questions should be asked (and, indeed, answered).

The votes on Graces 5 and 6 of 20 November, 2002, therefore provide a virtually unprecedented opportunity to examine the ways in which IRV may on occasion misrepresent the wishes of an electorate. The actual numbers of votes, and the way in which they were transferred, are presented in tables 1 and 2.

<i>Option</i>	Count 1	Count 2		Count 3		Count 4		Count5	
50, no email	91	+27	118	-118	0	0	0	0	0
50, email	50	-50	0	0	0	0	0	0	0
25, no email	185	0	185	+57	242	+78	320	+29	349
25, email	134	+14	148	+18	166	-166	0	0	0
10, no email	204	0	204	0	204	+2	206	-206	0
10, email	273	0	273	0	273	+22	295	+64	359
Non-transferable		+9	9	+43	52	+64	116	+113	229

Preferred

Table 1: Grace 5 results: the number of signatories required to call a Discussion

<i>Option</i>	Count 1	Count 2		Count 3		Count 4		Count5	
50, no email	105	+35	140	-140	0	0	0	0	0
50, email	61	-61	0	0	0	0	0	0	0
25, no email	176	0	176	+68	244	+84	328	+26	354
25, email	135	+14	149	+24	173	-173	0	0	0
10, no email	197	0	197	0	197	+4	201	-201	0
10, email	248	0	248	0	248	+21	269	+69	338
Non-transferable		+12	12	+48	60	+64	124	+106	230

Preferred

Table 2: Grace 6 results: the number of signatories required to call a ballot

It can be difficult to draw sensible conclusions from these seas of numbers. Some clarity can be obtained by calculating the differences in the number of voters for each option at each point between the two Graces. The following table shows this: the Grace 5 results are subtracted from those of Grace 6.

<i>Option</i>	Count 1	Count 2	Count 3	Count 4	Count 5
50, no email	+14	+8	+22	-22	0
50, email	+11	-11	0	0	0
25, no email	-9	0	-9	+11	+2
25, email	+1	0	+1	+6	+7
10, no email	-7	0	-7	0	-7
10, email	-25	0	-25	0	-25
Non-transferable		+3	+3	+5	+8

Preferred

Table 3: Differences in numbers of votes between the results of Graces 5 and 6

It is clear from this that only a small proportion of voters had differing views on the number of signatures (or the manner in which they might be permitted to be expressed) that ought to be required in the two cases. And yet the outcomes were wildly different. This cannot be sensible.

One of the big problems was that two issues (number of signatures, and the manner of their transmission) were conflated into one. It seems that very few people considered the two issues to be linked (although without details of the numbers of each particular ranking of options, this must remain merely a conjecture): the sole point at which the redistribution of votes appears to show any consideration of the relative difficulty of obtaining signatures by email or not is in the 4th count where 2 votes for Grace 5, and 4 for Grace 6, move from the twenty-five, email permitted option to the ten, email not permitted. Apart from this tiny minority of people, it looks as if people were firmly focused either on the number of signatures, or the manner of their transmission. So there was no need for the two issues to be drawn together like this. It is worth considering what would in all probability have happened had they not been.

The following figures show the numbers of first-choice votes for each option, for both Graces, as two-dimensional pictures (number of signatures varying vertically; email/non-email horizontally). The totals for each row and column are shown in bold, and from this it is possible to make a guess at the basic stance of the voters on each of the two issues.

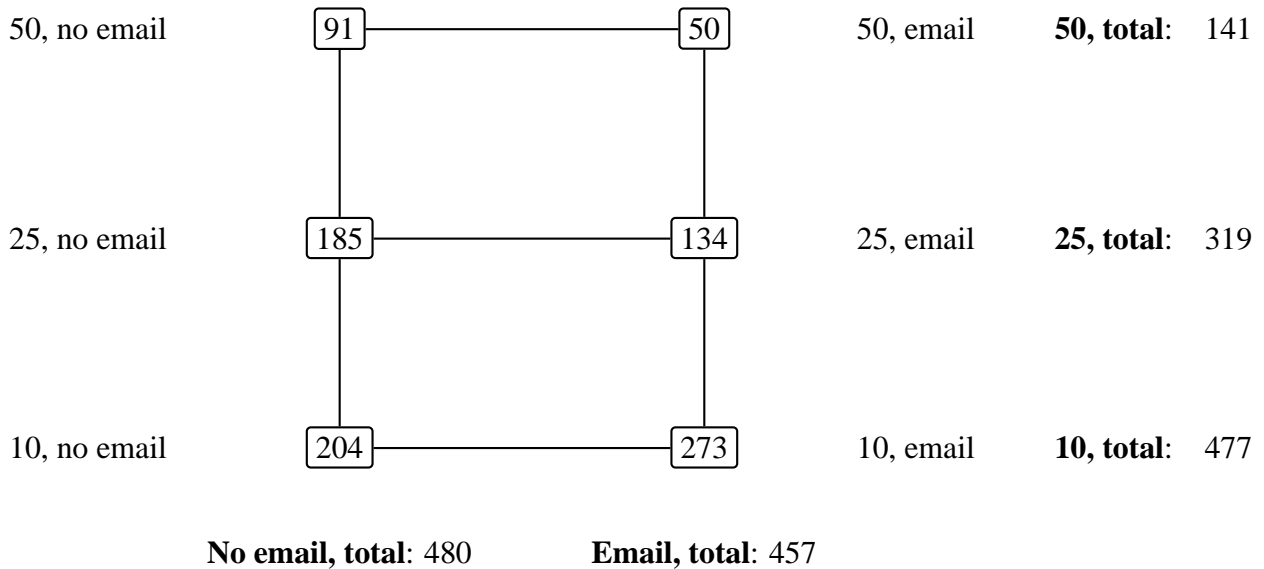


Figure 1: 2D representation of first-choice votes: Grace 5

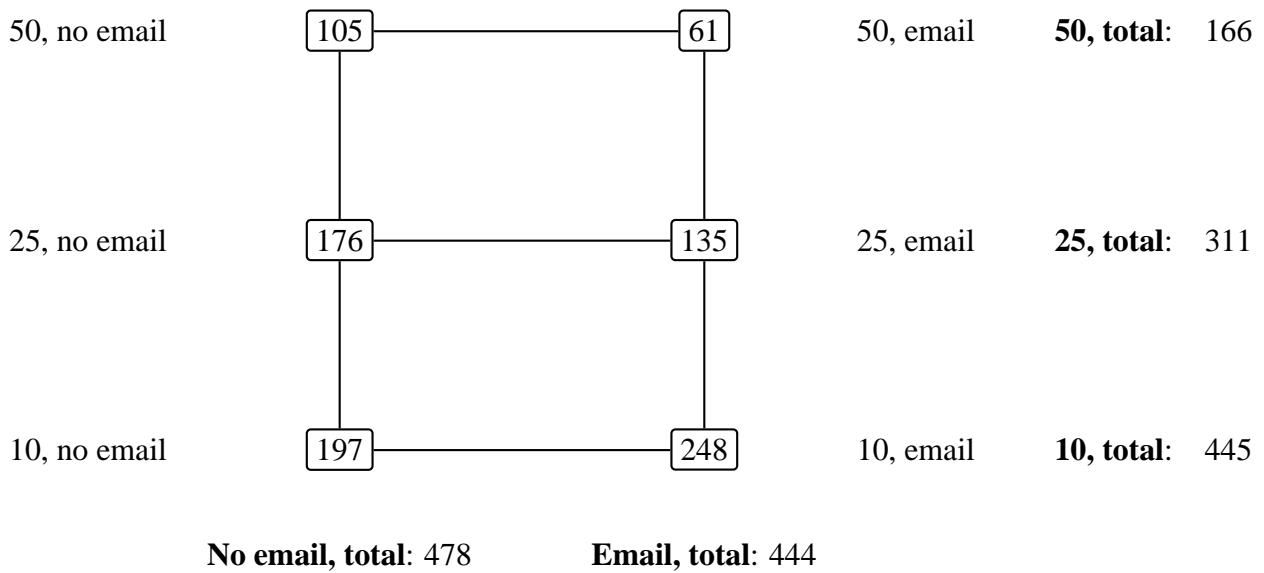


Figure 2: 2D representation of first-choice votes: Grace 6

In both cases it seems clear that, by a narrow majority, not allowing email is more popular than allowing email, although to what extent this was influenced by the misleading wording of a semi-official flysheet, signed by several members of the Council (and thus appearing to carry more weight than those produced by ‘mere’ members of the Regent House), is an open question.

The number of signatures required is a slightly more contentious issue. In both cases, it is clear that ten is by far the most preferred option. In the case of the number of signatures required to call a Discussion on a Topic of Concern, there is a clear majority favouring ten; in the case of the number of signatures required to call for a ballot on a Grace, there is not. However, after the transfer of votes from the least popular option, fifty signatures, and the consequent reduction in the size of the electorate, the ten signature option is again favoured.

So, it would appear that in both cases it is likely that ten signatures, email not permitted, would have won had the issues been voted on separately (or, indeed, had a less divisive voting system been used). That in one case (Discussions on Topics of Concern) the result was ten signatures, email permitted, and the other (ballots on Graces) twenty-five signatures, email not permitted, despite the very small voter swing (as shown in table 3) suggests that something went wrong, most likely in both cases.

This alone is a conclusive argument to abandon IRV as a voting system, at least within the University, and most likely outside it as well. It is imperative that the full rankings are now made available so that the results can be recalculated according to a variety of voting systems.

References

- [1] Schulze, M., “A New Monotonic and Clone-Independent Single-Winner Election Method”, *Voting Matters*, Issue 17, October 2003, pp. 9–19.
- [2] Newland, R.A., *Comparative Election Methods*, The Arthur McDougall Fund, London, 1982.
- [3] <http://www.electionmethods.org/>
- [4] <http://www.electorama.com/em/>, the election methods mailing list.