

Mr Deputy Vice Chancellor,

Cambridge prides itself on its ancient democratic system of governance and wishes to preserve it. And rightly so. But perhaps it is worth examining quite how democratic the system we currently have *is* and then taking steps to ensure that failures in the system, where they exist, are rectified rather than ignored. In this context, there are two issues that I wish to address: the design of ballots and the choice of voting system.

### The design of ballots

Professor Grant is quoted in *The Guardian* of February 11 as feeling ‘deep despair’ over the low turnout for the governance ballots; in the same paper on February 25, the Member of Parliament for Cambridge, Anne Campbell, bemoans the ‘dismally low turnout’. Less than one third of those eligible to vote filled out their ballot papers. And this in an institution that claims to be a democratic community of scholars. The question that must be asked is: why?

Do Regents not care about the future of the University? I rather doubt that that is the case. Do Regents not have time to fill in the ballot papers? In some cases most certainly they do not, but this is probably not a generally-applicable answer. Do Regents not have time to understand the issues, and therefore leave voting on them to those who either do or think they do? Quite possibly some do, but I doubt that there are that many who are so humble.

Or is it that some of the ballots were designed in such a fashion that they would not have been unworthy as a brainteaser in a national newspaper and that people, despairing of managing to find a way of filling them out that actually expressed their wishes, decided they ought not to fill them out at all? I should imagine this was the case for many people.

Consider, for example, the ballots on Graces 5 and 6 of 20 November 2002. Figure 1 shows the logical ways that votes can be transferred between options at the point at which the first such transfer takes place.

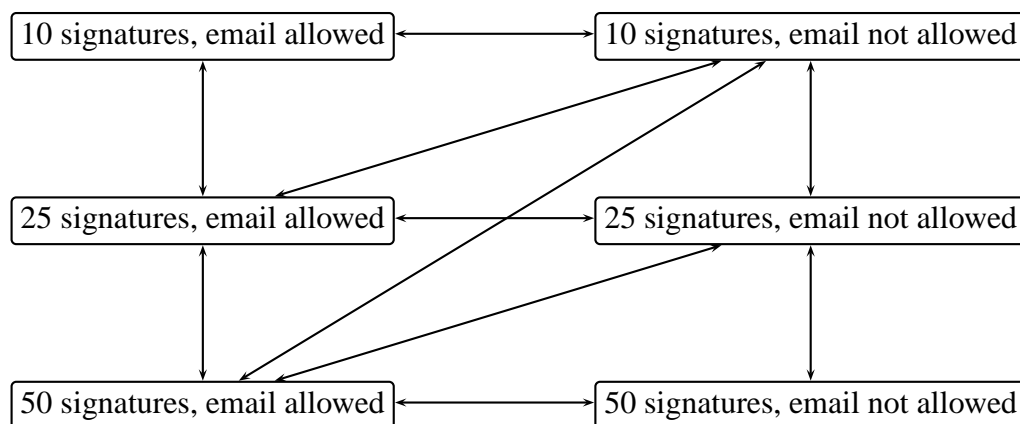


Figure 1: Logical vote transfers at first elimination

Pity the poor voter whose first choice preference was for the status quo: ‘ten signatures, email not permitted’. Is the number of signatures more important than the means by which they may be transmitted, or vice versa? Or is it more important to concentrate on how hard it is to call for a Discussion or for a ballot? And in that case is it easier to collect ten signatures in writing, or twenty-five or even fifty via email? Or maybe one is so opposed to the existence of amendments that one’s only other choice is ‘fifty signatures, email not permitted’ ? (I had assumed that such people no longer existed, so I removed that line from Figure 1. It would appear, from Professor Schofield’s remarks, that I was wrong to do so.) How to decide? The voter is being asked to make subjective decisions on matters about which he has no, or minimal, information. Small wonder if he reaches for the headache pills, or more likely a stiff drink, and consigns the ballot papers to the wastepaper basket !

Supporters of three of the other five positions will find themselves in a similar quandary. Supporters of the two extreme positions at first sight appear to have an easier time of it, but even they are caught by the dilemma of whether ‘more signatures, email permitted’ is easier than ‘fewer signatures, email not permitted’, as they are the two positions most likely to be concerned with the difficulty of calling for a Discussion or for a ballot.

So, what are the lessons to be learned from this? Firstly, ballots need to be designed so as to be as simple as possible. A ‘yes/no’ question requires only minimal thought to answer, but ballots with many subtly-different options lead to confusion; the KISS (‘Keep It Simple, Stupid’) principle springs to mind here. Secondly, voters should not be expected to have to guess as to what the effects of voting for a particular option might be, or even which one would be a more appropriate choice to achieve the effects that they would like to see. Only when the effort of filling in the ballots is minimal is it likely that the overworked majority will be able to participate in the university’s governance.

### **The choice of voting system**

I now turn my attention to the selection of an appropriate voting method. The utility and fairness of a voting system can be assessed according to various criteria. Perhaps the most fundamental is the *monotonicity criterion*, which is that, with the relative order of the other candidates unchanged, ranking a candidate higher should never cause the candidate to lose, nor should ranking a candidate lower ever cause the candidate to win. This seems like common sense, surely? Any method that does not comply with this criterion cannot sensibly be described as fair. The good news is that almost all methods satisfy the monotonicity criterion; the bad news is that Instant Runoff Voting (IRV), which is the single-winner variant of STV and thus the system that is used for ballots of the Regent House, is pretty much unique among popular methods in failing to. A simple example, adapted from one on the website of the Election Methods Education and Research Group <sup>1</sup>, illustrates the point quite strikingly.

Imagine a case in which a University (hypothetical, of course) finds itself in dire financial straits. Four, highly disparate, proposals are suggested as to how the situation should be handled. The first (option A) is that the ten least profitable departments should be closed down; the second (option B) is to take control of the ownership of researchers’ intellectual property and to set up a new division who will, with luck, be able to exploit it in a more profitable fashion; the

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<sup>1</sup><http://www.electionmethods.org/>

third (option C) is to sell off several of the University’s primely-sited buildings; and the fourth (option D) is to do nothing and if the University goes bankrupt then that is God’s will. A ballot has been called to decide which of the four strategies should be adopted.

Much lobbying has been occurring within the University, and most people consider that selling the University’s properties is short-sighted at best and must be avoided. A small splinter-group think that this is an optimal strategy. Various factions have formed, and few people have had the strength of mind to resist joining the appropriate departmental faction. The electorate initially intends to vote as in table 1, with the ballot proceeding as in table 2 leading to option B being adopted.

<b>Order</b>	<b>Number</b>	<b>Order</b>	<b>Number</b>	<b>Order</b>	<b>Number</b>
A	18	A,B,D	225	A,D,B	40
B,A,D	170	B,D,A	158	C	5
C,B,A	12	C,A,B	5	C,D,A	120
D	36	D,A,B	158	D,B,A	40

Table 1: Initial choices

<i>Option</i>	Count 1	Count 2		Count 3	
A	283	+5	288	-288	0
B	328	+12	340	+230	570
C	142	-142	0	0	0
D	234	+120	354	+40	394
Non-transferrable		+5	5	+18	23

**Preferred**

Table 2: Ballot run with initial choices

However, just prior to the start of the voting period, the official newspaper of the University publishes a Report in which the twenty least profitable Departments are listed. Many of the advocates of option C are shocked to find their Departments on this list, and therefore 88 of those who initially intended to vote (C,D,A) now decide to favour option B above option D (C,B,D), as they believe that B is more likely to succeed than D. All other votes remain as in table 1. The revised ballot proceeds as shown in table 3. Option A now “wins” instead of B, and the ten Departments are shut down. The 88 people who sought to prevent this by ranking B more highly than A have thus caused A rather than B to be adopted ! This would have been a dismal failure of the current voting system, were this a real rather than hypothetical case.

<i>Option</i>	Count 1	Count 2		Count 3	
A	283	+5	288	+190	478
B	328	+100	428	+40	468
C	142	-142	0	0	0
D	234	+32	266	-266	0
Non-transferrable		+5	5	+36	41

**Preferred**

Table 3: Ballot run with revised choices

So, what should be done? While not wishing to dwell unduly on the negative, it seems to me that continued reliance on such an inherently flawed scheme – so flawed, in fact, that we *cannot even tell* whether any of, for example, the governance ballots suffered a similar fate – would be foolhardy at best. Cambridge may have thought itself ahead of the times in adopting STV in 1926, but better voting systems were already in existence.

In my search for a fairer and more reliable voting system I came across an interesting debate amongst another democratic community of intelligent individuals who have been contemplating changing their voting system due to it suffering from another potential failure mode: that of the Condorcet voting paradox. This group of individuals, the developers of Debian GNU/Linux, finally appear (after over three years of discussion and pondering on the matter) to be close to agreement on an improved system. Whilst their needs are considerably more complicated than our own the basic system that they are contemplating adopting, Condorcet pairwise elimination with a technique known as Cloneproof Schwartz Sequential Dropping (CpSSD) to resolve the voting paradox, seems to me to be of considerable merit, and quite possibly the fairest method that is currently known.

For entertainment, I decided to apply this method to the hypothetical ballot described previously. Amusingly enough, this case also throws up the voting paradox ; but using CpSSD leaves A the preferred option in the initial case, and B the preferred option in the revised case. Much more sensible; those who revised their votes achieved their aim, rather than hindering it.