

Comments on Newland's paper

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1 Introduction

Like all work published posthumously, if there are any faults in this paper [1], the author should not be blamed for them because, had he lived longer, he might well have revised it, or even withdrawn it. The paper is important as showing Newland supporting some of the main features of the Meek method. It is a pity that he did not support all of them, but his disagreement with the Meek method of handling short votes gets no mention here.

It is easy to agree with him that to think of saving time or money, as a result of computer counting, is unrealistic, but he fails to mention other advantages of counting by computer, even if the rules remain those of hand-counting methods. These advantages are that, given a correct computer program: (i) anybody can carry out an STV election without having to understand the rules; (ii) the results are much more likely to be correct, provided that due care is taken in converting the ballot paper information to a computer file. Such evidence as is available suggests that STV hand-counts, even by experienced staff, usually have errors in them.

His saying that "It would be absurd to write a computer program restricting the calculation ... to two decimal places" is therefore not correct. Where existing systems require the two-decimal place restriction, doing it by computer, for the sake of a correct result within those rules, is worth while.

He says that "Using more decimal places would, on occasion, lead to a different, better, result". Although the words "on occasion" need to be noticed, I take his meaning to be that on occasion there will be a difference but, if there is, it will necessarily be a difference for the better. Whether that is so depends upon how "better" is defined. In the hope of avoiding controversy, let us take it to mean, in the context

of Newland's paper, "more like the result that would have been obtained by adopting remedies (A) and (B) of the paper". Such work as I have done on it suggests that merely more precision in the calculations does not help to that end.

2 Remedies (A) and (B)

Newland's "Remedy (A)" is to re-commence the count *ab initio* after each exclusion; his "Remedy (B)" is to transfer voting papers to next preferences even if already elected. He says that "If STV counts are to be computerised, it would be foolish not to include remedy (A)". He appears not to have realised that to include (A) without (B) can be troublesome. I take it that he was thinking in terms of the rules of Newland and Britton 2nd edition [2] and adding remedy (A) to those, so I shall do so in the following examples.

2.1 What is wrong with Remedy (A) on its own

Example 1

Suppose 8 candidates for 5 seats, with votes

25 ACDF.
24 BCEF..
7 D..
5 E..
2 F..
6 G
3 HBC

We get a quota of 12 and the count proceeds as:

A	25	-13	12	12	12	
B	24		24	-12	12	12
C		+13	13		13	13
D	7		7		7	7
E	5		5	+12	17	-5.00 12
F	2		2		2	+4.80 6.80
G	6		6		6	6
H	3		3		3	3
n/t						+0.20 0.20

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Exclude H and restart:

A	25		25	-13	12		12		12
B	27	-15	12		12		12		12
C		+14.85	14.85		14.85		14.85	-2.85	12
D	7		7	+13	20	-8	12		12
E	5		5		5		5	+2.64	7.64
F	2		2		2	+8	10		10
G	6		6		6		6		6
n/t		+0.15	0.15		0.15		0.15	+0.21	0.36

Exclude G and restart. There are now 6 fewer valid votes, so the quota becomes 11:

A	25		25	-14	11		11
B	27	-16	11		11		11
C		+15.93	15.93		15.93		15.93
D	7		7	+14	21	-10	11
E	5		5		5		5
F	2		2		2	+10	12
n/t		+0.07	0.07		0.07		0.07

Thus E was deemed elected in the first count, and had a surplus transferred, but had to be unelected and take back that surplus for the second count. Finally E fails to get even half a quota and loses. It might be said that there is no need to say that anyone has been elected until the final result is known, but then how can the surplus transfer be explained, for without it F would have been excluded first instead of H?

Example 2

Suppose 8 candidates for 5 seats, with votes

- 25 ACDF..
- 24 BCEH..
- 7 D..
- 5 E..
- 2 F..
- 6 G
- 3 HBC

These are identical votes to example 1 except that 24 BCEF.. has been changed to 24 BCEH..

Following through the election in a similar way, those elected are found to be ABCDE. Thus E succeeds if those 24 vote BCEH but E fails if those 24 vote BCEF. So their choice of a later preference has upset the fate of their earlier preference. My memory of Robert Newland says that he would have hated that.

3 Conclusions

We must always remember that it is mathematically impossible to find a faultless system, so these faults of remedy (A) on its own are not necessarily conclusive, but they tell strongly against it. What would be safe would be to restart after each exclusion, provided that no candidate had yet been deemed elected.

4 Acknowledgement

I thank the referee for some very helpful comments.

5 References

- [1] R.A. Newland. Computerisation of STV counts. *Voting matters*, issue 22, 11-13, 2006.
- [2] R.A. Newland and F.S. Britton. How to conduct an election by the Single Transferable Vote, 2nd edition. Electoral Reform Society, 1976.