An odd feature in a real STV election

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Although artificial data can be extremely useful in clearly demonstrating difficulties in election rules, there is also much to be said in favour of looking at real data, particularly where anything odd appears to have happened.

A few years ago, there were 23 candidates in an election for 15 seats, and there were 539 votes. The candidates' names have here been coded as A, B, C, etc.

One voter gave preferences, in order, as: M D L R I J C T B E H A O U F etc. Using Newland and Britton (second edition) rules [1], the last candidate elected was F and the runner-up was V. Amazingly, if that one voter had put V instead of F as 15th preference, V would have been elected and F runner-up. In other words, the election result depended upon that one voter's 15th preference.

There is, of course, nothing wrong with a 15th preference being taken into account. If all previous 14 preferences have been excluded it is right that the 15th preference comes through with a value of 1.0 as if it had been a 1st preference. In this case, though, it came through with a value of 1.0 even though 10 of the earlier preferences were elected. Of those 10, 8 had been elected before that vote reached them and, in accordance with the rules, were "leap-frogged". The other 2, J and T are more remarkable; in each case the vote in question was among those that triggered their election and, being part of the last parcel received, was due to be transferred with a transfer value. For both of them, however, there were enough non-transferable votes in the parcel that the transfer value came out as 1.0.

When the final transfer was made, V had 30.31 votes, and F had 30.51, so the additional 1.0 was enough to sway the result. The vote had not had to make any contribution to electing the 10 elected candidates named earlier by the voter.

If Meek rules [2] had been used, that 15th preference would still have been reached, but F would have been ahead of V by almost 4 votes and the value attached to the particular vote, because it would have had to contribute a fair share to electing the earlier 10 candidates, would have been only 0.000000905 and would thus have made no difference.

It is pleasing that, as it happened, the correct result was reached by the actual count, but it could so easily have been the wrong one.

It has sometimes been suggested that messing about with such small fractions of votes, which make no difference to the result, is not worth while. There are two answers to that suggestion. The first is that, if the logic of the Meek method is accepted, then either we can follow that logic through, even if it does result in such "messing about with small fractions", which is easy, or we can put in special rules to stop it doing so, which is much more difficult. We should need to consider not only what special rules to adopt in such cases, but also how to determine when to use them. Obviously it makes sense to do the easy, and correct, thing.

The second answer is that there are cases where such a very small difference can change the answer, so it would be wrong to ignore a 15th preference. If the contest between V and F had reached an exact tie from all the other relevant votes, then the result should, of course, have been settled by what that 15th preference was.

1 References

[1] R A Newland and F S Britton. *How to conduct an election by the Single Transferable Vote*. 2nd edition. Electoral Reform Society. 1976.

[2] I. D. Hill, B. A. Wichmann and D. R. Woodall. Algorithm 123 — Single Transferable Vote by Meek's method. *Computer Journal* Vol 30, pp271-281. 1987.