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A Nail-Biting Election

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Abstract

In the first competitive election for President of the Social Choice and Welfare Society, the (official) approval-voting winner differed from the (hypothetical) Borda count winner, who was also the Condorcet winner. But because the election was essentially a toss-up, it is impossible to say who should have won. The election for Council was more true to form of other professional-society elections, with the winners identical, and even their rankings almost duplicative, under both voting systems.

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A Nail-Biting Election¹

In 1999, for the first time in its history, the Social Choice and Welfare Society (SCWS) held competitive elections for President and members of the Council. There were three candidates for President (one to be elected) and eleven candidates for Council (eight to be elected).

What was unusual about this election was that (1) it was conducted under approval voting (AV) and (2) voters were also asked to rank the candidates for each office, presuming the Borda count (BC) as the method of election. Thus, while AV was used in the official election, hypothetical election results under BC could be used as a basis of comparison. In addition, voters were also asked to indicate their sincere and strategic rankings—should they differ—and where they would draw the line between approved and non-approved candidates in these rankings (with one exception, voters did not give strategic rankings different from their sincere ones).

In the past fifteen years, SCWS is the sixth professional society, with collectively over 600,000 members, to have adopted AV in its election of officers (Brams, 2000).²

¹ We are grateful to Maurice Salles for providing us with ballots for the election described herein. Steven J. Brams gratefully acknowledges the support of the C.V. Starr Center for Applied Economics at New York University.

² The other societies are: American Mathematical Society (AMS), American Statistical Association (ASA), Institute of Management Science and Operations Research (INFORMS), Institute of Electrical and Electronics Engineers (IEEE), and Mathematical Association of America (MAA). In addition, the Econometric Society and the National Academy of Sciences use AV, or a variant, in the selection of fellows, as does the International Joint Conference on Artificial Intelligence in choosing candidates for awards.

While our book on AV (Brams and Fishburn, 1983) preceded these adoptions, the subsequent analyses we and others have done of elections in these societies generally support our arguments that AV tends to find consensus candidates (see Brams and Fishburn, 1992, for an overview). We readily acknowledge that some ranking procedures, including BC, also have attractive properties (Brams and Fishburn, forthcoming), but we regard AV as particularly appealing because of its simplicity and practicability.

Donald Saari and some of his colleagues, who have made important contributions to the study and comparison of voting systems (Saari, 1994), disagree with us on the relative merits of AV and BC. For an airing of these differences, we commend the reader to an exchange we had more than a decade ago (Saari and Van Newenhizen, 1988a, 1988b; Brams, Fishburn, and Merrill, 1988a, 1988b). More recent and independent views and analysis of different voting systems, including AV and BC, can be found in a multi-authored symposium (*Symposium: Economics of Voting*, 1995).

Given this background and controversy, it seemed useful to compare AV and BC in an election involving voters whose professional interests lie specifically in the area of social choice. Because our advocacy of AV has centered on its use in single-winner elections, we will give more details on the SCWS election for President than for Council.

With respect to the Council election, we generally do not support AV's use in multi-winner elections if the purpose of the election is to elect representatives that mirror different viewpoints in the electorate.³ For this purpose, there are other voting systems,

not necessarily involving the straightforward aggregation of votes—either approval votes or rankings—that may be superior, depending on one’s notion of what constitutes a representative body (Potthoff and Brams, 1998).

Analysis of Election Returns

In the SCWS election for President, there were three candidates, whom we call *A*, *B*, and *C* (see Table 1). Because 19 of the 71 voters in the electorate did not rank the

Table 1 about here

candidates, we give the BC results only for the 52 voters who did rank candidates, but we present the AV results for both the 52 and the entire electorate of 71 voters.

However one counts votes, the election was a “nail-biter”³ colloquialism for a very close contest that causes people to bite their nails in anticipation of the outcome. (Not that we think the outcome was so consequential, except perhaps for conferring prestige on the winner.) Under AV, in which voters can approve of as many candidates as they like and the candidate with the most approval votes wins, the margin of victory was only 2 votes in both the 52-voter (22 - 20 votes) and 71-voter (32 - 30 votes) contests. Under BC, in which candidates receive more points the higher they are ranked (in a 3-candidate contest, a voter’s first choice receives 2 points, its second choice 1 point,

³ What, then, is the justification for using AV to elect the SCWS Council? If there are not sharply opposing viewpoints in the electorate—as seems true of SCWS—we believe that AV is an excellent procedure to find the set of most widely supported members whose views, presumably, are representative of the society as a whole.

and its third choice 0 points), the race was even closer (60 - 59 points) in the 52-voter contest.

The big surprise was that candidate *A* won under AV, but candidate *C* would have won under BC (at least according to the 52 voters who ranked candidates). Moreover, *C* is the Condorcet winner: *C* defeats both *A* (28 - 24 votes) and *B* (32 - 20 votes) in pairwise contests. This can be verified from the numbers of voters who rank the three candidates in the $3! = 6$ different rankings, also shown in Table 1.

The 52 rankings are approximately randomly distributed over five of the six rankings. It is extraordinary that none of the 52 voters chose *BAC*. Of the 52 voters, 49 cast one approval vote (always its first choice in the rankings), one approved of its top two candidates, and two cast no approval votes, making the approval-to-ballot ratio 0.98.

The 19 voters who did not rank the candidates were somewhat more generous in their approvals: 15 cast one approval vote, 2 cast two approval votes, and 2 approved all three candidates. This makes their approval-to-ballot ratio 1.32.

Normatively speaking, we view this election as one in which there is no incontrovertible argument that *A* or *C* *should* have won. To be sure, the fact that BC and the Condorcet criterion agree on a single candidate (*C*), which will often not be the case in a very close election like this one, supports the choice of *C* as the winner.⁴

On the other hand, the fact that *A* got more approval from both bullet voters (i.e., those who cast one approval vote) and the two-approval-vote voters indicates *A* to be

⁴ In seven 3-candidate elections of professional societies that were not so close and that allowed for the reconstruction of preferences from approval votes, Regenwetter and

more acceptable to both classes of voters who make distinctions among the candidates (those who approve of none or of all the candidates are not making a distinction). Hence, *A*'s greater support is not an artifact of *where* voters draw the line between acceptable and nonacceptable candidates.

We turn next to the Council election. Of the 49 (of 71) voters who ranked candidates, 1 voter ranked five, 2 ranked six, 2 ranked eight, and the other 44 ranked all eleven candidates (with some indicating ties, in which case we averaged the Borda points associated with these ranks). In determining Borda points for the truncated orders, we started at 10 points, as if their orderings were complete, and went down 9, 8, 0 points until the ranking ran out (so all candidates who were not ranked received 0 points from that ballot).

As can be seen from Table 2 for the eleven candidates a, b, \dots, k , the BC ranking

Table 2 about here

for the 49 Borda voters, and the AV ranking for both these 49 and the 71 voters in the entire electorate, are nearly identical. Only *d*'s Borda count would put him slightly higher (one rank, interchanging him with *c*) than his AV votes do. As for the eight candidates elected to the Council, they are identical under BC and AV.

The 49 Borda voters averaged 6.2 approval votes per ballot, and the 22 nonranking voters averaged 5.3 approval votes per ballot. Thus, the more conscientious Borda voters, who took the trouble to rank candidates, were somewhat more approving, which was not

Grofman (1998) found that the AV and BC winners were identical and, in addition, were

the case (to a greater degree) in the election for President, wherein the nonranking voters were more generous in their approvals.

Comparing, in both the President and Council elections, the ratios of the number of candidates to be elected to number of candidates running (President: $1/3 = .33$; Council: $8/11 = .73$), the 71 AV voters approved, on average, more than this ratio in the election for President (.36), less than this ratio in the election for Council (.54). We speculate that in the election for President, the candidates were better known and therefore more likely in relation to the number to be elected to be considered acceptable. In the SCWS, it seems, familiarity does not breed contempt!

Conclusions

The election for President, by almost any measure, was a toss-up. In an election this close, we believe that no strong case can be made that AV votes should trump Borda points, or vice versa, when they produce, as they did, different winners. While one might argue that the BC outcome is more compelling because the BC winner is also the Condorcet winner, we think that an equally persuasive argument on the other side is that the AV winner was more approved of by both bullet and nonbullet voters; hence, his election did not depend on how discriminating, with respect to dispensing approval, the voters were.

The Council election presented a completely different picture: the eight candidates elected under AV would have been identical under BC. Indeed, the almost complete

invariably the Condorcet winners.

coincidence in ranks of approval votes and Borda points *for all eleven candidates* struck us as uncanny.

Comparing the experiences of the other professional societies that have adopted AV with that of SCWS, the election for Council is the norm, the election for President the exception. The AV and BC winners generally coincide with the Condorcet winner, at least in single-winner elections. For this reason, we believe AV should get the nod because of its ease of use.⁵

If there are multiple winners, as in the election for Council, we believe a proportional-representation (PR) system is preferable to AV if there are factions in the electorate whose members have different preferences. AV provides no assurance that the different factions will be able to elect candidates in rough proportion to their numbers in the electorate, as do PR systems we discuss elsewhere (Brams and Fishburn, forthcoming).

⁵ The fact that almost one-third of the SCWS electorate did not rank candidates, especially the eleven in the Council election, does not seem to be because this election was not the official one. Rather, the task of ranking this many candidates, or voting strategically, was too onerous, as more than one voter complained.

References

- Brams, Steven J. (2000). "Approval Voting." *International Encyclopedia of Elections*. Washington, DC: CQ Press, pp. 17-18.
- Brams, Steven J., and Peter C. Fishburn (1983). *Approval Voting*. Cambridge, MA: Birkhäuser Boston.
- Brams, Steven J., and Peter C. Fishburn (1992). "Approval Voting in Scientific and Engineering Societies." *Group Decision and Negotiation* 1 (April): 41-55.
- Brams, Steven J., and Peter C. Fishburn (forthcoming). "Voting Procedures." In Kenneth Arrow, Amartya Sen, and Kotaro Suzumura (eds.), *Handbook of Social Choice and Welfare*. Amsterdam: Elsevier Science.
- Brams, Steven J., Peter C. Fishburn, and Samuel Merrill, III (1988a). "The Responsiveness of Approval Voting: Comments on Saari and Van Newenhizen." *Public Choice* 59 (November): 121-131.
- Brams, Steven J., Peter C. Fishburn, and Samuel Merrill, III (1988b). "Rejoinder." *Public Choice* 59 (November): 149.
- Potthoff, Richard F., and Steven J. Brams (1998). "Proportional Representation: Broadening the Options." *Journal of Theoretical Politics* 10, no. 2 (April): 147-178.
- Regenwetter, Michel, and Bernard Grofman (1998). "Approval Voting, Borda Winners, and Condorcet Winners: Evidence from Seven Elections." *Management Science* 44, no. 4 (April): 520-533.
- Saari, Donald G. (1994). *Geometry of Voting*. New York: Springer-Verlag.

Saari, Donald G., and Jill Van Newenhizen (1988a). "Is Approval Voting an

"Unmitigated Evil"? A Response to Brams, Fishburn, and Merrill." *Public*

Choice 59: 133-147.

Saari, Donald G., and Jill Van Newenhizen (1988b). "The Problem of Indeterminacy in

Approval, Multiple, and Truncated Voting Systems." *Public Choice* 59:

101-120.

"Symposium: Economics of Voting" (1995). *Journal of Economic Perspectives* 9, no. 1

(Winter): 3-98.

Table 1**Borda Counts, Approval Votes, Borda Rankings, and Majorities for President**

Candidates	52 Ballots with Rankings			Approval Votes			
	Votes in Position			Borda Count	Approval Votes	19 Nonranked	
	1	2	3			Ballots	Total
<i>A</i>	24	11	17	59	22	10	32
<i>B</i>	9	19	24	37	9	5	14
<i>C</i>	19	22	11	60	20	10	30

Borda Ranking	Frequency	Majorities, Based on the 52 Ballots with Rankings	
<i>ABC</i>	11	<i>A > B</i>	35 - 17
<i>ACB</i>	13		
<i>BAC</i>	0	<i>C > A</i>	28 - 24
<i>BCA</i>	9		
<i>CAB</i>	11	<i>C > B</i>	32 - 20
<i>CBA</i>	<u>8</u>		
<i>Total</i>	52		

Table 2**Borda Counts and Approval Votes for Council**

Candidates	52 Ballots with Rankings			Approval Votes			
	Votes in Position			Borda Count	Approval Votes	22 Nonranked	
	1	2	3			Ballots	Total
<i>a</i>	8	6	4	329	39	15	54
<i>b</i>	8	8	2	293	36	13	49
<i>c</i>	2	5	10	277	35	12	47
<i>d</i>	8	7	3	292	31	11	42
<i>e</i>	1	8	6	259	31	11	42
<i>f</i>	2	4	7	256	29	11	40
<i>g</i>	9	3	7	256	29	10	39
<i>h</i>	7	5	4	252	27	10	37
<i>i</i>	2	0	4	195	22	11	33
<i>j</i>	1	2	0	130	12	7	19
<i>k</i>	1	1	1	115	13	5	18

