

Adoption of Approval Voting for Senate-Run Elections

Proposal

The Senate Working Group on the Bylaws proposes the following motion:

The Faculty Senate of Rice University adopts the Approval voting system for all the elections it holds. The instructions to voters and/or the ballots shall contain the statement:

This election uses the Approval method of voting. Mark each candidate that you approve of to serve in the particular position. You may vote for as many candidates as you wish. You may vote for all the candidates if you approve of them all; such a ballot will not help select a winner, but it will show that you voted and that you approved of the winner. The candidate with the largest number of votes wins the election. In case of a tie, a winner will be chosen by lot from among the tied candidates.

Approval

The motion was approved by the Faculty Senate December 6, 2006.

Background

A document providing information on voting systems and the Working Group's arguments for the Approval system was distributed to the Senate before the November 15, 2006 meeting, and is attached for reference.

Voting Systems for Senate-Held Elections

James F. Young, November 2006

Charge

The Faculty Senate working group on Senate Bylaws was asked to consider what type of voting system might be most suitable for Senate-Held elections, e.g., for Senators, and for Promotions and Tenure (P&T) Committee members.

Background

Previous elections held by the Faculty Council (FC) among the entire faculty, for FC members, University Council members, etc., used a preferential voting method called “Instant Runoff Voting,” more formally called the Hare System, after its inventor Thomas Hare (1857). The reasons for the FC adopting this system, or when it did so, are unknown to us. The Senate continued to use the same system to conduct its elections. However, the nature of Senate elections is different from FC elections because Senate and P&T members represent, and are elected by, numerous, smaller constituencies than was the case for FC. Thus, there are fewer voters in each election and a greater possibility of ties or close elections. Last year there was some concern that a required coin-toss in one election led to an arbitrary result, and that a different voting method might well have produced a different winner.

Voting Systems

The study of voting systems became an academic field around the time of the French Revolution. It is related to game theory and may reside in a department of mathematics, philosophy, or political science. The purpose of a voting system is to take a set of voter preferences and produce an election outcome. Most voting systems are based on the concept of majority rule, or the principle that more than half of the voters should get the outcome they want. We are most familiar with the traditional single-vote-plurality system commonly used in U.S. elections: every voter gets one vote, and the candidate with the most votes wins. Nearly everyone studying voting methods agrees that the simple plurality system does the worst job of picking the candidate that the majority of voters prefer and virtually guarantees a two-party monopoly. Given the simplicity of majority rule, it is surprising that hundreds of voting systems exist. If there are only two candidates, one necessarily will receive a majority of the vote unless there is a tie. However, when there are three or more candidates, there may not be a single one that is preferred by a majority. Different voting systems have different forms for allowing the individual voter to express his or her preferences, and prescribe different ways of determining the majority or best candidate based on those preferences. In plurality voting, voters select only one option (and sometimes a run off election is held to produce a majority); in preference voting, like the Hare system, voters rank their choices from most to least preferred. In cumulative voting, voters get as many votes as there are candidates, and may vote for the same candidate multiple times. In approval voting, voters can vote only once for each candidate, but may vote for as many candidates as they approve. Rarely used now is the “reverse” voting system of Athens: ostracism; each year the citizens voted for a citizen to be banished for the next ten years. Now, *that* is a negative campaign, but not without some appeal even today.

The natural question is: which voting system is best or most fair, which leads to the problem of defining a fair election. More than twenty criteria for a fair election have been proposed by various scholars. Some are simple and intuitive, such as no single voter should be able to dictate the outcome of an election, or, if every voter prefers one candidate, he should be declared the winner. Other criteria are quite technical and

difficult to understand without examples. Please refer to the references given below for more fairness criteria with examples. The important point is that economist Kenneth Arrow proved in 1950 that no possible voting system can satisfy all fairness criteria, even a reduced set of three or four criteria. Although Arrow's proof helped win him the Nobel Prize, it means that *there is no one best voting system*.

Below, we propose that the Senate replace the Hare system of voting with the Approval voting method. We will briefly describe both systems and our reasons, but for more information we suggest you refer to the following online references. In the interests of full disclosure, a good deal of the text here has been lifted from these sources. There are, of course, many other books and papers.

- <http://www.sci.wsu.edu/math/Lessons/Voting/> is a very readable, relatively short general tutorial describing several voting systems. It has nice examples, illustrates some fairness criteria, and the problems that can occur. It is organized into six lessons, of which all are good, but the most relevant are Lessons 1, 2, 4, and 6.

- http://theorem.ca/~mvcorks/code/voting_methods.html provides a good general discussion of voting methods and fairness criteria. It has examples, is somewhat technical but readable, and of moderate length.

- <http://www.barnsdl.demon.co.uk/vote/approve.html> focuses on the advantages of Approval voting. It is easy to read and relatively short.

- Wikipedia has everything, of course. See http://en.wikipedia.org/wiki/Voting_system, http://en.wikipedia.org/wiki/Approval_voting, and http://en.wikipedia.org/wiki/Instant-runoff_voting. All are easy to read, informative, and have many links to more information.

- http://fc.antioch.edu/~james_green-armytage/voting.htm is an introduction to voting methods "intended to be readable by someone who is totally new to the field." However, it is very long, somewhat rambling, and often mathematical. It has a survey describing forty of "the most interesting" voting methods, if you want a sense of the variety (and complexity) of possible voting systems.

Proposal

We propose that the Senate adopt the Approval Voting method for its elections, in place of the Hare, or instant runoff method, used previously by the FC and the Senate.

The Hare System. Voters rank the candidates, from most desirable (1) to least desirable. They do not have to rank all the candidates. If no candidate receives an overall majority of first rankings, the candidate with fewest first rankings is eliminated, and his or her votes are transferred to the other candidates according to the second preference on those ballots. The process continues in rounds until one of the remaining candidates achieves a majority. In the case of a tie for the elimination of a candidate in any round, one is chosen by lot. Advocates say that the preferential ballot provides more information, and the Hare system allows voters to express their preferences more completely than using a simple one-vote ballot. However, the information and preferences may never be considered in the final result if a candidate is eliminated early, and some ballots may be eliminated completely if the voter does not express enough preferences. It can be shown that the Hare system fails to satisfy some important fairness criteria.

Of particular concern for Senate elections, eliminating a candidate by lot during the counting rounds can result in quite different outcomes depending on which candidate is eliminated. Since ties are more likely with Senate elections, the Hare system has the possibility of producing inconsistent, arbitrary results. Furthermore, the idea of strictly ranking candidates presupposes strong preferences, which are rare in Senate elections. Often, voters consider two or more candidates equally qualified and acceptable. In this

case, a voter's lower rankings (and maybe even the highest) can be largely arbitrary. In the Hare system, changes in the second, and lower, preferences can easily change the final winner. If there is a strong feeling about a candidate in a Senate election, it is more likely to be disapproval of one candidate for some particular reason, rather than a strong preference.

Approval Voting. Approval voting is very simple. Each voter may cast one vote for as many candidates as he or she wishes. In doing so, he or she gives an equal vote for every candidate deemed acceptable to serve, and gives no votes to unacceptable candidates. Determining the winner is also simple: the candidate with the most votes wins. Approval voting is easy to understand, and easy to administer. Since more votes can be cast than the number of voters, it is less likely that a tie will result. If there is a tie, the choice is between candidates who have been approved by an equal number of voters; no candidates, nor ballots, are eliminated in the counting process.

Many of the problems faced with preferential voting methods, like the Hare system, simply don't apply to non-preferential systems like Approval voting. Hare advocates complain that the Approval system doesn't let voters express all their preferences, but at least it counts all the preferences that a voter has expressed, something that can't be said for Hare. Since Approval voting lets people vote for more than one candidate, some claim that it violates a "1-person-1-vote" rule. But if 1-person-1-vote means that each voter has an equal opportunity to vote his/her preferences and to have those preferences counted, then Approval voting doesn't violate that rule, though Hare arguably does, when it erratically chooses which voter's preferences it will count or not count. Situations can be constructed where Approval voting produces counter-intuitive results, but it is hard to do so.

For these reasons we recommend that the Senate adopt Approval voting.