

# **A Minimax Procedure for Electing Committees**

**A presentation by**

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## Abstract

A new procedure for electing committees, called the *minimax procedure*, is described. Based on approval voting (AV) ballots, it chooses the committee that minimizes the maximum “Hamming distance” to all voters, called the *minimax outcome*. This outcome may be different from, and even diametrically opposed to, the outcomes obtained by Majority or Plurality Voting. The former is shown to minimize the sum of the Hamming distances to all voters, and can therefore be called the *minisum outcome*. Computer simulation is used to determine how much, on average, minimax and minisum outcomes diverge. The manipulability and monotonicity of the minimax procedure, and other social-choice properties, are also investigated.

As an illustration, the minimax procedure is applied to ballot data from the 2003 Game Theory Society (GTS) election of a council of 12 new members from a list of 24 candidates. If the minimax procedure had been used, the 9<sup>th</sup> and 10<sup>th</sup> biggest vote-getters would have been displaced on the council by the 16<sup>th</sup> and 17<sup>th</sup> biggest vote-getters. The differences would have been even more substantial if the number of candidates to be elected had been endogenous, rather than fixed at 12. It is argued that when few if any voters cast identical AV ballots, as was true in the GTS election (there were  $2^{24}$ , or approximately 16.8 million possible ballots), a minimax committee will better represent the interests of all voters than any other, including the minisum committee. Refinements to the procedure that address the duplicate-ballot problem are discussed.

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