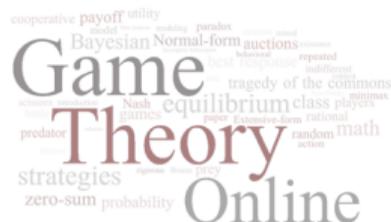


Introduction



Our setting now:

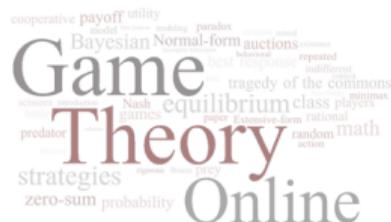
- a set of **outcomes** or **alternatives**
- agents have **preferences** over them
- the 'goal': a **social choice function**: a mapping from profiles of preferences to a particular outcome
 - Which such functions have desirable properties?

Voting Schemes base on Ranking

- **Plurality with elimination** (“instant runoff”, “transferable voting”)
 - everyone indicates their favorite outcome
 - if some outcome has a majority, it is the winner
 - otherwise, the outcome with the fewest votes is eliminated (may need some tie-breaking procedure)
 - repeat until there is a winner.
- **Borda Rule, Borda Count**
 - assign each outcome a number.
 - The most preferred outcome gets a score of $n - 1$, the next most preferred gets $n - 2$, down to the n^{th} outcome which gets 0.
 - Then sum the numbers for each outcome, and choose the one that has the highest score
- **Successive elimination**
 - in advance, decide an ordering of alternatives
 - everyone votes for the first or second, and the loser is eliminated



Condorcet Consistency:



If there is a candidate or outcome that is preferred to every other candidate in pairwise majority-rule comparisons, that candidate should be chosen.

- There is not always a Condorcet winner:
- sometimes, there is a cycle where A defeats B , B defeats C , and C defeats A , known as a Condorcet Cycle.