(Tideman) Ranked Pairs Tiebreakers

Proposed Algorithm

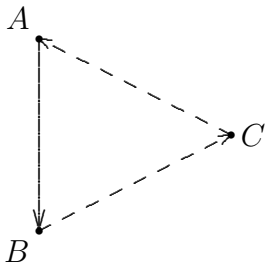
Use Tideman ranked pairs, but do not include any edges where it along with some edges with greater or equal margin of victory would create a cycle. After the automated portion of the algorithm stops and *at that point in time when a decision becomes relevant*, the Chair chooses any ordering consistent with the graph.

I'll write A defeats B as AB, etc.

Three Candidate Example

7-4 AB

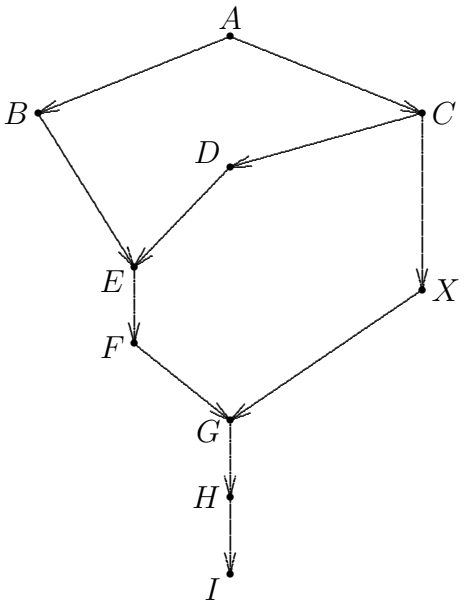
6-5 BC, CA



Chair decides among CAB, ACB, ABC.

Example from a Modification of our Zoom Ballots

Ten Candidates A-I and X and 22 voters. After considering margins 14-8 and greater, the directed graph (omitting some "redundant" edges) is as below.

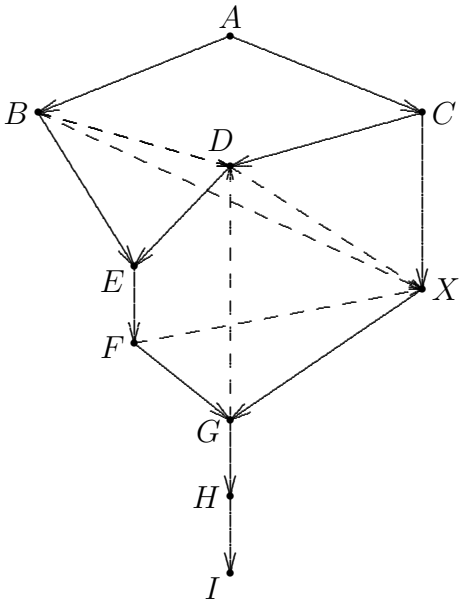


13-9 GD

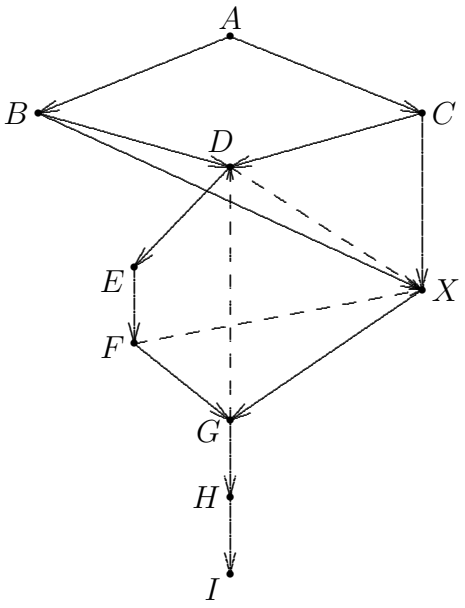
This edge would create a cycle so, we can't add it.

12-10 BD, BX, DX, XE, FX

We can choose among the dashed edges, other than the excluded GD.

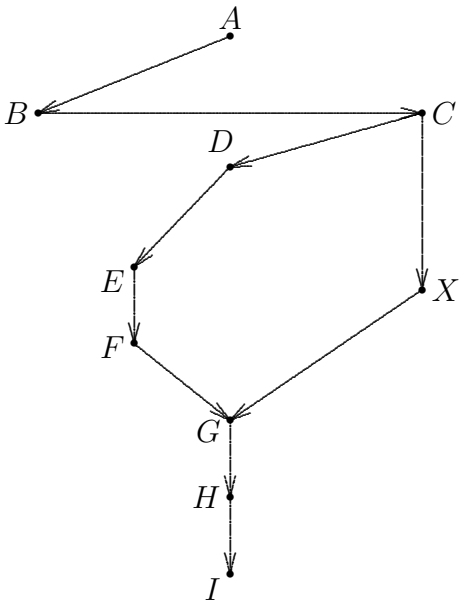


According to my algorithm, we can add only BD and BX. All other potential edges are part of a cycle if we were to add all of the dashed edges.



11-9 BC, XE

We can only add BC (and no longer need BD and BX).



There are no additional edges among C-G and X that do not create a cycle among edges with at least the margin of victory of that edge. At this point, the Chair just has to decide where to insert X between C and G.

Here's an example of how letting the Chair wait until the *relevant time* might affect the Chair's decision. Suppose the Chair has ranking ...E...X...D... and we plan to interview four candidates. If A, B, C accept our invitation, the Chair would want X between C and D. If one of them turned us down, the Chair would want X after E. The added benefit of postponing a decision is that the Chair doesn't have to agonize about what doesn't matter, for instance if we were interviewing three and A, B, C accept our invitation.