Sociotropic Behavior in Voting

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Main Idea

In COMSOC, much attention has been given to manipulation. But what if people manipulate for the sake of the group?

We propose a model of sociotropic voting, where voters cast ballots based only on the interest of the rest of the group, ignoring their own preferences.

Example

Suppose we need to buy some drinks for a dinner. We vote using the Borda rule.

: "Beer ≻ Wine ≻ Milk!"

: "Wine ≻ Beer ≻ Milk!" : "Wine ≻ Beer ≻ Milk!"

: "Beer ≻ Milk ≻ Wine!"

Suppose you are . The Borda winner would be Beer, your favorite. However, being very considerate, you know that Wine is quite popular (two friends place it first). To accommodate them, you too rank it first:

: "Wine ≻ Beer ≻ Milk!"

: "Wine ≻ Beer ≻ Milk!" : "Wine ≻ Beer ≻ Milk!"

: "Beer ≻ Milk ≻ Wine!"

The Borda winner is now Wine! What happens if all voters behave sociotropically? Will they actually achieve the group's interest?

Formal Model (Ranked Ballots)

We have n voters (, , , , ...) that vote on some alternatives (▲, ■, ★, ...). Each voter has their individual preference:

▲	▲	■	★
■	★	▲	▲
★	■	★	■

Suppose is sociotropic. She will form her ballot by considering the preferences of the rest of the group, and by applying some internal aggregation function:

$$\text{Borda}\left(\begin{array}{ccc} & & \\ \blacktriangle & \blacksquare & \bigstar \\ \bigstar & \blacktriangle & \blacktriangle \\ \blacksquare & \bigstar & \blacksquare \end{array}\right) = \blacktriangle \succ \bigstar \succ \blacksquare$$

We assume all voters compute their ballots similarly (for example, considers the ballots of , and) and simultaneously, building the sociotropic profile:

▲	▲	▲	▲
★	■	★	■
■	★	■	★

- We assume that all voters share the same internal aggregation rule.
- Observe that ties might emerge. We discuss how to handle this in the paper.

Overview

We consider three types of voting:

- **Single-winner approval voting**
- **Single-winner ordinal voting**
- **Multi-winner approval voting**

We find that, in most cases, the outcome can change due to sociotropic behavior. Our results suggest that this can have both positive and negative effects.

Does sociotropic voting affect the outcome?

Interestingly, we find the following:

> *If both the external election and the sociotropic voters use single-winner approval voting, the outcome does not change.*

In general, for other settings (other rules, ordinal ballots, multi-winner voting, ...), the outcome can change. Still:

> *If both the external election and the sociotropic voters use plurality voting, any winner in the sociotropic profile is also a winner in the original profile.*

The latter holds even if not all voters are sociotropic!

Negative effects of sociotropic behavior

If the election already uses a fair rule, sociotropic voting can have negative effects:

> *For multi-winner voting, due to sociotropic behavior, the outcome of the election can be unproportional (fail JR) even if the external election uses a proportional rule.*

Similar results hold for ordinal voting, where we might lose a Condorcet winner due to sociotropic behavior.

Positive effects of sociotropic behavior

Sociotropic behavior can also help, in particular if voters use a fairer internal rule than the rule used in the election.

> *For ordinal voting, if sociotropic voters use a weakly-Condorcet internal aggregation rule, then the Condorcet winner of the original profile will always unanimously win the election.*

We get similar results for multi-winner voting, but only in special cases.

> *For multi-winner approval voting, if sociotropic voters internally use MES, for party-list profiles, the outcome will always satisfy JR (even if we use a non-proportional rule).*

Additionally, in **simulations**, we have found out that, if sociotropic voters use a proportional rule (such as MES, seqPAV, ...), then the outcome of the election will be almost always strongly proportional (EJR+), even if the election uses a non-proportional rule, and even if only a fraction of the voters are sociotropic.

We have found similar results for ordinal voting, where most of the time sociotropic behavior results in the election of the Condorcet winner.

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