Vote buying revisited

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(joint work with Wolter Pieters)
Voting

- purpose
- requirements

Anonymity

Vote buying

Buying

Voters

Conclusions

- establish consensus within a group
- incentive to direct consensus \(\rightarrow\) attacks
- centuries-long refinement of attacks and countermeasures

- e-voting: years-long reinvention of the wheel
Election requirements:
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  - Only eligible voters
  - 1V1V
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  - individual
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- **Fairness**

- **Anonymity (Receipt-freeness)**
intuition

Expressed using anonymity groups.

\[ AG(subject) \subseteq AnonymitySet \]

(note: *subject* wants anonymity)

Two dimensions of anonymity:

- Indistinguishability
- Uncertainty
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Two dimensions of anonymity:

- \textbf{Indistinguishability} \( (AG(Pieter) \subseteq Profs) \)
- \textbf{Uncertainty} \( (AG(salary(Pieter)) \subseteq [3k, 25k]) \)
What is anonymity in voting?
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- unknown who cast a vote?

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Extra twist: vote buying!
Because it interferes with the intent of voting:

*A collective expression of will as inferred from a number of votes.*

– dictionary.com
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- Does vote buying always interfere?
- What about election promises?
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- Does vote buying always interfere?
- What about election promises?
- ...

- Where is the boundary between the two?
Examine issue from influencer’s point of view.
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Two ways to influence voters:

1. enticement
   reward, seduce
2. coercion
   threaten
Illustrations of acceptable and unacceptable conduct:

**acceptable enticement** promising to lower taxes

**unacceptable enticement** paying a voter to vote for you

**acceptable coercion** claiming the others to be far worse

**unacceptable coercion** threats of physical violence
motivating examples

Examples of incentives for rewards:

- *handout*
  give each voter 100,- and mention candidacy
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- **mensa**
  upon election, disabled child prodigies get 100,-
Methodology

Classification approach: adopt attack trees (Schneider).

Example:

- open safe
  - get combination
    - guess
    - from keyholder
  - break open
    - by force
    - lockpick
Derived dimensions:
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- group size (!)
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- rewarding conditions (cast vote, election win, unconditional, other)
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Attack tree not ideally suited to determine dimensions.
Voters casting votes
Voters casting valid votes
Voters casting compliant, valid votes
Voter characteristics w.r.t vote buying:

- accepts reward
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- accepts reward
- initial preference
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- aware of attempt
Voter characteristics w.r.t vote buying:

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- aware of attempt
- targetted
Voter characteristics w.r.t vote buying:

- accepts reward
- initial preference
- aware of attempt
- targeted
- vote cast
Preliminary attack tree constructed (WIP).

Early indication:

Generic effect of vote buying is already attainable by casting the vote(!)
concluding

Vote buying . . .

- . . . depends on many different issues
- . . . can be hard to distinguish from election promises
- . . . can be targeted at influencing groups

In short: vote buying ≠ money in exchange for proof of compliance
concluding

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In short: vote buying ≠ money in exchange for proof of compliance

Thank you for your attention

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