CS378
Autonomous Multiagent Systems
Spring 2005

Prof: Peter Stone
TA: Nate Kohl

Department of Computer Sciences
The University of Texas at Austin

Week 11b: Thursday, April 6th

Good Afternoon, Colleagues

Are there any questions?

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- Diseconomies of scale?
- Indep of irrel alternatives? (why desirable)
- Dictatorial scheme?
- Implications of impossibilty results
- Clarke tax alg — how does it improve things?
  example - how did collusion help

Auctions vs. voting

- Auctions: maximize profit
  - result affects buyer and seller
- Voting: maximize social good
  - result affects all

Gibbard-Satterthwaite

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What about Clarke tax algorithm?

Class Discussion

Michael Romer on tactical voting

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- Push-over: Rank someone higher to get someone else elected
  - e.g. in a protocol with multiple rounds

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Criterion of independence of irrelevant alternatives. If one set of preference ballots would lead to an an overall ranking of alternative X above alternative Y and if some preference ballots are changed without changing the relative rank of X and Y, then the method should still rank X above Y.

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Non-dictatorship. There should not be one specific voter whose preference ballot is always adopted.

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Not all possible!

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- Smith set: smallest set of candidates such that each candidate in the set preferred over each candidate not in the set
- Every candidate in the Smith set is relevant

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- Does that solve everything? What about cycles?

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Consumers: utilities, endowments

Producers: production possibility sets

Variables: prices on goods

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  - Braess' paradox

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  - If rejects, both get nothing
- Another version
  - One person makes an offer
  - Other accepts, rejects, or counters
  - If counters, $.05 lost
  - Game ends with an accept or reject

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Anonymity: no discrimination

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Maximize $u_1(o) * u_2(o)$

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- Contract nets: task allocation among agents
  - Contingencies
  - Leveled commitment (price)
- Coalitions
  - Formation
  - Optimization within
  - Payoff division

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- Backing out of contracts
  - Contingency (future events)
  - Leveled commitment (price)
  - What are some of the tradeoffs?

Contingency vs. leveled commitment

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3. What if only one agent observes that relevant event happened?

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1. Breacher's gain may be smaller than victim's loss
2. May decommit insincerely (wait for other) - inefficent contracts executed.

Coalitions

- Formation
- Optimization within
- Payoff division

DRDM Summary

For many agents: voting, general equilibrium, auctions

For fewer agents: auctions, contract nets, bargaining

Possible in all: coalitions

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All self-interested, rational agents