

**CS395T**  
**Agent-Based Electronic Commerce**  
**Fall 2003**

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# Logistics

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- Submitting responses to readings
  - Prefer non-**just**-summary ones
  - Show me you've **thought** about the readings
  - If it helps to summarize in addition, that's fine

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- Any questions?

# Mechanism Design

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- The rules of the game (what strategies are possible)
- Defines a mapping from strategy to outcome
- Terms:
  - Efficient
  - (Weak) Budget balanced
  - Individual rationality
- “An ideal mechanism provides agents with a dominant strategy and also implements a solution to the multiagent distributed optimization problem” (p. 29, last paragraph of the section)

# Relation to game theory

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		Player 2	
		Action 1	Action 2
Player 1	Action 1	4,8	2,0
	Action 2	6,2	0,8

- What's the mechanism in this game?



# Relation to game theory

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		Player 2	
		Action 1	Action 2
Player 1	Action 1	4,8	2,0
	Action 2	6,2	0,8

- What's the mechanism in this game?
- What's an alternative mechanism?

# Bayes Nash Equilibrium

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  - Define a Nash equilibrium (what do you need to know)?
  - Define a Bayes-Nash equilibrium (what do you need to know)?
  - Is there a dominant strategy equilibrium?
  - What if I tell you, I'll take what you tell me as your value and compute for you the correct thing to do given what other people bid?

# Ex ante vs. ex post

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- Mechanism: each of you give me \$1, one gets \$100 back



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- Individually rational?

# Ex ante vs. ex post

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- Mechanism: each of you give me \$1, one gets \$100 back
- Individually rational?
- Ex ante, yes
- Ex post, no

# Vickrey-Clarke-Groves

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- Groves: efficient, strategy-proof
- Pivotal: individually-rational

	value
camera alone	\$50
flash alone	10
both	100
tripod	20

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- Groves: efficient, strategy-proof
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	value
camera alone	\$50
flash alone	10
both	100
tripod	20

	value
camera	\$60
flash	20
tripod	30

# questions

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- What is the allocation?

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- What is the allocation?
- What are the payments?
- Why is it strategy proof?
- What are choice set monotonic, negative externality, single-agent effects?



# Computational considerations

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- Why is this mechanism a burden on the bidders?

# Impossibility/possibility results

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- e.g. strategy-proof, efficient, individually rational, and (strong) budget-balanced impossible