

## 14.12 Economic Applications of Game Theory

- Professor: Muhamet Yildiz
- Lecture: MW 3:00-4:30

## Recitations

- F 10
- F 3
- F xx (xxx)

## Quiz Problem

- Without discussing with anyone, each student is to write down a real number  $x_i$  between 0 and 100 on a paper and submit it to a TA.
- The TAs will then compute the average

$$\bar{x} = \frac{x_1 + x_2 + \cdots + x_n}{n}.$$

- The grade of a student is  $100 - |x_i - 2\bar{x}/3|$  where  $x_i$  is the number student bids.

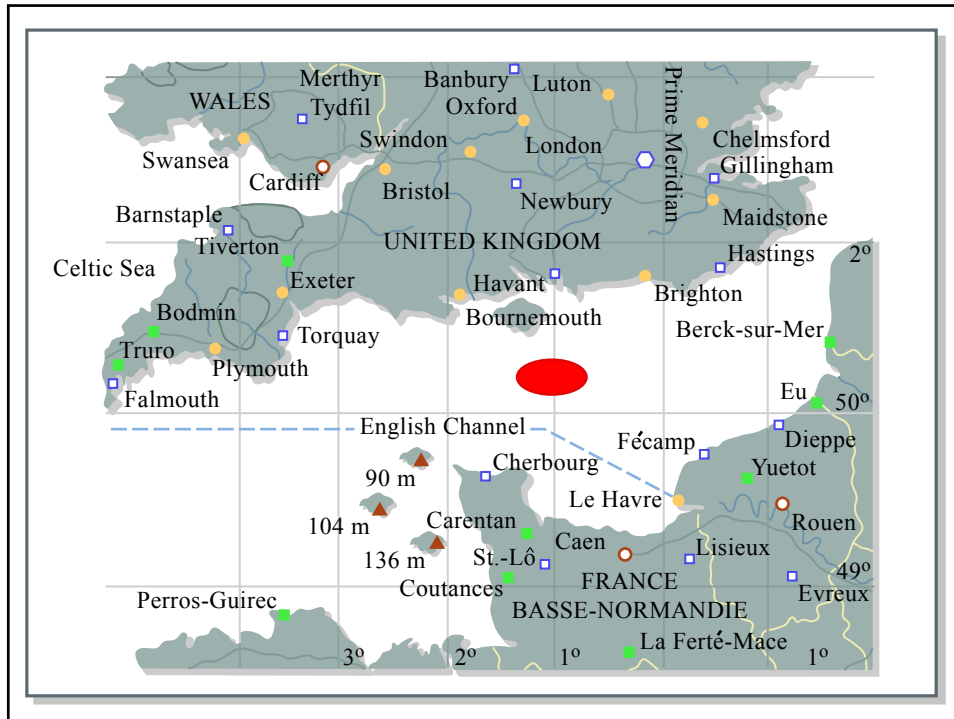


Figure by MIT OCW.

## Name of the game

Game Theory = Multi-person decision theory

- The outcome is determined by the actions independently taken by multiple decision makers.
- Strategic interaction.
  - Need to understand what the others will do
  - ... what the others think that you will do
  - ...

## A coordination game

	Left	Right
Top	(1,1)	(0,0)
Bottom	(0,0)	(1,1)

## A game

1 \ 2	L	m	R	
T	(1,1)	(0,2)	(2,1)	1 is rational
M	(2,2)	(1,1)	(0,0)	
B	(1,0)	(0,0)	(-1,1)	

2 is rational and knows that 1 is rational

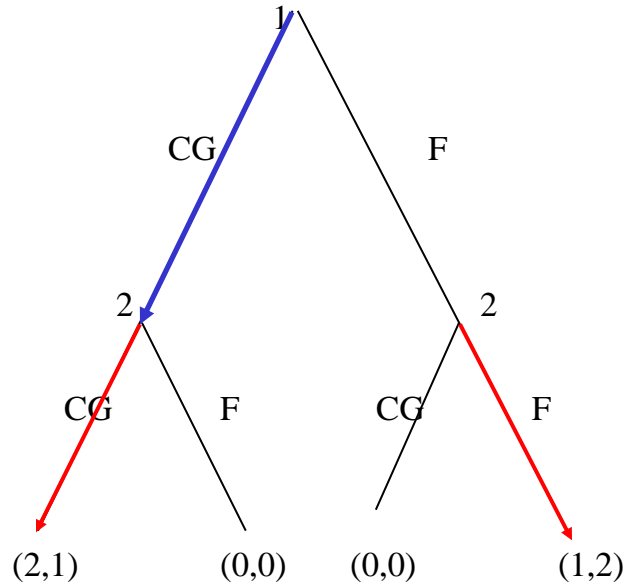
## A coordination game

	Left	Right
Top	$(1,1)$	<del><math>(0,0)</math></del>
Bottom	<del><math>(0,0)</math></del>	$(1,1)$

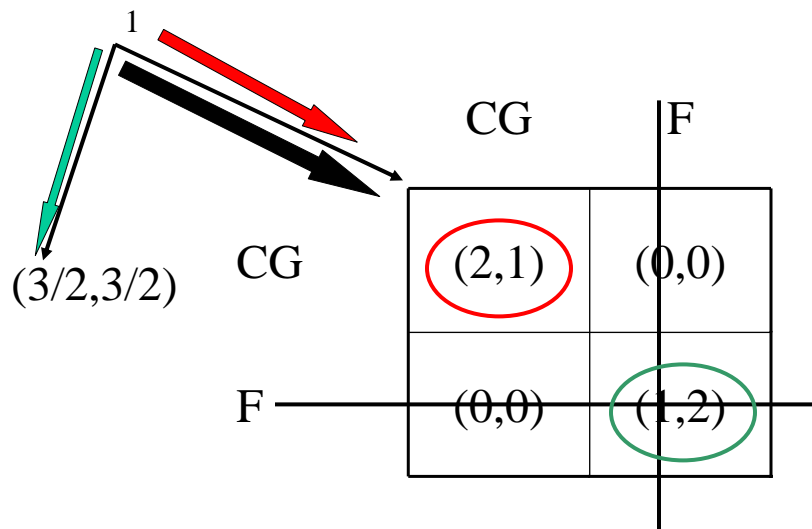
## Battle of Sexes

$(2,1)$	<del><math>(0,0)</math></del>
<del><math>(0,0)</math></del>	$(1,2)$

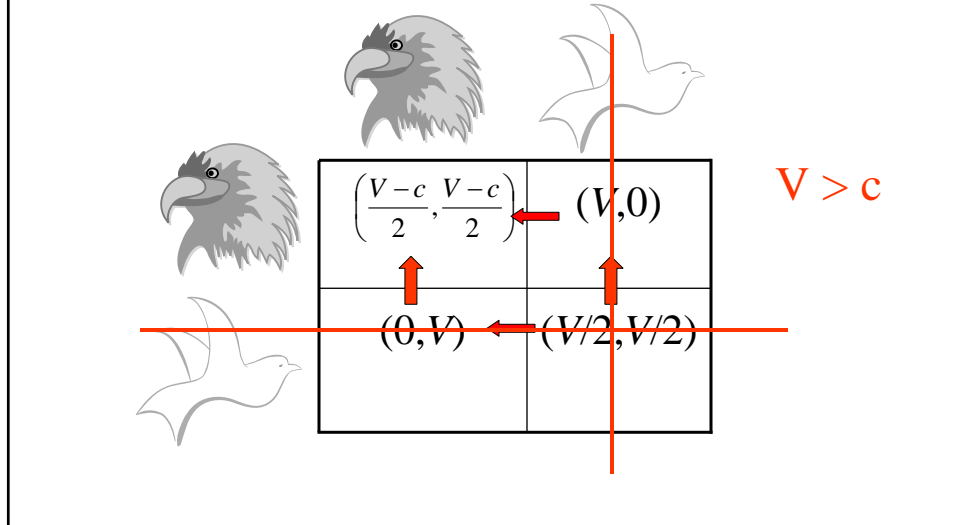
### Battle of The Sexes with perfect information



### Battle of Sexes with outside option

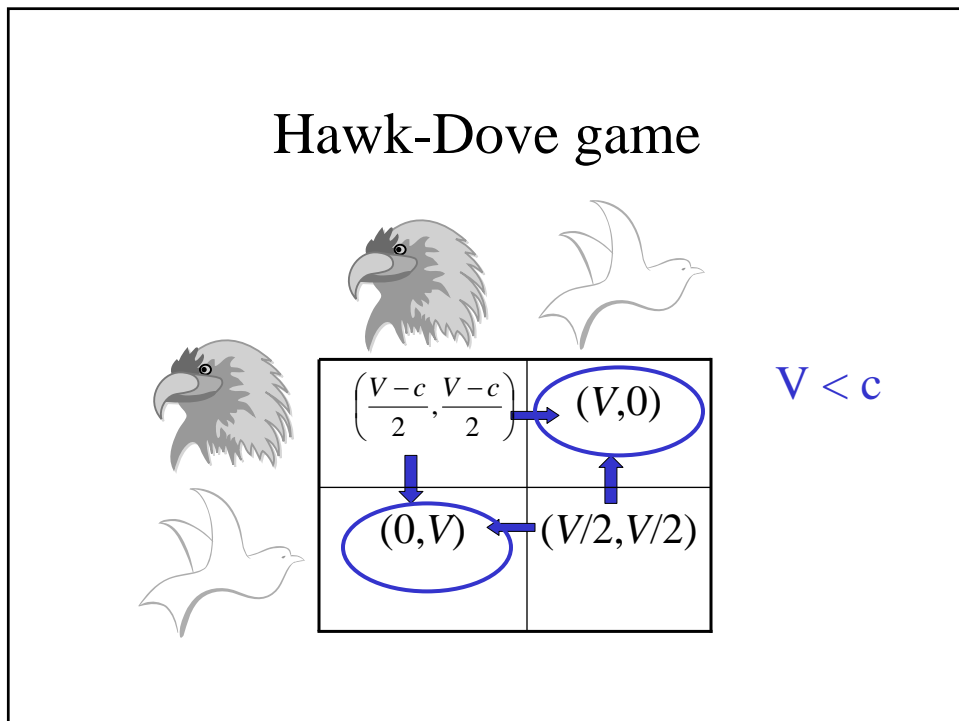


## Hawk-Dove game

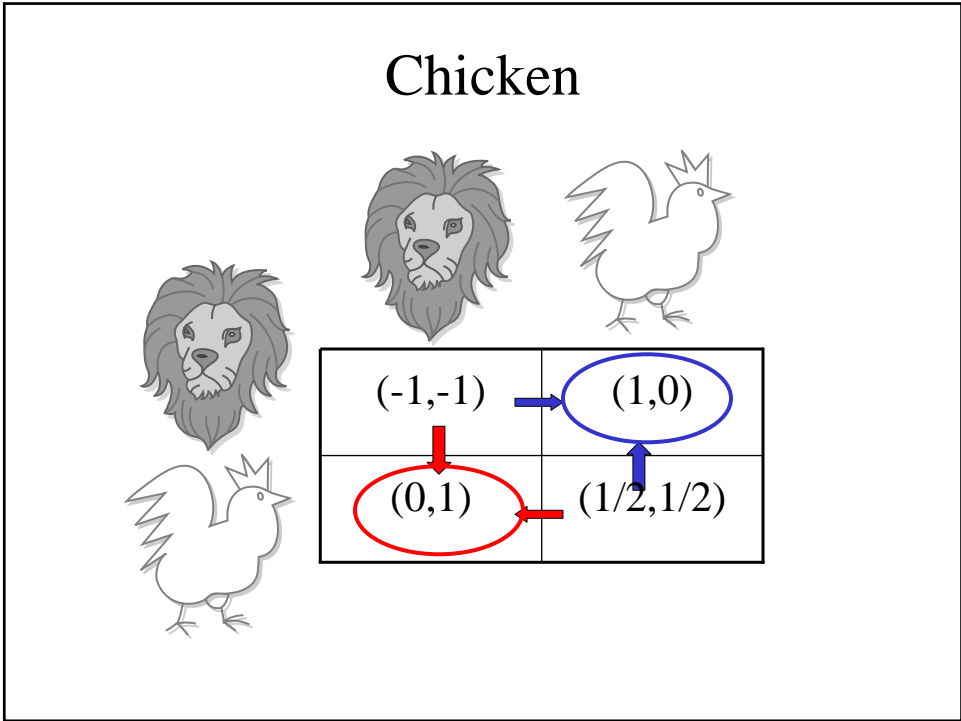


Figures by MIT OCW.

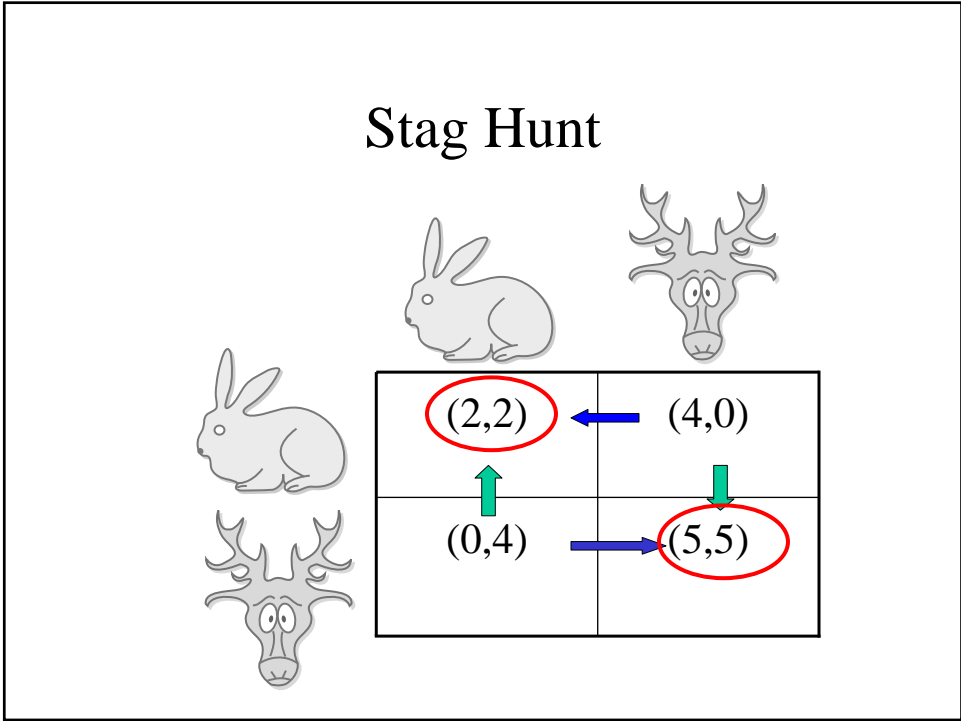
## Hawk-Dove game



Figures by MIT OCW.



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