Iterated Elimination of Dominated Strategies

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Dominated Strategies

Rational players *NEVER* choose **dominated actions**
- i.e. actions which yield a lower payoff compared to other actions, irrespective of action of others

An action a_i *is strictly dominated by* b_i *if for all* a_{-I}

$$u_i(a_i,\ a_{-i}) < u_i(b_i,\ a_{-i})$$

The strategy a_i is weakly dominated by b_i if for all a_{-i}

$$u_i(a_i,\ a_{-i}) \leq u_i(b_i,\ a_{-i})$$

- and $u_i(a_i,\ a_{-i}) < u_i(b_i,\ a_{-i})$ for some a_{-i}

Good Strategy

Attempt to see the situation from the viewpoint of your rival
  ◦ "Putting yourself in others shoes"

And also understand that he is trying to do the same!

Prisoner's Dilemma

P_1/P_2	Confess	Deny
Confess	(-5,-5)	(0,-20)
Deny	(-20,0)	(-1,-1)

Iterated Elimination

	L	C	R
U	1.10	3.20	40,0
M	10,20	50,-10	6,0
D	2,20	4,40	10,0

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Iterative Elimination of Weakly Dominated Strategies

	L	R
T	2,1	0,0
M	2,1	1,1
B	0,0	1,1

If we do iterative elimination of weakly dominated strategies, then the result is not necessarily unique.

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	L	R
T	2,1	0,0
M	2,1	1,1
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If we do iterative elimination of weakly dominated strategies, then the result is not necessarily unique.

One more illustration

	L	R
T	3,0	0,1
M	0,0	3,1
B	1,1	1,0

Is there any dominant strategy for any of the player?

Is there any strategy for any player dominated by any other strategy of the same player?

How about best responses of the row as well as column player

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Another Game

Rules

Choose a number between **0 and 100**. The winner is the person whose number is closest to **2/3 times the average of all chosen numbers**