Game Theory
Overview and Applications

By

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June 2001

> "Business is a game--the greatest game in the world if you know how to play it,"
>
> Thomas J. Watson (IBM's founder).

No background in game theory is required. This introduction may be of interest to everyone who communicates, in public or in private. We will introduce game theory, which is a rigorous mathematical approach, which shows that the same mathematical formalism can describe your argument [with your parents] and US Military Negotiations [with Soviet Union].

We will have a short (2 – 3 lectures) non-technical game theory introduction. We start with game theory fundamentals, and define the major concepts: **the set of players**, **their strategies** and **payoffs**, and **the set of possible actions.** Then, we introduce a notion of **Nash equilibrium**, and - time permitting – a notion of **subgame perfect equilibrium**. We will discuss basic **types of games** (such as **Prisoners dilemma**, coordination game, **zero-sum** and non zero-sum games, **one time** games, and **repeated** or infinitely repeated (i.e. **supergames**) games, **static** and **dynamic** games).

We will use basic game theory to approach every day situations and explain why some things happen, and other ones do not. To analyze "real life" games, we will present them as a combination of basic games, and find their equilibria. Sample questions we can address are below:

☛ Could your parents be more supportive of your wishes?

☛ Why some web addresses are sold for millions of dollars?
   Example: http://www.altavista.com/
   Used to be: http://www.altavista.digital.com/

☛ Why prohibition failed?
   US: adopted 1919 - repealed 1933
   Finland: adopted 1919 - repealed 1931

☛ When humans tend to cooperate, and when to fight?

☞☞☞   Any other question: please, discuss with each other to pick one of mutual interest. Submit your selection(s) via e-mail to galka@umich.edu

Try out GAMBIT: http://www.hss.caltech.edu/gambit/Gambit.html
[software program for solving games from Cal Tech]