

ance and repair of machines; and a wide variety of military problems.

Game theory is essentially a theory of competition. It deals with situations where the outcome will depend on the decision of two or more participants who have conflicting interests. It is assumed in such situations that each participant will act in a rational manner and will try to benefit as much as possible from his decisions. Most of the practical applications of game theory relate to situations involving two decision-makers - a so-called "Two-Person Game." To illustrate this game, suppose that two players, A and B, - I believe these players were made famous by Gilbert and Sullivan some years ago - suppose these players are competing with one another in a conflict situation.

Furthermore, suppose A has three alternative decisions, or strategies, available to him, and B has four. The first thing each player would do is, make up a table like the one shown on the slide, in which he would estimate the consequences of each possible pairing of strategies selected by himself and his opponent. Suppose the slide shows A's table. Then, the entry A two three represents the value of the game to player A. If he chooses strategy A two and player B chooses strategy B three; the other entries on the table represent the values to A of other strategy combinations. A negative value in the table would indicate a loss by a player - by player A, for the pair of strategies involved.

If each player wins what the other loses, this game is called a "Zero Sum Game." Now, if player B always used the same strategy and A knew what this was, - A can pick any one of the strategies on the side and B can take any of the ones on the top - if player B always uses the same strategy and A knew what this was, A would select that strategy which gained him the most, and he would continue to use it. A would then win the same amount from B each time they played, which would be rather rough on B. Consequently, B must change the strategy he selects each time