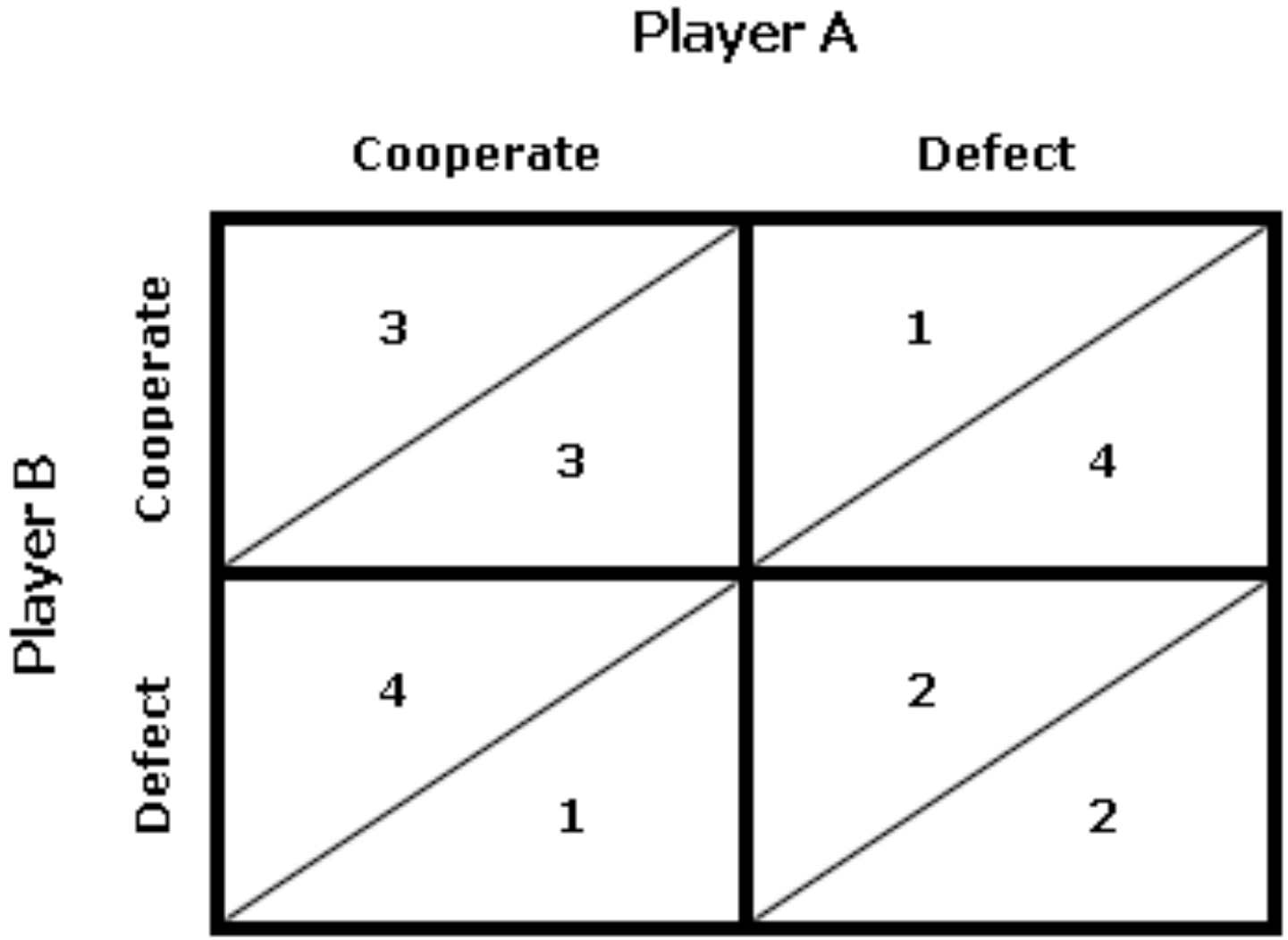
Interaction

Experiments about self-interest

Self-Interest Assumption in Game Theory

- Choices in games should always reflect what is best for the decision maker, i.e. what will maximize the decision maker's payoff

Prisoner's Dilemma (Tucker, 1955)



Defect-Defect is the *dominant strategy equilibrium*

Dominance

- A dominant strategy is one that does better than all other strategies a player has available
- A dominant strategy equilibrium is a set of dominant strategies, one for each player, generating a payoff for each player
- PD is an example of how a dominant strategy equilibrium can fail to be Pareto optimal - players can be made better off than the DSE without anyone being made worse off

Prisoner's Dilemma Labeling Experiment (Ross and Samuels, 1993)

- When PD is labeled the "Wall Street Game", only 1/3 cooperate
- When it is labeled the "Community Game", 2/3 cooperate
- Shows presence of both tendencies – defection and cooperation – which can be evoked by social signals

Nash equilibrium

- A Nash equilibrium (NE) is a set of strategies, one for each player, such that each player is playing their best response to the other player's strategy
- A DSE is a Nash equilibrium
- Nash proved that every game has at least one NE, but it may be involve mixed strategies, i.e. a strategy consisting of a probability distribution over pure strategies

The Ultimatum Game (Guth et al., 1982)

- $10 in one dollar bills available to be divided between two players
- “Proposer” chooses a division
- “Receiver” can either
  - accept: both receive proposed amounts
  - reject: both receive nothing
- How much should the Proposer offer?

Ultimatum game experiment (Thaler, 1988)

- Nash equilibrium strategy is for proposer to offer $1 and for receiver to accept it
- Most proposers offer $5 (even split), or a little less, to the receiver
  - altruism
- Low offers ($1) usually rejected
  - “altruistic punishment”

Dictator Game (Kahneman et al., 1986)

- One P (student in class) asked to divide $20 between self and other P. Other P has no choice to accept/reject.
- Two possibilities:
  - Even split ($10 each)
  - Uneven split ($18 for self, $2 for other)
- Game theory predicts uneven split
- 76% chose an even split

Ultimatum and Dictator Games in Traditional Societies (Henrich et al., 2001)

- Ps tested 15 small-scale societies
- Ultimatum game:
  - Mean offer varied from 0.26 to 0.58 (0.44 in industrial societies)
  - Rejection rate also quite varied: low offers rarely rejected in some groups, in others *high* offers are often rejected
- Great variation in behavior even among nearby groups; depends on deep aspects of culture, experience:
  - e.g. meat-sharing Ache (Paraguay) and village-minded Orma (Kenya) made generous offers, family-focused Machiguenga (Peru) showed low cooperation

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  - e.g. meat-sharing Ache (Paraguay) and village-minded Orma (Kenya) made generous offers, family-focused Machiguenga (Peru) showed low cooperation
- General conclusion: there is no such thing as *homo economicus*; cooperation behavior is highly variable, heavily determined by cultural norms

Effects of a Norm of Self-Interest

- People describe involvement in social cause as being more self-interest motivated than it is (Miller, 1999)
- Voting behavior in U.S. becoming more self-interest-driven (McCarty, in press), may reflect shift toward greater norm of self-interest in politics
- Economic theories and language “can become self-fulfilling” (Ferraro, Pfeffer, and Sutton, 2003)

Agreement

Bargaining and negotiation

Some definitions

- Bargaining: The process of coming to agreement when two or more parties differ in their preferences for setting the of level a quantity (e.g. a price, or an amount of a divisible good to be received by one person)
- Division: Bargaining over a fixed quantity
- Negotiation: The process of coming to agreement that may involve any number of dimensions on which the parties have different preferences (e.g. a labor contract dealing with wages, benefits, hours, working conditions, and job security)

Easy examples of agreement

- Cake cutting, a bargain between 2 people: “I cut, you choose” leads to fair division
- Hobson’s choice: Seller offers a good; buyer can accept it or not. Choice is determined by buyer’s preference (no bargaining)
- Auction: Seller commits to selling to the highest bidder (no bargaining)

Bartering

- One good for sale by seller; one potential buyer
- Seller and buyer each have *reservation prices* - the minimum acceptable price *s* for the seller and the maximum acceptable price *b* for the buyer
- Gain from trade $g = b-s$
- Bartering is bargaining over the division of *g*
- Example: Good is a used car; s=$5000 and b=$7000, so g=$2000. [$5000,$7000] is the *zone of agreement* or the *von Neumann-Morgenstern bargaining set*

Bartering: some theory

- Normative principle: Seller's revealed *s* for a given good should be independent of buyer's bartering strategy
- Consider two buyer's strategies:
  - Incremental offer (starting offer, then increases)
  - Fixed offer (starting offer, no increases)
- Should the seller's reservation price *s* differ in these two cases?

Bartering: experiment (Davies, unpublished)

- Sellers were merchants at the Grand Bazaar in Istanbul
- “Buyers” were students posing as shoppers, bidding on the same goods
  - Incremental strategy generated lower selling prices than fixed strategy across several goods

Negotiation and framing (Bazerman 1986)

A large car manufacturer has recently been hit with a number of economic difficulties and it appears as if three plants need to be closed and 6000 employees laid off. The vice president of prodcution has been exploring alternative ways to avoid the crisis. She has developed two plans:

Plan A: The plan will save 1 of the 3 plants and 2000 jobs.

Plan B: This plan has a 1/3 probability of saving all 3 plants and all 6000 jobs, but has a 2/3 probability of saving no plants and no jobs.

Which plan would you select?

Bazerman (1986) continued

Plan C: This plan will result in the loss of 2 of the 3 plants and 4000 jobs

Plan D: This plan has a 2/3 probability of resulting in the loss of all 3 plants and all 6000 jobs, but has a 1/3 probability of losing no plants and no jobs.

Which plan would you select?

Bazerman (1986) continued

Over 80% of subjects choose plans A and D, creating a framing effect

What does this tell us about negotiation?

Neale and Bazerman (1983) showed negotiators where overconfident by 15% on average in the likelihood of an arbitrator accepting a final-offer-by-package offer (65% confidence vs. 50% actual chance)

Failures of Pareto optimality in negotiation

Both sides are likely to be overconfident in winning (e.g. both sides think the gains from trade will ultimately favor their side), thus leading to higher transaction costs (cost of impasse) and failure to improve on the best alternative to a negotiated agreement (BATNA) available through a third party (Farber 1981)

Failures of Pareto optimality in negotiation

- False fixed pie belief and reactive devaluation (Neale and Bazerman, 1991; Ross and Stillinger, 1991) - believing what is good for the other side is bad for me
  - Example from Ross:

Initial evidence for the reactive devaluation barrier was provided in a 1986 sidewalk survey of opinions regarding possible arms reductions by the U.S. and the U.S.S.R. (Stillinger et al. 1991). Respondents were asked to evaluate the terms of a simple but sweeping nuclear disarmament proposal—one calling for an immediate 50 percent reduction of long-range strategic weapons, to be followed over the next decade and a half by further reduction in both strategic and short-range tactical weapons until, very early in the next century, all such weapons would have disappeared from the two nations' arsenals. As a matter of history, this proposal had actually been made slightly earlier, with little fanfare or impact, by the Soviet leader Gorbachev. In the Stillinger et al. survey, however, the proposal's putative source was manipu*lated*—that is, depending on experimental condition, it was ascribed by the survey instrument either to the Soviet leader, to President Reagan, or to a group of unknown strategy analysts—and only the responses of subjects who claimed to be hearing of the proposal for the first time were included in subsequent analyses.

The results of this survey showed, as predicted, that the proposal's putative authorship determined its attractiveness. When the proposal was attributed to the U.S. leader, 90 percent of respondents thought it either favorable to the U.S. or evenhanded; and when it was attributed to the (presumably neutral) third party, 80 percent thought it either favorable to the U.S. or evenhanded; but when the same proposal was attributed to the Soviet leader, only 44 percent of respondents expressed a similarly positive reaction.

More on reactive devaluation

Ross:

While such results, and related ones reported a generation ago by Stuart Oskamp (1965), are unlikely to violate the reader's intuitions and experience, there is a point about research methodology or strategy that is worth emphasizing. It would be relatively easy for any competent experimenter to illustrate that the perceived valence of a proposal can be influenced by the perceived valence of its source. All the experimenter would have to do is frame a fictional proposal and contrive a negotiation context that featured lots of ambiguity or uncertainty—for example, ambiguity about what the parties would do and receive, or about the conditions under which they could exercise an "escape clause," or about the consequences they would face for not living up to the proposal's terms. But it should be noted that in the case of the proposal offered by Gorbachev, the framer's interest presumably lay not in producing such reactive devaluation but in preventing it (to which end, presumably, he was obliged to formulate terms that either would be clear and forthcoming or else ambiguous in ways specifically designed to win a positive rather than a negative reaction from the intended audience). Accordingly, the Stillinger et al. demonstration cannot be dismissed as a hothouse product of the psychological laboratory, one irrelevant to the real world. Nor could the cool reception that Stillinger et al.'s subjects afforded the Gorbachev proposal relative to the Reagan or third-party proposal be attributed to some strategic goal. For, unlike players on the real-world diplomatic stage, these subjects obviously were not trying to coax further concessions from the other side or to win the hearts and minds of partisan constituents or third parties

More in the handout paper by Ross