

Prisoner's Dilemma

A prisoner's dilemma is a game theoretic circumstance that mirrors many real world circumstances. It allows us to understand why parties often fail to reach mutually desired goals that are, in principle, within their control.

In a prisoner's dilemma, two parties are each given a pair of options, (a) act cooperatively or (b) defect. Moves of the two players are revealed simultaneously. The payoff to each party is dictated by the combination of their own choice and the choice of the other player. The maximum payoff is awarded to a player who defects, when his opponent has cooperated. A high, but sub-maximum payoff is awarded to each player when both chose to cooperate. A small sum is awarded to both players if both defect. And the minimum (suckers) payoff is awarded to a player who cooperates when the other player has chosen to defect.

A rational player realizes that no matter what his opponent does, choosing to defect nets a higher payoff. So, if both parties are rational, both defect, resulting in an outcome that is far worse for both than if they had both cooperated.

The outcome can be quite different, however, if the same two parties play repeatedly. When that happens, players who start out cooperating and continue to cooperate until the other player defects tend to do much better than players prone to unprovoked defection.

Evil:

Causing harm to others for no benefit at all. This is an ineffective strategy (not an ESS) which selection will eliminate wherever it arises.

Altruism:

Acting to benefit others when doing so provides no conceivable benefit to the individual. This is an ineffective strategy (not an ESS) which selection will eliminate wherever it arises.

Selfishness (self interest):

Acting to one's narrow and immediate benefit regardless of the consequences for others. Selfishness can spread in the short term, but is vulnerable to competition from enlightened self interest in the long term.

Enlightened Self Interest:

Acting to one's long-term benefit even when that means accepting substantial costs in the short-term. This is the fittest strategy in the long term, though it is endangered in the short term by competition from selfishness. It may even go extinct in the short term from such competition if not protected by incentives of some kind.

Briefly describe the four evolutionary explanations for cooperation. What is group selection and why isn't it a valid evolutionary explanation for cooperation?

Kin Selection is the most basic reason for cooperation. The more closely two individuals are related to each other, the more genes they share in common. Therefore, genes (and memes) that promote the prioritizing of the interests of close relatives (in proportion to their degree of relatedness) can spread. Humans, like all social animals, cooperate with close relatives. Mothers feeding their own offspring is the most obvious example.

Reciprocal altruism (reciprocity) is the tendency of individuals to form cooperative relationships with other individuals. Individuals may experience costs of cooperation in the present, but those costs are more than repaid in the future, producing a mutually profitable alliance.

Indirect reciprocity (reputation) is the tendency to join a cooperative group where all individuals benefit in the long term from the cooperation of other group members, but "repayment" for a particular cost doesn't need to come from the same individual that received the benefit. This system is vulnerable to invasion by cheaters unless it evolves with a system of reputation, where cheating carries large costs, and benevolent action itself increases the benevolence of others toward those who cooperate at high levels.

Morality involves the prioritizing of the interests others over one's own interests, though the debt is unlikely to repaid. It only evolves where dependence on the group is extreme, such that destruction of the group condemns the individual to the same fate.

Group selection is prioritizing of the interests of others above one's own interests for no fitness enhancing purpose. It, like all instances of true altruism, is driven to extinction by competition from self-interested parties, enlightened, moral, or otherwise.

