

“Rational selfish prisoners always choose the one strategy pair [i.e., the Nash equilibrium (D,D)] that both can agree is undesirable—in the sense that they would both prefer (C,C).” (Strategy D is to defect and C is to cooperate.)

Rational selfish prisoners should not choose the Nash equilibrium. Because the game is symmetrical for the two players and because both players are rational, then whichever strategy Player 1 decides is best, Player 2 will also decide is best. Thus, the only possibilities are (D,D) and (C,C). Since (C,C) is better for each player than (D,D), rational selfish prisoners should choose (C,C). The reason the Nash equilibrium is not relevant is that its definition considers pairs of strategies which are impossible if both players are rational, i.e., (C,D) and (D,C).

This is discussed in detail in Chapter 30 of *Metamagical Themas: Questing for the Essence of Mind and Pattern*, by Douglas R. Hofstadter (Basic Books, March 1996, ISBN 0-465-04566-9). Hofstadter notes that most people when presented with the above argument still say they would choose D.

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### Prisoner's Dilemma

Regarding the Prisoner's Dilemma, Steven E. Landsburg (“Quantum game theory”, April 2004, page 395) says,

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