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Axelrod identifies three factors, quantitative variables whose relation to one another determines whether Tit-for-Tat is an optimal strategy in a iterated (repeated) prisoner's dilemma game. What are these three variables?

There are three quantitative variables in Axelrod's discussion of the iterated prisoner's dilemma (PD) simulation: *niceness*, *forgiveness*, and *retaliation*.

A *nice* strategy is one that never defects first. Tit-for-Tat (TFT) is *nice* enough to never defect unless the opponent does first, though it is worse than Tit-for-Two-Tats (TFTT), which takes two *defect* moves by the opponent to defect itself—which allows TFTT to be exploited by less *nice* strategies like *Tester*.

Forgiveness is described as the "propensity to cooperate in the moves after the other player has defected"—TFT, as Axelrod describes, is unforgiving for one move, but completely forgets the opponent's betrayal in the next—this may have allowed it to fair better than other nice but unforgiving strategies like *Friedman*—which implements permanent retaliation.

A retaliatory strategy is one that immediately defects after an "uncalled for" *defect* move by the opponent. Tit-for-Tat balances out forgiveness and retaliation, as it will retaliate but forgive thereafter.

Axelrod views all three strategies as effective, and that "[TFT] combines these desirable properties." Considering that TFT continued to be effective despite expert-developed strategies in the second computer simulation evidences his argument, as well as the modeling of strategies with these intuitive variables reveal why TFT is effective.

Another variable introduced but discussed briefly was the *weight* or discount parameter that applies to the payoffs, as Axelrod argues "In fact, no rule can invade [TFT] if the discount parameter, w, is sufficiently large."—indeed it would be interesting to test TFT with lower discount parameters.

(251 words)