

Natural Language

- **Skinner's theory**
- **Chomsky's theory**
 - **Poverty of stimulus**
 - **Language window**
 - **Pidgins and Creoles**
 - **"Homework, dog, chomp!, sorry"**
 - **"Colorless green ideas sleep furiously."**
- **Deep-structure**
- **Culturally varied surface structure**

Prisoner's Dilemma

- **Game theory**
- **Strategic games**
- **Making the rational play**
- **Original version of the prisoner's dilemma**
- **Playing against a random computer**
- **Playing against a rational opponent**

Prisoner's Dilemma

	You play Heart	You play club
Computer plays heart	You get 3	You get 5
Computer plays club	You get 0	You get 1

Prisoner's Dilemma

- **Let's play!**
- **My rational play**
- **Your rational play**
- **Club is dominant play**
- **The paradox**
- **Can we strike a deal?**
- **Let's play again**

	You play heart	You play club
Jeff plays heart	You get 3 Jeff gets 3	You get 5 Jeff gets 0
Jeff plays club	You get 0 Jeff gets 5	You get 1 Jeff gets 1

Problem of Altruism

- **Biological altruism**
 - Vampire bats
 - Chimpanzees
- **Evolutionary problem**
- **Group selection verses individual or gene selection**
- **Kin selection**
- **Empirical confirmation**

Solutions to the Prisoner's Dilemma

- **Bargains**
- **Bargaining to law and government**
 - **State of nature**
 - **Social contract**
- **Rules and sanctions**
- **Cultural rules and sanctions**
- **Innate rules and sanctions?**

Repeated Play Tournaments

- **Robert Axelrod**
- **The tournament**
 - **Each against the others**
 - **200 plays**
 - **Total points**
- **The players**
- **The clear winner**

TIT-FOR-TAT

- **Plays heart on first move**
- **Plays what opponent played on previous move**
- **Simplest program**
- **Can't "win" against any opponent**
- **Still accumulates most points and wins the tournament**

Tit-for-Tat's Virtues

- **Friendly (cooperates first play)**
- **Refuses to be a sucker (retaliates for defections)**
- **Doesn't hold grudges (as soon as opponent begins to cooperate, returns to playing hearts)**
- **Easy for opponents to figure out**

The Evolution of Cooperation

- **In iterated play contexts, rational move may be to play heart (tit-for-tat)**
- **Cooperation may evolve naturally**
- **Empirical support for this view**
- **Is this enough?**

Secular Natural Law

- **Prisoner's dilemma's are not hopeless**
- **Rational to set up and enforce rules**
- **Cooperative behavior is rational in iterated prisoner's dilemmas**
- **Biological basis for altruistic behavior toward kin**
- **Biological basis for cooperative behavior in general?**

Biologically Based Moral Realism

- **Deep-structure to morality**
 - **Tit-for-tat**
 - **Constrained-maximization**
 - **Predisposition to cooperation**
- **Cultural dimension**
 - **Obvious cultural differences**
 - **What is fair, reasonable, cooperative**
 - **Who one owes this constraint to**