

## CO 480 Project Proposal – Spring 2015

### Group Membership

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### Project Summary

**Person** John Forbes Nash, Jr.  
**Place** America through World War II, Cold War, and Civil Rights Eras  
**Problem** Equilibria in Strategic Games  
**Hook** This is the story of a man who achieved equilibrium between players who were not cooperative in games.

### Project Outline

#### America through World War II, Cold War, and Civil Rights Eras

1. The end of World War II
2. Liberalization of Trade & Rebuilding of Europe
3. Communism vs Capitalism
  - (a) Creation of the Eastern Bloc
  - (b) Nuclear Arms Race — Mutually Assured Destruction
  - (c) Korean War
  - (d) McCarthy & the Red Scare
4. Continued Development of Game Theory and its Applications
5. Beginning of Civil Rights Movements

#### John Forbes Nash, Jr.

1. Early Life
2. Undergraduate Studies — From Chemical Engineering to Mathematics
3. Princeton & Thesis
4. Interests other than Game Theory
5. Family Life
6. Struggles with Mental Illness
7. Nobel Prize & Other Recognitions
8. Recent Exploits - Agency in Game Theory

## Equilibria in Strategic Games

1. Introduction to Strategic Games
2. Best Response Functions
3. Pure Equilibria & Cournot Oligopoly
4. Mixed Equilibria
5. Existence of Mixed (Nash) Equilibria
  - (a) Sperner's Lemma
  - (b) Browder's Fixed Point Theory
  - (c) Nash's Existence Proof
6. Practical Applications
7. Lemke-Howson Method for Finding Equilibria

## Source Material

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