

# CO 480 Project Proposal – Spring 2015

## Group Membership

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## Project Summary

**Person** John Forbes Nash Jr.  
**Place** Princeton University circa 1950  
**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

### Place

1. The end of World War II
2. Communism vs Capitalism
  - (a) Creation of the Eastern Bloc
  - (b) Mutually Assured Destruction - Nuclear Armament
  - (c) Korean War
  - (d) McCarthy & the Red Scare
3. Continued Development of Game Theory and its Applications
4. Beginning of Civil Rights Movements
  - (a) Jackie Robinson (1947)
  - (b) Desegregation of US Armed Forces
5. Liberalization of Trade & Rebuilding of Europe

### Problem

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) Brouwer'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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6. Nasar, S. (2001). A Beautiful Mind: *The Life of Mathematical Genius and Nobel Laureate John Nash*. New York: Simon & Schuster.
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10. Young, H. P. (2011). Commentary: John Nash and evolutionary game theory. *Games and Economic Behaviour*, 71(1), 12-13.