

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

John Forbes Nash Jr.

Princeton University

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
5. Liberalization of Trade & Rebuilding of Europe

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

1. Binmore, K. (2011). Commentary: Nash's work in economics. *Games and Economic Behaviour*, 71(1), 2-5.
2. Cook, M. R. (2009). *Mathematicians: an outer view of the inner world*. Princeton, NJ: Princeton University Press.
3. Hart, S. (2011). *Commentary: Nash equilibrium and dynamics*. *Games and Economic Behaviour*, 71(1), 6-8.
4. McCain, K. W., & McCain, R. A. (2010). Influence & incorporation: John Forbes Nash and the Nash Equilibrium. *Proceedings of the American Society for Information Science and Technology*, 47(1), 1-2.
5. Meltzer, H. (1999). A Beautiful Mind: A Biography. *The Journal of Clinical Psychiatry*, 60(4), 266.
6. Nasar, S. (2001). A Beautiful Mind: *The Life of Mathematical Genius and Nobel Laureate John Nash*. New York: Simon & Schuster.
7. Nash, John F. *Non-cooperative Games*. Thesis. Princeton University, 1950.
8. Nosal, E., & Rupert, P. (2002). A beautiful theory. *Federal Reserve Bank of Cleveland*, 1-4.
9. Saint-Laurent, P. (n.d.). Beautiful minds: The competitive world of financial planning meets the mathematical. *Advisor's Edge*, 5(6), 45.
10. Young, H. P. (2011). Commentary: John Nash and evolutionary game theory. *Games and Economic Behaviour*, 71(1), 12-13.