

# *Powerpoint*

## B.A.R. G.A.M.E.

# Better Arithmetic Reasoning Generated by Acknowledging Minority Experiences

<http://www.bargame.info/>

## Group 7

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Demo 1

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# The El Farol Bar Problem

Group #7

332:452 Software Engineering

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# The Original Problem

- ▶ The **El Farol bar problem** is a problem in game theory. Based on a bar in Santa Fe, New Mexico, it was created in 1994 by W. Brian Arthur.
  - In a town there is a finite amount of people who wish attend a bar to have fun. However, the bar is not fun if too many people go to the bar.
    - If **less than 60%** of the people go to the bar, then they'll all have a **better** time compared to the people staying at home. (People going to the bar 'wins')
    - If **more than 60%** of the people go to the bar, then they'll all have a **worse** time compared to the people staying at home. (People who stay home 'wins')
  - Everyone decides **at the same time** whether they will go to the bar or not.
    - People cannot wait and see how many others are going to the bar for a particular turn.
    - Their decision must be based on pervious experiences they have had at the bar.
- ▶ If everyone uses the same pure strategy then no one will have a good time:
  - The solution to this problem is for people to have mixed strategies.

# Version 2.0

- ▶ To build upon our first Demo, we implemented the following changes/features:
- ▶ New:
  - Mortality Population Variable
  - Group Population Variable
  - Drop Score Population Variable
  - Ability to save simulation data
  - Separate Data Interpreter Application
  - More Statistics are available to be presented in Graph windows
- ▶ Changes:
  - Revamped GUI
  - Automatically Updating GUI
  - Reworked System Back-End

# Importance of new Population Variables

- ▶ **Mortality**: Simulates the entering and leaving of Agents with knowledge of the market as a function of time.
- ▶ **Groups**: Simulates the psychological effect of a “**Group Mentality**” and how it affects individual success versus group success.
- ▶ **Drop Score**: Promotes **individual reasoning** of Agents to decide when to drop a poorly performing **Strategy** and replace it with a new one.