Guided Study Program in System Dynamics
System Dynamics in Education Project
System Dynamics Group
MIT Sloan School of Management

Assignment #2

Reading Assignment:

Read refer to Road Maps 1: A Guide to Learning System Dynamics (D-4501-4) and read the following papers from Road Maps 1:

- Simulating Hamlet in the Classroom (D-4540-1)
- System Dynamics Meets the Press, an excerpt from *The Global Citizen* (D-4143-1)
- Counterintuitive Behavior of Social Systems (D-4468-1)

Exercises:

As in Assignment #1, each of the following questions should be answered with one or more short paragraphs. Again, there are no right or wrong answers. We are trying to help you understand the principles covered in the readings by identifying the presence of dynamic systems in your everyday life.

1. Simulating Hamlet in the Classroom

In this paper, Pamela Hopkins selected a series of character relationships and analyzed their feedback behavior. Choose a literary work from the following list and identify a feedback system. Justify your choice and identify positive and negative feedback. If you feel you are not familiar enough with any of these works, feel free to write about one of your choice.

- Jane Austen: Pride and Prejudice
- Jane Austen: Sense and Sensibility
- Albert Camus: The Plague
- Charles Dickens: Tale of Two Cities
- Jack Engelhard: Indecent Proposal
- William Golding: Lord of the Flies
- Nathaniel Hawthorne: The Scarlet Letter
- James Joyce: Dubliners
- Ken Kesey: One Flew Over the Cuckoo's Nest
- Jerome D. Salinger: Catcher in the Rye
- William Shakespeare: Romeo and Juliet
- William Shakespeare: Macbeth
- Stendhal: The Red and the Black
- Lev Tolstoy: War and Peace
- Mark Twain: The Adventures of Huckleberry Finn
- Alice Walker: The Color Purple

2. System Dynamics Meets the Press, an excerpt from *The Global Citizen*

In this paper, Donella Meadows listed a number of common assumptions of the current social paradigm. Choose three out of the assumptions listed on pages 4 and 5, and think of an example that demonstrates the assumption. Discuss why the assumption about that example may not hold. Elaborate on the effects of making a false assumption in the particular situation.

3. Counterintuitive Behavior of Social Systems

A. On page 6, *Counterintuitive Behavior of Social Systems* listed four common programs of improving the depressed nature of the central city: busing the unemployed to the suburbs, implementing a training program, providing financial aid (government subsidies) to depressed cities, and constructing low-cost housing. Only the fourth was discussed in detail. Choose one of the other three and discuss why it may lead to counterintuitive behavior.

B. In 1905 the Kaibab plateau was an isolated region in which two populations, deer and wolves, have lived for years. The wolves, the predators, fed on the deer, the prey, which in turn nourished itself by eating the grass that grew on the plateau. In 1905, however, authorities decided that they wanted to increase the deer population by protecting it from the wolves. They offered a bounty for the hide of each wolf any hunter would eliminate.

You have just read a paper on the counterintuitive behavior of systems. Can you think of any side-effects that the authorities may have over-looked when planning their bounty policy? Using the logic described in the paper, can you suggest what might actually have happened to the deer population on the Kaibab plateau?

C. *Counterintuitive Behavior of Social Systems* was written in 1971. Industrialization, population growth and technological advancement have progressed at record rates in the two and a half decades that have since passed. What factors might have changed between 1971 and 1998 to compound the behavior described in this paper?