UNIVERSITY OF TEXAS AT DALLAS COURSE OUTLINE
School of Management Spring 2001

MAS 8V42-003: Organizational Simulation

Richard Harrison, Zhiang (John) Lin, and Steve Phelan
Mondays, 2:00 - 4:40 p.m.
JO 3.534

Course Objectives

This doctoral seminar will introduce students to the field of computer simulation of organizational processes, with an emphasis on theory construction and formal modeling. It is intended to be accessible to students without strong quantitative backgrounds or computer programming skills. Its objectives are: (1) to develop skills in rigorous formal modeling of theoretical processes; (2) to acquaint you with issues in developing and running computer simulations; (3) to enable you to read and critically evaluate simulation research papers; and (4) to provide opportunities for you to develop simulation programs. Since organizational processes are important for strategic management and international management as well as for organization theory and organizational behavior, class discussions and written assignments may address dynamic organizational issues in any of these areas.

Required Text

A. Lomi and E. Larsen (eds.). 2001. *Dynamics of Organizational Societies: Information, Structure and Computation*. AAAI Press/ MIT Press.

Course Structure

The first eight class sessions will be taught by Professor Harrison, followed by three sessions each by Professors Lin and Phelan. Additional readings will supplement the Lomi and Larsen book. Class members are expected to participate actively in class discussions.

Assignments

Organizational culture simulation experiment (Harrison). To acquaint you with the process of running simulation programs, you will be provided with previously developed and documented simulation software on organizational cultural transmission over time. You will use the software to conduct a new simulation experiment (i.e., make some change in the program, such as in the parameter settings, and run the program). Due February 19.

Formal modeling paper (Harrison). This paper will develop a formal model of some theoretical process of interest to you in sufficient detail to serve as a basis for a computer simulation. You are not expected to write and run the simulation program. Due March 19.

Weekly participation (Lin). Class discussion of the simulation articles assigned for this section of the course (March 26 – April 9). Students are expected to come to class being prepared for and actively involved in discussing all readings. Each student being assigned to a certain article will also submit a paper of two to three pages that contains the critiques and

recommendations for the article. The quality of each student's discussion will be evaluated every week through the following questions: (1) Does the student demonstrate a basic understanding of the assigned reading materials? (2) Can the students identify the common themes in the readings and use these themes to integrate and compare the articles? (3) Does the student use the readings as a base to develop new ideas or insights? (4) Can the student formulate appropriate critiques of the readings and defend his/her position in discussion with other class members?

Simulation project on promotion systems (Phelan). By modifying a previously developed simulation program on organizational promotion systems, you will conduct a simulation research project on some aspect of the dynamics of promotion systems in organizations. Due May 7.

Grading

Organizational culture simulation experiment		20%
Formal modeling paper	30%	
Weekly participation	20%	
Simulation project on promotion systems	30%	

Office Hours

After class, and by appointment.

Academic Honesty

Work submitted for credit should be the work of the class member alone. Class members may consult library materials, web resources, and other informational sources, but may not receive the assistance of others on assignments. Cheating, plagiarism, collusion, and falsifying academic records are expressly prohibited by UTD (see the course schedule and catalogue).

MAS 8V42 *Weekly Schedule*

PART I (Harrison)

January 22 *Introduction*

January 29 *Simulation Structure and Design*

J. Richard Harrison. 1998. The Concept of Simulation in Organizational Research.

J. Richard Harrison and Glenn R. Carroll. 1991. Keeping the Faith: A Model of Cultural Transmission in Formal Organizations. Administrative Science Quarterly, 36: 552-582.

Review of Cultsim program.

February 5 *Organizational Mortality*

"Forward" and "Introduction and Presentation" in text.

J. Richard Harrison and Glenn R. Carroll. 2001. Modeling Culture in Organizations: Formalization and Extension to Ecological Issues. Chapter 1 in text.

Alessandro Lomi and Erik R. Larsen. 2001. Failure as a Structural Concept: A Computational Perspective on Age Dependence in Organizational Mortality Rates. Chapter 9 in text.

February 12 *Organizational Innovation and Adaptation*

Daniel Levinthal. 2001. Modeling Adaptation on Rugged Landscapes. Chapter 11 in text.

Jeho Lee and J. Richard Harrison. 2001. Innovation and Industry Bifurcation: The Evolution of R&D Strategy. Industrial and Corporate Change (forthcoming).

Michael Macy and David Strang. 2001. Pluralistic Ignorance and the Top Secret Management Handbook: A Computational Model of Fashionable Innovation. Chapter 3 in text.

February 19 *Group Performance*

Christoph H. Loch, Bernardo A. Huberman, and Sezer Ülkü. 2001. Multi-dimensional Status Competition and Group Performance. Chapter 4 in text.

Cultural simulation assignment due.

February 26 *Industry Structure*

Matthew Bothner and Harrison C. White. 2001. Market Orientation and Monopoly Power. Chapter 6 in text.

David Baron. 2001. Simulating the Dynamics of Organizational Populations: A Comparison of Three Models of Organizational Entry, Exit and Growth. Chapter 7 in text.

J. Richard Harrison. 1998. Simulating Organizational Growth in Ecological Models.

March 12 *Modeling Industries*

John Miller. 2001. Evolving Information Processing Organizations. Chapter 10 in text.

Franco Malerba, Richard Nelson, Sidney Winter, and Luigi Orsenigo. 2001. Product Diversification in a "History-friendly" Model of the Evolution of the Computer Industry. Chapter 12 in text.

March 19 *Formal Models and Complexity*

Anjali Sastry. 2001. Understanding Dynamic Complexity in Organizaitonal Evolution: A System Dynamics Approach. Chapter 13 in text.

Theory paper due.

PART II (Lin)

March 26 *Perspectives and Philosophy in Computational Organization Theory*

Carley, K.M. 1994. Sociology: Computational Organization Theory. Social Science Computer Review, 12(4): 611-624.

Carley, K.M. 1995. Computational and Mathematical Organization Theory: Perspectives and Directions. Computational and Mathematical Organization Theory, 1(1): 39-56.

Carley, K.M. 1996. Artificial Intelligence Within Sociology. Sociological Methods and Research, 25(1): 3-30.

Carley, K.M. 1996. Validating Computational Models. Working Paper, Carnegie Mellon University.

Burton, R.M. and Obel, B. 1995. The Validity of Computational Models in Organization Science: From Model Realism to Purpose of the Model. Computational and Mathematical Organization Theory, 1(1): 57-72.

April 2 *Computational Approaches in Intra- and Inter-Organizational Relationships*

Carley, K.M. 1999. Learning Within and Among Organizations. Working Paper, Carnegie Mellon University.

Prietula, M.J. 2001. Advice, Trust and Gossip Among Artificial Agents. Chapter 5 in text.

Lin, Z. 2000. Does Interpersonal Trust Benefit Organizational Performance: A Meso Exploration Using Computer Modeling. Paper Submitted To Management Science.

Lin, Z. 2000. The Impact of Top Management Succession on Organizational Performance: An Open System's Exploration Using Computer Modeling. Paper Submitted To Group And Organization Management.

April 9 *Computational Approaches in Organizational Design and Change*

Carley, K.M. and Hill, V. 2001. Structural Change and Learning Within Organizations. Chapter 2 in text.

Carley, K.M. and Svoboda, D.M. 1996. Modeling Organizational Adaptation As A Simulated Annealing Process. Sociological Methods and Research, 25(1): 138-168.

Lin, Z. and Carley, K.M. 2000. Organizational Design and Adaptation In Responses To Crises -- Theory and Practice. Paper Submitted To Organization Science.

Carley, K.M. 1996. A Comparison of Artificial and Human Organizations. Journal of Economic Behavior and Organizations, 896: 1-17.

Lin, Z. and Hui, C. 1999. Should Lean Replace Mass Organization Systems: A Theoretical Examination from A Management Coordination Perspective. Journal Of International Business Studies, 30(1): 45-80.

Part III (Phelan)

April 16 – April 30

Promotion Systems project (due May 7).