

Cornell System Dynamics Network
Status Report

October 2003

The Boorstein Fund for System Dynamics at Cornell will provide support for four activities to promote greater awareness and application of System Dynamics at Cornell University. The four activities are

- 1) A system dynamics seminar series
- 2) Development of system dynamics course options for Cornell students
- 3) A mentoring program in collaboration with other educational institutions
- 4) Acquisition and digitization of key SD-related materials by the University Library system

In addition, other activities have been supported by internal resources. Activities to date and current status of each of these activities is summarized below.

General SD-related Activities at Cornell October 2002-October 2003

SD Discussion Series

This is an informal seminar series for individuals currently undertaking system-dynamics based research. The participants and their topics during Spring 2003 include:

7 February: Dr. Richard Dudley, Department of Natural Resources, "Willingness of Villagers in Indonesia to Engage in Illegal Logging"

21 February: Dr. Jody Enck, Department of Natural Resources, "Modeling Human Perceptions of New York Deer Populations"

28 February: Dr. Ben Okumu, Department of Applied Economics and Management, "Bio-economic Modeling of Agricultural Poverty Traps in East Africa"

14 March: Paul Newton, Department of Applied Economics and Management, "Using Stella for Storytelling"

28 March: Karl North, Organic Sheep Farmer, "Modeling Nutrient Management on Organic Livestock Farms"

4 April: Ahmed Shalaby, Department of City and Regional Planning, "Modeling Planned Cities in Egypt"

25 April: Doug Brown, Department of Applied Economics and Management, "Modeling Forest Land Conversion in Central Africa"

2 May: Dr. Chuck Nicholson, Department of Applied Economics and Management, “A System Dynamics Commodity Model with Government Policy”

The discussion group will resume during October 2003.

Short Courses

Short course in bio-economic modeling based on system dynamics was offered to 20 participants from Kenya, Uganda and Madagascar. Instructor: Dr. Ben Okumu, post-doctoral fellow. Organizer: Dr. Christopher Barrett, Associate Professor, Applied Economics and Management. A second short course will be offered during Fall 2003.

Papers Presented

Pagel, Erica. “No More Magic Cows: Modeling Dairy Farm Structural Change.” Presented at the 5th MIT-Albany Colloquium, University at Albany, October 4, 2002.

Nicholson, Charles and Thomas Fiddaman. “Dairy Policy and Price Volatility.” Presented at the 10th Annual Workshop for Dairy Economists and Policy Analysts, Memphis, TN, April 22-23, 2003.

Fiddaman, Thomas and Charles Nicholson. “Modeling Dairy Price Volatility.” Presented at the 21st International Conference of the System Dynamics Society, New York City, July 20-24, 2003.

International Agricultural Modeling Workshop Proposal

Dr. Nicholson is pursuing the idea of an international workshop to be held at one of the International Agricultural Research Centers (IARC), which are overseen by the Consultative Group on International Agricultural Research (CGIAR) and funded primarily by the World Bank and national development agencies such as USAID. The purpose of the workshop is to make researchers in the IARC system more aware of the applicability of system dynamics modeling tools for ex ante assessment of agricultural technologies and policies. George Richardson at Albany and Tom Fiddaman of Ventana Systems have expressed an interest in participating, and the International Agriculture Program of the College of Agriculture and Life Sciences at Cornell has agreed to be a co-sponsor and provide some limited funding. A concept note is under review by potential IARC collaborators, and additional funding sources are being explored.

Cornell System Dynamics Network Website

A website for the Cornell System Dynamics Network will be developed during the 2003-2004 academic year. This site will describe current SD-related activities at Cornell, and provide a clearinghouse site for SD information at Cornell and other academic institutions.

System Dynamics Seminar Series

Activities October 2002 - October 2003

During Spring 2003 and Fall 2004 to date, the System Dynamics Seminar Series sponsored three seminars by visitors:

Exploring Climate Policy Options with a Behavioral Model

Dr. Thomas S. Fiddaman

Ventana Systems Inc.

1:30PM-2:30PM, Friday, April 4, 2003

401 Warren Hall

System Dynamics Modeling as a Basis for Understanding Fishery Management Complexities

Dr. Richard Dudley

Dept. of Natural Resources, Cornell University

1:30PM-2:30PM, Friday, April 18, 2003

401 Warren Hall

Modelling Interactions between communities and landscapes at the humid forest margin: an application of the SIMILE modeling environment

Dr. Christopher Legg

Geospatial Laboratory at the International Institute for Tropical Agriculture, Ibadan, Nigeria

2:00PM-3:00PM, Thursday, May 1, 2003

401 Warren Hall

Group Model Building of Welfare Policy Reform

Dr. George Richardson

Chair, Department of Public Administration and Policy, University at Albany

1:30PM-3:00PM, Friday, September 12, 2003.

These seminars were co-sponsored by the Department of Applied Economics and Management. Future seminars will include co-sponsorship of the Business Strategy Group, which includes faculty from AEM, Johnson Graduate School of Management and the Hotel School.

Activities for the Remainder of the 2003-2004 Academic Year

A monthly seminar series is under development. As a part of our efforts to expose Cornellians to SD concepts, we plan to bring one visitor per month to Ithaca over the next nine months. The visitors will encompass a range of different disciplines, from business to biology. Our strategy is to have each visitor present what we call an "application" seminar which illustrates how the application of SD concepts and modeling approach is

relevant to a particular disciplinary research question. To the maximum extent possible these seminars will be linked with relevant departmental (or "field") seminar series to expose faculty, students and staff in that field to SD concepts and applicability. We are also planning to link up with the university library system to offer a series of more general seminars on the value of systems thinking and modeling for more real-world (less disciplinary-focused) problems. Finally, we would also like the visitor to interact with the core group of faculty, staff and graduate students who are learning about SD to provide input to various projects and our efforts to promote SD-related learning and research here. The following individuals have been invited to Cornell during the upcoming academic year (with date of visit in parenthesis when known):

Dr. John Sterman, MIT

Dr. Jim Hines, MIT/Worcester Polytechnic Institute/Intel

Dr. David Andersen, University at Albany (8 December 2003)

Dr. Andrew Ford, Washington State University (March 2004)

Dr. Khalid Saeed, Worcester Polytechnic Institute (24 October 2003)

Dr. Peter Otto, University at Albany (21 November 2003)

Mr. Nick Pudar, General Motors

Dr. Philip Thornton, University of Edinburgh (February or April)

Dr. Michael Mazzocco, University of Illinois

The schedule will be finalized shortly and made broadly available to the Cornell Community.

System Dynamics Course

Activities October 2002 - October 2003

Discussions with Cornell faculty, staff and students concerning course structure and requirements held throughout this period. Key faculty in this effort include Dr. Alice Pell, Animal Science, Dr. Robert Blake, Animal Science, Dr. David Lewis, City and Regional Planning, Dr. Chris Barrett, Applied Economics and Management and Dr. Charles Nicholson, Applied Economics and Management. As a result of these discussions, two alternative but complementary course ideas will be pursued: 1) development of an introductory system dynamics modeling course to be taught by Dr. Ben Okumu with input from Drs. Barrett and Nicholson, and 2) discussions with Worcester Polytechnic Institute to determine whether Cornell faculty, staff and student can gain preferential access to the distance education course that are part of WPI's Graduate Certificate in System Dynamics. The content and scheduling of the introductory system dynamics modeling course will coordinate with Dr. Lewis' introductory course on quantitative methods, which provides an initial introduction to SD methods.

Activities for 2003-2004 Academic Year

Dr. Ben Okumu will develop a course proposal for Fall 2004. If approved by the departmental and college curriculum committees, the course will be structured as *AEM 494, Undergraduate Special Topics in Applied Economics and Management*, with a target audience of advanced undergraduates and first-year graduate students.

Further discussions with WPI (Jim Hines and the Dean for Corporate Education, John Minasian) regarding their distance education program will be held in late August 2003.

When course arrangements are finalized, they will be publicized throughout the Cornell community and on the CSDNet website.

Mentoring Program

Activities October 2002 - October 2003

Discussions were held with University at Albany faculty in October 2002, and an agreement in principal was reached to explore the idea further. George Richardson visited Cornell in June 2003, and alternative proposals for a how a program could be structured were discussed. A visit was made in April 2003 to MIT to explore this idea, but no concrete plans for furthering the Cornell-MIT linkage were developed.

One idea is to have Albany offer a course in what would essentially be “consulting practice” for its second-year PhD students. George believes this to be a good idea, but no current Albany PhD students can make the time commitment required. In lieu of PhD students, two recent Albany PhD’s (Peter Otto and Eliot Rich, Business School of the University at Albany) have agreed to serve as mentors for Bill Siemer (Department of Natural Resources) and Bernard Okumu (Department of Applied Economics and Management) as a pilot program. Drs. Otto and Rich will visit Cornell on 3 November 2003 to discuss specific arrangements.

Activities for 2003-2004 Academic Year

Discussions will continue about establishing a mentoring pilot program between Albany and Cornell. In lieu of PhD students, two recent Albany PhD’s (Peter Otto and Eliot Rich, Business School of the University at Albany) have agreed to serve as mentors for Bill Siemer (Department of Natural Resources) and Bernard Okumu (Department of Applied Economics and Management) as a pilot program. Drs. Otto and Rich will visit Cornell on 3 November 2003 to discuss specific arrangements. Further discussions with Dr. Saeed and MIT faculty will continue.

Library Acquisition and Digitization of SD-Related Materials

Activities October 2002 - October 2003

A listing of key system dynamics literature and materials was developed by Dr. Nicholson and provided to Dr. Marcy Rosenkrantz, Director of Digital Library Information Technology. The library devoted extensive effort to seeking copyright permissions to digitize these materials. Because many publishers are in the process of developing their own electronic book businesses, few of the copyright holders granted permission for complete works to be digitized as was initially envisioned, and those that did were overly expensive. In July 2003, Dr. Nicholson met with Dr. Rosenkrantz and Marisue Taube to discuss the copyright issue. We agreed that the lack of copyright permissions is currently a barrier to development of the electronic materials access originally envisioned for this part of the project. As a result, an alternative approach has been adopted. This includes: 1) acquisition of key system dynamics print materials by the library system (multiple copies as appropriate), 2) exploration of the option of purchasing system dynamics materials available in e-book form, and 3) development of an internal database of system dynamics “grey literature” through the library’s “D-Space” project, which will allow registered users to update an electronic library of system dynamics materials (particularly those not easily available from commercial sources). A listing of recommended print materials acquisition by library has been developed by Dr. Nicholson and forwarded to Marcy Rosenkrantz and Kathy Chiang in Mann Library. Suggested materials for the initial phase of the “D-Space” database have also been provided to the library.

Activities for 2003-2004 Academic Year

The individual library units will review the recommended print material acquisitions, and the approved materials will be purchased. Dr. Nicholson will refine the materials to be included in the D-Space database, and staff under Dr. Rosenkrantz will explore the future possibilities for acquisition of e-books in system dynamics. The D-space database will be established and made accessible to the Cornell community