



In Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy
David J. Yu

Will defend his prospectus

**Robustness of Social-Ecological Systems to Global Changes:
Insights from Irrigation and Forestry Systems using Multiple Methods**

Abstract

Following the debunking of the conventional theories of the commons and demonstrating that humans can self-organize for solving the commons dilemma, Elinor Ostrom and her colleagues have worked on, among others, applying the concept of robustness to the study of social-ecological systems (SESs). Robustness, meaning reduced sensitivity of system output to shocks, signifies a dynamic system-level approach to the study of SESs. This thesis aims to contribute to this growing line of research by studying robustness of SESs in a number of research fronts. Specifically, using communal irrigation and forestry systems as platform for research, I will investigate the roles of (1) feedback controls, (2) structure of SESs, and (3) changing perceptions of inequality or inequality tolerance to better understand how SESs cope with uncertainty and change. Although communal irrigation and forestry systems play important roles for local livelihoods in many developing countries, these systems are increasingly exposed to novel disturbances as a result of globalization and global environmental change. For example, disturbances such as rising wage rates, market integration, and environmental shocks are threatening continuity of these systems. I will study robustness of these systems to such disturbances by focusing on the aspects of feedback controls, structure of SESs, and inequality tolerance. To operationalize this research, I will employ a multi-method approach: behavioral laboratory experiment and content analysis of participant communication, formal dynamic modeling, and case study analysis.

Monday, October 14, 2013
3:00 PM
Wrigley Hall, Room 401

Faculty, students, and the general public are invited.

Supervisory Committee:
Dr. J. Marty Anderies, Chair
Dr. Marco A. Janssen, Member
Dr. Rachata Muneeppeerakul, Member