



# CoCo Seminar Series

## Fall 2015

### Simulating a Binghamton Smart Grid Using Case-based Decision Theory

Dr. Andreas Pape (Economics)  
Dr. Ziang (John) Zhang (Electrical and Computer Engineering)  
Binghamton University

Wednesday November 25th, 2015  
8:30-9:30am **at UU-120**  
**(Note the location change)**



Effective demand response on an electrical distribution grid can improve power system efficiency. The current challenge is unpredictable individual and household consumer behavior on the simulated grid. This project aims to address this challenge by inserting computational, decision-theoretic agents into the grid to represent the consumers. The agent we use is the Case-Based Software Agent (CBSA) which has been shown to match human individual and social learning in a laboratory (Pape and Kurtz 2013, Guilfoos and Pape 2015), which means that this agent is partially validated as a model of human choice and learning behavior. In this project, we build this combined simulation and evaluate the emergent patterns. In the future, this model can be calibrated to and measured against observed human choice data.

Dr. Andreas Pape is an Associate Professor of Economics and the Associate Director of the Center for Collective Dynamics of Complex Systems at Binghamton University. His research interests are agent-based modeling, microeconomic theory, decision theory, and complex systems.

Dr. Ziang (John) Zhang is an Assistant Professor of Electrical and Computer Engineering at Binghamton University. His research interests are control and modeling of smart grids, distributed algorithms, cyber-physical systems and multi-agent systems.

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