

Syllabus---Draft

## **Empirical Implications of Theoretical Models (EITM) The Second Week**

June 23-27, 2003

University of Michigan

Co-leaders: Ken Kollman, University of Michigan  
Scott E. Page, University of Michigan

Guest Lecturers: Scott de Marchi, Duke University  
Troy Tassier, Fordham University and the University of Michigan

In this week we seek to introduce participants to the fundamental ideas in the field of complex systems modeling, to present research in economics and political science using this type of modeling, and to explore ways that empirical research can become a more prominent part of this growing field.

We ask that students read the materials in advance, and work together on the assignments. Assignments will be discussed and announced during the sessions.

### Monday, June 23---Scott Page

Session begins at 9:00 AM

Readings: Chapters 3-4 from Thomas Schelling, *Macromotives and Microbehavior*.  
“Computational models from A to Z,” Scott Page, *Complexity*  
Introduction to “Computational Models in Political Economy” by Ken  
Kollman, John Miller, and Scott Page  
Baron and Ferejohn, 1989, “Bargaining in Legislatures” *APSR*

Topics:

Morning A general theory of complexity and complex adaptive systems  
Afternoon Classic models in complexity and complex adaptive systems

### Tuesday, June 24---Scott Page and Troy Tassier

8:30 AM Breakfast meeting, voluntary.

Session begins at 9:30 AM

Readings: Robert Axelrod, "Disseminating Culture" 1997. *Journal of Conflict Resolution*.  
Jenna Bednar and Scott Page, "Culture and Games"  
Kollman, Miller, and Page, 1997. "Political Institutions and Sorting in a Tiebout Model." *American Economic Review*.  
"Models of the Small World: A Review", Mark Newman, J Stat Phys 101, p. 819-841 (2000). [http://aps.arxiv.org/PS\\_cache/cond-mat/pdf/0001/0001118.pdf](http://aps.arxiv.org/PS_cache/cond-mat/pdf/0001/0001118.pdf)  
Scott Page, "On Path Dependence"

Topics:

Morning Political and economic models using complex systems approaches  
Small worlds, and networks (Tassier)  
Afternoon Models of culture  
Path dependence and set dependence

Wednesday, June 25---Ken Kollman

8:30 AM Breakfast meeting, voluntary

Session begins at 9:30 AM

Readings: Kollman, Miller, and Page, 1992. "Adaptive Parties in Spatial Elections." *APSR*.  
Kollman, Miller, and Page, 1998. "Political Parties and Electoral Landscapes" *British Journal of Political Science*.  
"On Path Dependence" John Jackson.

Topics:

Morning Complexity models of political competition  
Moving to empirical testing of complexity models  
Afternoon Empirical testing of complexity models  
Models of path dependence and empirical testing

Thursday, June 26---Ken Kollman and Scott de Marchi

8:30 Breakfast meeting, voluntary

Session begins at 9:30 AM

Readings: Dana Ballard. An Introduction to Natural Computation. MIT Press, 1997. Chapters 1 and 3.  
Berlekamp, Conway, and Guy. Winning Ways For Your Mathematical Plays. AK Peters, Ltd., 2001. Chapter 1.  
Christopher Bishop. Neural Networks For Pattern Recognition. Oxford Press, 1995. Chapter 1: pages 1-20. TOTAL: 20 pages.  
Scott de Marchi. Chapter 3: Addressing Complex Games: An Example from Security Studies. Book manuscript.  
Deep Blue FAQ. [www.research.ibm.com/deepblue/meet/html/d.3.3.html](http://www.research.ibm.com/deepblue/meet/html/d.3.3.html),  
Anantharaman, Campbell, and Nowatzyk. A Grandmaster Chess Machine. Scientific American. October 1990.  
[www.sciam.com/article.cfm?articleID=0005CCF5-D9D7-1CF6-93F6809EC5880000](http://www.sciam.com/article.cfm?articleID=0005CCF5-D9D7-1CF6-93F6809EC5880000)

Topics:

Morning Empirical testing of complexity models  
Empirical models of path dependence

Afternoon Other complexity models of politics  
Artificial intelligence and computational models (de Marchi)  
Classes of complexity models(de Marchi)

Friday, June 27---Kollman, Page, deMarchi, Tassier

8:30 AM Breakfast meeting, voluntary

Session starts at 9:30 AM

Topics:

Morning Testing complex systems models (de Marchi)  
Testing network models (Tassier)

Afternoon Student group presentations  
Wrap-up