

## **COMPLEXITY & DEVELOPMENT**

Professor Yuen Yuen Ang  
Office address: 7719 Haven Hall  
Email: [yuenang@umich.edu](mailto:yuenang@umich.edu)

### **Course Overview**

This course has two objectives. Pivoted around big questions, the first objective is to provide a broad overview of the canonical literature in the political economy of development, including the good institutions/governance school, modernization theory, and historical institutionalism.

The second objective is to introduce dynamic, non-linear approaches to the study of development, focusing on these questions: How did development actually happen? In other words, how did some societies make the dual transition from poverty and backwardness and prosperity and modernity? What tools can we develop and apply to study non-linear, endogenous, and multi-dimensional processes of change? What are the underlying conditions and institutions that shape processes of adaptation? Why are some organizations and societies more adaptable than others?

We will explore the above questions through the paradigm of complexity (also known as “complex adaptive systems”) and its signature themes of mutual causality, fluid preferences, uncertainty, adaptation, coevolution, and so on. We will read literature from political science, economics, sociology, public policy, and complexity studies.

### **Assignments & Grades**

You will be graded on three components: participation (15%), three semi-structured response papers (50%), and a final memo (35%).

#### Participation

Participation and punctuality is mandatory. I deduct two points from your final score for every unexcused absence.

#### Three semi-structured response papers

Sign up to write three semi-structured responses over the course of the semester. Your paper should be 2 to 3-pages, single-spaced and contain two parts: (a) Respond to any one or more questions I will provide in advance of class each week, and (b) share your reactions on and/or raise questions about the week’s readings in the second half of the paper. Or if you wish to write the entire paper on (a) only, that is fine too.

## Final “ideas” memo

The final assignment is an “ideas” memo, which should be 5 pages long, single-spaced. In place of usual research papers, write a memo that outlines how you would incorporate ideas from the class—especially from complexity—to tackle a particular problem or question related to development. For doctoral students, think about how the themes of complexity motivate a research question and/or inspire new ways to conduct research. For policy students, think about how ideas from the course inform a particular policy issue or cause that you wish to pursue in your future career.

Your memo should do the following:

- 1) Identify a particular research question or problem → study *something*, not everything.
- 2) Discuss your motivation for pursuing this agenda.
- 3) Compare and discuss what it would be like if you choose to pursue this agenda from the conventional as compared to complexity perspective (In other words, what leverage do you get by privileging mutual causality, fluid preferences, uncertainty, adaptation, coevolution, etc., in your analyses? Do these themes motivate you to ask questions that you otherwise would not have asked? Do they push you to approach problems in ways that you otherwise would not have tried?)
- 4) Allow yourself some imagination and project the ways in which you may pursue your agenda.
- 5) In the conclusion, come back to reality and discuss the immediate, concrete step/s you will take to advance your goal.

## Required books

- North, Douglass. (2005). *Understanding the process of economic change*. Princeton University Press.
- Axelrod, Robert, & Cohen, Michael D. (1999). *Harnessing complexity : organizational implications of a scientific frontier*. Free Press
- Axelrod, Robert. (1984). *The evolution of cooperation*. Basic Books.
- Lansing, Stephen. (2006). *Perfect order: recognizing complexity in Bali*. Princeton University Press.
- Diamond, Jared. (2005). *Guns, germs, and steel : the fates of human societies*. Norton.
- Miller, John, & Page, Scott. (2007). *Complex adaptive systems : an introduction to computational models of social life*. Princeton University Press.
- Yuen Yuen Ang. (2016). *How China Escaped the Poverty Trap*. Cornell University Press.

## **Introduction**

Course objectives; course structure; assignments

Select and share with class one piece of work that you think represents “box-breaking” research. This can be from any field: natural sciences, social sciences, or humanities.

### Required

Alvesson, Mats, & Sandberg, Jörgen. (2014). Habitat and Habitus: Boxed-in versus Box-Breaking Research. *Organization Studies*, 35(7), 967.

## **Good institutions vs. geography as primary cause**

### Required

- Diamond, Jared M. (2005). *Guns, germs, and steel : the fates of human societies*. Prologue; Chap 2 (Australia), Chap 18 (collision with the West)
- Diamond, Jared M. (2005). *Guns, germs, and steel*, Epilogue on “Why not China?” (pp. 409-433)
- Acemoglu, Daron, Johnson, Simon, & Robinson, James. (2002). Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution. *The Quarterly Journal of Economics*, 117(4), 1231-1294.

### Supplemental

- Diamond, Jared M. (2005). *Guns, germs, and steel*. Chap 4 (food production); Chap 14 (state formation); Chap 11 (on germs; my favorite chapter)
- Gallup, John Luke, Mellinger, Andrew, & Sachs, Jeffrey. (1999). Geography and Economic Development. *International Regional Science Review*, 22(2), 179-232.
- Diamond, Jared. “Intra-Island and Inter-Island Comparison,” *Natural Experiments of History* (2010), edited by Diamond & Robinson
- Pomeranz, Kenneth. (2000). *The great divergence: China, Europe, and the making of the modern world economy*. Princeton University Press.
- Acemoglu & Robinson. *Why Nations Fail*. Chap 2; Chap 3 (popular version of their rebuttal of geography thesis); Chap 5 (China); Chap 7 (Glorious Revolution)
- North, Douglass, & Weingast, Barry. (1989). Constitutions and Commitment: The Evolution of Institutional Governing Public Choice in Seventeenth-Century England. *The Journal of Economic History*, 49(4), 803.

## **Growth as the cause of good institutions**

### Required

- Przeworski, Adam et al. (2000). *Democracy and development: political institutions and material well-being in the world, 1950-1990*. Chapter 2.
- Boix, Carles, & Stokes, Susan C. (2003). Endogenous Democratization. *World Politics*, 55(4), 517.
- Inglehart, Ronald, & Welzel, Christian. (2005). *Modernization, cultural change, and democracy : the human development sequence*. Introduction; Chap 1

Goldsmith, Arthur A. (2012). Is governance reform a catalyst for development? . In K. S. Jomo & A. Chowdhury (Eds.), *Is good governance good for development?*

### Supplemental

Lipset, Seymour. (1959). Some Social Requisites of Democracy: Economic Development and Political Legitimacy. *American Political Science Review*, 53(1), 69.

Ronald Inglehart. (1997). *Modernization and Postmodernization*. Chap 3, 11.

Milan Svolik. (2008). "Authoritarian reversals and democratic consolidation." *American Political Science Association*.

Acemogulu, Johnson, Robinson, Yared (2010). "Reevaluating the modernization thesis." *Journal of Monetary Economics*.

### **Does good governance lead to growth or vice versa?**

#### Required (read in order indicated below)

Kurtz, Marcus, & Schrank, Andrew. (2007b). Growth and Governance: Models, Measures, and Mechanisms. *The Journal of Politics*, 69(2), 538. [1]

Kaufmann, Daniel, Kraay, Aart, & Mastruzzi, Massimo. (2007b). Growth and Governance: A Reply. *The Journal of Politics*, 69(2), 555-562. [2]

Kurtz, Marcus, & Schrank, Andrew. (2007a). Growth and Governance: A Defense. *The Journal of Politics*, 69(2), 563. [3]

Kaufmann, Daniel et al. (2007a). Growth and Governance: A Rejoinder. *The Journal of Politics*, 69(2), 570. [4]

Przeworski, Adam. (2004). The Last Instance: Are Institutions the Primary Cause of Economic Development? *European Journal of Sociology*, 45(2), 165-188. [5]

### Supplemental

Krasner, Stephen. (2014). *State Building Outside In: Development Theories and Policy Implications*. University of Michigan Ford Security Seminar, Ann Arbor.

Kaufmann, Daniel, Kraay, Aart, & Zoido-Lobaton, Pablo. (1999). Governance Matters: World Bank

Kaufmann, Daniel, & Kraay, Aart. (2002). Growth without Governance. *Economia: Journal of the Latin American and Caribbean Economic Association*, 3(1), 222.

Lora, Eduardo. (2002). Growth without Governance: Comments. *Economia*, 3(1), 216.

Pritchett, Lant. (2002). Growth without Governance: Comments. *Economia*, 3(1), 224.

Kaufmann, Daniel, & Kraay, Aart. (2002). Growth without Governance: Response. *Economia*, 3(1), 222

La Porta, Rafael, Shleifer, Andrei, & Vishny, Robert. (1999). The Quality of Government. *Journal of Law, Economics & Organization*, 15(1), 222-279.

### **Historical roots of development**

#### Required

Kohli, Atul. (1994). Where do high growth political economies come from? *World development*, 22(9), 1269.

- Mahoney, James. (2003). Long-Run Development and the Legacy of Colonialism in Spanish America. *American Journal of Sociology*, 109(1), 50.
- Acemoglu & Robinson (2008). *Why Nations Fail*. Chap 9 (Colonialization), Chap 12 (Vicious Cycle); Chap 14 (Breaking mold)
- Mahoney, James, & Thelen, Kathleen. (2010). "A Theory of Gradual Institutional Change." In *Explaining institutional change*.

#### Supplemental

- Evans, Peter. (1995). *Embedded autonomy: states and industrial transformation*. Princeton. Chap 1, 3 (States)
- Krasner, Stephen. (1988). Sovereignty: An institutional perspective. *Comparative Political Studies*, 21(1), 66.
- North, Douglass. (1990). *Institutions, institutional change, and economic performance*. Chap 11 (path-dependence)
- Page, Scott E. (2006). Path Dependence. *Quarterly Journal of Political Science*, 1(1), 87.
- Banerjee, Abhijit, & Iyer, Lakshmi. (2005). History, Institutions, and Economic Performance: The Legacy of Colonial Land Tenure Systems in India. *The American Economic Review*, 95(4), 1190-1190.
- Conference on "Understanding Governance Virtuous Circles: Who Succeeded and Why?," (2015), Hertie School of Governance, program:  
<http://www.againstcorruption.eu/wp-content/uploads/2015/05/Final-Agenda-Virtuous-Circle-Conference1.pdf>

### **Public policy turns adaptive: anything goes?**

#### Required

- Rodrik, Dani. (2007). *One economics, many recipes : globalization, institutions, and economic growth*. Princeton: Princeton University Press. Introduction; Chap 1
- Grindle, Merilee. (2004). Good enough governance: Poverty reduction and reform in developing countries. *Governance*, 17(4), 525.
- Andrews, Matt, Pritchett, Lant, & Woolcock, Michael. (2013). Escaping Capability Traps Through Problem Driven Iterative Adaptation (PDIA). *World Development*, 51, 234.
- Pritchett, Lant, & Woolcock, Michael. (2004). Solutions when the solution is the problem: Arraying the disarray in development. *World Development*, 32(2), 191.

#### Supplemental

- Krasner, Stephen. (2013, September 23, 2013). Seeking 'good-enough-governance'--not democracy, *Reuters*
- Grindle, Merilee. (2011). Good Enough Governance Revisited. *Development Policy Review*, 29(1), s199.
- Levy, Brian, & Fukuyama, Francis. (2010). Development Strategies Integrating Governance And Growth. *World Bank Policy Research Working Paper 5196*.
- Jomo, K. S., & Chowdhury, Anis. (2012). Introduction: governance and development In K. S. Jomo & A. Chowdhury (Eds.), *Is good governance good for development*.

Carothers, Thomas, & de Gramont, Diane. (2011). *Aiding Governance in Developing Countries: Progress Amid Uncertainties*. Carnegie Endowment for International Peace.

### **North's big question: The process of economic change**

#### Required

North, Douglass, Wallis, John, & Weingast, Barry. (2009). *Violence and social orders : a conceptual framework for interpreting recorded human history*. Chap 1

North, Douglass C. (2005). *Understanding the process of economic change*. Princeton, N.J.: Princeton University Press. Chap 1-7

#### Supplemental

North, Douglass, Wallis, John, & Weingast, Barry. (2009). *Violence and social orders*. Chap 5 & 6.

North, Douglass C. (2005). *Understanding the process of economic change*. Rest of the book.

Bowles, Durlauf & Hoff. (2011). *Poverty Traps*. Intro + Chap 1.

### **Development as a coevolutionary process**

#### Required

Yuen Yuen Ang (2016). *How China Escaped the Poverty Trap*. Cornell University Press. Intro; Chap 1; Chap 5; Chap 7

Padgett, John, & Powell, Walter. (2012). *The emergence of organizations and markets*. Princeton, N.J.: Princeton University Press.

#### Supplemental

Padgett, John, & McLean, Paul. (2011). Economic Credit in Renaissance Florence. *The Journal of Modern History*, 83(1), 1.

Mahoney, James, & Thelen, Kathleen. (2010). "A Theory of Gradual Institutional Change," In *Explaining institutional change*

Tsai, Kellee. (2006). Adaptive Informal Institutions and Endogenous Institutional Change in China. *World Politics*, 59(1), 116-141.

YY Ang (2016). *How China Escaped the Poverty Trap*. Methods Appendix A.

### **Introduction to complexity**

#### Required

Axelrod, Robert M., & Cohen, Michael D. (1999). *Harnessing complexity : organizational implications of a scientific frontier*. Preface; Chap 1

Miller, John H., & Page, Scott E. (2007). *Complex adaptive systems : an introduction to computational models of social life*. Part I; Chap 1; Chap 2

#### Supplemental

Owen Barder (2012), "Complexity and Development," Kapuściński Lecture,  
<http://www.cgdev.org/doc/CGDPresentations/complexity/player.html>  
Holland, John H. (1996). *Hidden order: how adaptation builds complexity*. Perseus Books.  
See also capsule review of *Hidden Order* by Francis Fukuyama (2016), Foreign Affairs  
Mitchell, Melanie. (2009). *Complexity: a guided tour*. Oxford University Press. Preface,  
Chap 1-2, 7, 19.

### **Application: Evolution of Cooperation**

#### Required

Axelrod, Robert. (2008). Political Science and Beyond: Presidential Address to the  
American Political Science Association. *Perspectives on Politics*, 6(1), 3.  
Axelrod, Robert M. (1984). *The evolution of cooperation*. New York: Basic Books.

#### Supplemental

Martin Novak, "Why We Help," *Scientific American* 307, 34 - 39 (2012)  
Martin Nowak & Roger Highfield. (2012) *Super-Cooperators: Altruism, Evolution, and  
Why We Need Each Other to Succeed*

### **Application: Self-organizing processes**

#### Required

Lansing, Stephen. (2006). *Perfect order: recognizing complexity in Bali*. Princeton  
University Press. Chap 1, 4, 5, 6.

#### Supplemental

Ostrom, Elinor. (1990). *Governing the commons: the evolution of institutions for  
collective action*. Cambridge University Press.

### **Adaptation as solution and problem**

#### Required

Axelrod, Robert M., & Cohen, Michael D. (1999). *Harnessing complexity*, Chap 1 (re-  
read), Chap 2, 4, 5  
Yuen Yuen Ang. (2016) *How China Escaped the Poverty Trap*. Chap 2 (Directed  
Improvisation).  
Andrews, Matt, Pritchett, Lant, & Woolcock, Michael. (2013). Escaping Capability Traps  
Through PDIA. *World Development*, 51, 234. (re-read)  
Owen Barder (2011), "Complexity - the simple path to success in development," *The  
Guardian*

#### Supplemental

Heilmann, Sebastian, & Perry, Elizabeth. (2011). "Embracing uncertainty: Guerilla policy style and adaptive governance in China." In *Mao's invisible hand*.  
Dimitrov, Martin. (2013). "Understanding Communist Collaspe and Resistance," In *Why communism did not collapse*.

### **Application: Promoting Adaptation**

#### Required

Watch documentary before class, *A Lego Brickumentary* (2014)  
Yuen Yuen Ang (2016). How China Escaped the Poverty Trap. Chap 3 (variation), Chap 4 (Selection).  
Chua, R. Y. J., Roth, Yannig, & Lemoine, Jean-François. (2015). The Impact of Culture on Creativity: How Cultural Tightness and Cultural Distance Affect Global Innovation Crowdsourcing Work. *Administrative Science Quarterly*, 60(2), 189.

#### Supplemental

Axelrod, Robert M. (1984). *The evolution of cooperation*. Conclusion.  
Zook, Matthew et al. (2010). Volunteered Geographic Information and Crowdsourcing Disaster Relief: A Case Study of the Haitian Earthquake. *World Medical & Health Policy*  
Yale Management School, "Do Organizations Implement the Best Crowdsourced Ideas?"  
Ang, YY. (2014). Authoritarian Restraints on Online Activism Revisited: Why 'I-Paid-A-Bribe' Worked in India but Failed in China. *Comparative Politics*, 47(1), 21-40.  
Ang, YY (2014). Making Details Matter: How to Reform Aid Agencies to Generate Contextual Knowledge, *GDN Winning Essay on "The Future of Development Assistance"*

### **Tools: Statistical Learning Methods**

#### Required

Breiman, Leo. (2001). Statistical Modeling: The Two Cultures. *Statistical Science*, 16(3), 199.  
Levin, Pomares, Alvarez, "Using machine learning algorithms to detect election fraud," In *Computational Social Science*.  
Montgomery, Jacob, & Olivella, Santiago (Forthcoming). Tree-based models for political science data. *American Journal of Political Science*.

#### Supplemental

Axelrod, Robert M. (1984). *The evolution of cooperation*. New York: Basic Books.

### **Tools: Modeling & Evolutionary Game Theory**

#### Required

Miller & Scott, *Complex Adaptive Systems*, Chapter 3 + 5 (computational modeling)  
Lansing, Stephen. *Perfect Order*. Chapter 3 (on use of simulation model)



Axelrod, Robert. (1986). "An evolutionary approach to norms," *American Political Science Review*, 80(4): 1095–1111.

Gintis, Herbert (2000). "Classical Versus Evolutionary Game Theory," *Journal of Consciousness Studies*, 7 (1–2): 300–304.

#### Supplemental

Gintis, Herbert, Samuel Bowles, Robert Boyd and Ernst Fehr (2003). "Explaining altruistic behavior in humans," *Evolution and Human Behavior*, 24: 153–172.

Gintis, Herbert (2007). "The evolution of private property," *Journal of Economic Behavior & Organization*, 64: 1–16.

You are here. Home <sup>9</sup>. Dealing With Complexity in Development Evaluation - A Practical Approach.Â Recognizing that complexity calls for innovative, conceptual, and methodological solutions, this unique book offers practical guidance to policymakers, managers, and evaluation practitioners on how to design and implement complexity-responsive evaluations that can be undertaken in the real world of time, budget, data, and political constraints. How are the words Complexity and Development related? Complexity and Development are synonymous, and they have mutual synonyms.Â The Ferengi also have a similar idea of cultural development, but it is based on the complexity of economic systems rather than technology. Source: Technology Levels. Complexity, Development, and Evolution in Morphogenetic Collective Systems. Hiroki Sayama. Center for Collective Dynamics of Complex Systems Department of Systems Science and Industrial Engineering. Binghamton University, State University of New York sayama@binghamton.edu. Abstract. Many living and non-living complex systems can be modeled and understood as collective systems made of heterogeneous components that self-organize and generate nontrivial morphological structures and behaviors.