

# Yongren Shi

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## Education:

### Cornell University

*Doctoral Candidate in Sociology*    Spring 2016 (Expected)

*Dissertation Title:*        Relational Mechanisms of Opinion Polarization.

*Dissertation Synopsis:*    The dissertation examines political and cultural polarization in the U.S. using computational methods. Survey data show that U.S. is divided not only along “hot button” social issues but also on seemingly apolitical lifestyle and cultural topics. The first part of the dissertation proposes network autocorrelation as a relational alternative to atomistic explanations of polarization. Network autocorrelation refers to the tendency that individuals are influenced by their network neighbors. Computer simulations show that slight within individual effects, e.g. socio-demographic influences, can be amplified by interpersonal influences. The second part of the dissertation analyzes Amazon book co-purchase data and Twitter co-following data. Using the book co-purchase data, this dissertation explores the preferences of liberals and conservatives on various scientific disciplines and lifestyle and cultural topics, such as martial arts, camping, gardening, etc. Building on an innovative measure of structural equivalence on a bipartite Twitter following graph, this dissertation explores the political alignment of popular Twitter entities, from members in Congress to Fortune 500 companies and foods and beverages.

*Committee:*                Michael W. Macy (Chair), Douglas D. Heckathorn, Edward J. Lawler.

### Huazhong University of Science and Technology

*Master of Engineering*    Industrial Engineering, 2007.

*Thesis Title:*              Complex Adaptive Systems and Model and Simulation of Social Systems

*Bachelor of Engineering*    Mechanical Engineering, 2005.

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## Research Interests:

Social Networks; Organizations and Ecology; Opinion and Cultural Polarization; Sociology of Culture; Social Psychology; Computational Methods in Social Sciences.

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### Peer Reviewed Publications:

DellaPosta, Daniel, **Yongren Shi** and Michael W. Macy. 2015. "Why Do Liberals Drink Lattes?" *American Journal of Sociology*. 120(5):1473-1511.

Press coverage: BBC News, Boston Globe, National Affairs, London School of Economics, TheSocietyPage.

**Shi, Yongren**, Jiang Zhang, Liang Gao and Chi Zhou. 2006. "Scale-Free Networks Emerge out of Micro-Mechanism in an Agent-based Computational Economic Model." *IEEE International Conference on Computational Cybernetics*. 2006.

**Shi, Yongren**, Liang Gao, Jiang Zhang. 2006. "Agent-Based Computational Economics and its Application in Supply Networks". *Complex Systems and Complexity Science*. Vol.3: 69-76. (in Chinese)

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### Other Publications:

DellaPosta, Daniel, **Yongren Shi**, and Michael Macy. 2015. "Why Do Liberals Drink Lattes? How Lifestyles Tied to Political Views Can Be Self-Reinforcing among Partisan Groups." USAPP: The LSE's Daily Blog on American Politics and Policy. July 14, 2015.

Heckathorn, Douglas D., Christopher Cameron, and **Yongren Shi**. 2014. "Respondent-Driven Sampling: Origins, Current Developments, and Alternative Estimators." By Proceedings of the International Methodology Symposium 2013, Statistics Canada, Ottawa.

**Shi, Yongren**. 2007. "Is it Possible to Create Life in Computer?" Review of the Book "Digital Genesis - The New Science of Artificial Life". *Studies in Dialectics of Nature*. Vol. 23: 44-49. (in Chinese)

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### Manuscripts Under Review:

**Shi, Yongren**, Fedor Dokshin, Michael Genkin and Matthew E. Brashears. "An Ecological Analysis of Organizational Membership". (Under review at *American Sociological Review*)

**Shi, Yongren** and Michael Macy. "The Scalability of Structural Equivalence in Very Large Online Networks: The 4.9M Followers of Congress". (Under review at *Social Science Research*)

Behler, Rachel, Chan S. Suh, Matthew E. Brashears and **Yongren Shi**. "Familiar Faces, Familiar Spaces: Social Similarity and Co-Presence in Non-Relational Behavioral Convergence." (Under review at *Social Networks*)

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### Working Papers or Manuscript-in-Progress:

"Can We Agree on Science? Measuring the Ideological Alignment of Science with Book Co-purchase Data". (with Michael W. Macy, James Evans, Fedor Dokshin and Feng Shi) (Working paper, in preparation for submission)

“Model-based and Design-based Estimation: A Study of Differential recruitment in Respondent Driven Sampling.” (with Douglas Heckathorn and Chris Cameron.) (Working paper, in preparation for submission)

“A Study of Political and Cultural Polarization using Amazon Book Purchase Data”. (with Michael W. Macy and Fedor Dokshin) (Manuscript in Progress)

“The Influence of Familiar Others: Social Similarity, Peer Networks, and Smoking Diffusion among Adolescents” (with Chan Suh) (Manuscript in Progress)

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**Fellowship, Grants and Awards:**

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| 2015                    | Chinese Government Award for Outstanding Students Abroad. \$6,000.  |
| 2015                    | Winner of Visualization Competition, Department of Sociology, Cornell University.   |
| 2015                    | Amazon Web Service in Education Research grant. \$452.  |
| 2014                    | National Science Foundation Doctoral Dissertation Research Improvement Grant: Examining Social Clustering and Division via Patterns of Purchasing and Reviewing. \$11,938. PI: Michael W. Macy, Co-PI: Yongren Shi. |
| 2013, 2014              | Graduate School Travel Grants.  |
| 2007-2009,<br>2016-2017 | Sage Fellowship.  |
| 2007                    | Excellent Graduation Thesis Award in Hubei Province.  |
| 2007                    | Complex System Summer School, Santa Fe Institute, at Beijing.   |
| 2004                    | Swarm Robots. Undergraduate Innovation Project Grant.   |

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**Research Experiences:**

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| Fall, 2013 – Now             | Consultant for Center of Disease Control (CDC) project on “Respondent Driven Sampling Analysis Tool (RDSAT) Development and SAS Interface”. PI. Douglas Heckathorn.<br>Duty: Design and realize the RDSAT-SAS bridge with Douglas Heckathorn and Chris Cameron; Maintain RDSAT software.   |
| May, 2012 –<br>August, 2015  | Research Assistant for Matthew Brashears, Defense Threat Reduction Agency (DTRA) project “ <i>Covert Social Networks</i> ”.<br>Duty: Lead the project on ecological analysis of organizational membership; Theorize formal model and conduct simulation analysis; Assist colleagues in ERGM model specification and AddHealth data analysis.                           |
| Fall, 2012 –<br>Spring, 2013 | Research Assistant for Douglas Heckathorn, National Institutes of Health (NIH) project “ <i>Statistical and Sociological Development of Respondent-Driven Sampling</i> ”.<br>Duty: Assess the performance of different RDS estimators in simulated RDS samples; Construct two-stage Markov Chain based bootstrapping method to estimate the variance of RDS estimates. |

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| Fall, 2008                   | Research Assistant for Michael Macy, National Science Foundation project “ <i>Very Large Semi-Structured Datasets for Social Science Research</i> ”.<br>Duty: Study influence and self-selection in Amazon.com book reviews.  |
| Fall, 2006 -<br>Spring, 2007 | Research Assistant for Liang Gao, National High Tech R&D Program in China, “ <i>Theory and Methods for Dynamic Scheduling Based on Complexity Science</i> ”.<br>Duty: Help write the grant proposal; Build agent based simulations for large scale supply networks. |

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### Teaching Experiences:

Teaching Assistant for *Introduction of Sociology* (Fall, 2009; Spring, 2011; Spring 2012; led discussion sessions twice per week); *Social Inequality* (Spring, 2010); *Controversies about Inequalities* (Fall, 2010; Fall, 2011; led 6 debates each semester).

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### Professional Presentations:

“Pulp Friction: Book Co-Purchasing Patterns of Conservative and Liberal American”. Brown Bag Series Talk. November, 2014.  
 “Is Greed Good? An Ecological Analysis of Organizational Membership”. American Sociological Association, Mathematical Sociology Section (San Francisco, CA). August, 2014.  
 “Is Greed Good? An Ecological Analysis of Organizational Membership”. Sunbelt Conference (St. Peter, FL). Feb., 2014.  
 “A Study of Opinion Polarization Using Amazon Book Data”, INSNA conference 2013. (Xi’an, China). July, 2013  
 “Network Autocorrelation and Opinion Dynamics”, Conference of Analytical Sociology. (New York City). with Daniel DellaPosta. 2012.  
 “Network Autocorrelation and Opinion Dynamics”, Graduate Student Mini-conference, Department of Sociology. (Ithaca, NY). 2011.  
 “The Topological Structure of the Spacosphere”, Second Chinese Conference on Complex Networks, Central China Normal University, Wuhan, China. 2006.

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### Skills in Computation:

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| Proficient   | Python (Networkx, iGraph, Pandas, parallel python, numpy, scipy, mrjob), R, Gephi, Amazon Web Service. |
| Intermediary | Java, SAS, C++, C, SQL, Mapreduce, topic modeling, natural language processing, data-mining.           |
| Basic        | Stata, Delphi.   |

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### References:

**Michael W. Macy** (Committee Chair)  
 Goldwin Smith Professor of Arts and Sciences  
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***Matthew E. Brashears***

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