Philip S. Chodrow

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I am an applied mathematician developing methods and models for studying complex human systems. I use probability, information theory, statistics, and dynamical systems theory to learn about inequality, segregation, and modernity. I am also passionate about teaching, and putting powerful tools in the hands of those who aim to change the world for the better. I make regular contributions to the Boston nonprofit community, and organize a by-students-for-students course in statistical computing at MIT.

Education

2015-	**Ph.D. Candidate** in Operations Research, MIT. Coursework GPA: 5.0. Expected graduation May, 2020.
2008-12	**B.A. with High Honors** in Pure Mathematics and Philosophy, Swarthmore College. Coursework GPA: 3.95.

Recognitions and Honors

2017-20	**NSF Graduate Research Fellowship** supporting research in modeling difference, disparity, and group dynamics in cities.
2012	**Fulbright Scholarship** supporting a year of research in Oslo, Norway.
2012	**Ivy Award** "recognizing the man of the graduating class who is outstanding in leadership, scholarship, and contributions to the college community."
2012	**Brinkmann Award** recognizing "the best student paper on a mathematical subject."
2012	**Phi Beta Kappa** inducted member.
2010	**Eugene Lang Summer Initiative Grant**, supporting a summer of undergraduate research.

Papers

2017	Chodrow, P. S. (2017). Structure and information in spatial segregation. *Proceedings of the National Academy of Sciences*, 114(44):1–6

Morse, S. and Chodrow, P. S. (2016). Parameter Estimation for Persistent Communication Cascades. *Working paper*, pages 1–14. Appeared in Morse's SM thesis, May 2017.

2016   Chodrow, P. S., Awwad, Z., Jiang, S., and González, M. C. (2016a). Demand and Congestion in Multiplex Transportation Networks. *PLoS ONE*, 11(9):1–10

Chodrow, P. S., Mannherz, W., and Michaelson, J. (2016b). How We Grow. *Working paper*

Research Talks

2017	The Structure of Spatial Segregation. *Growth Lab Seminar*, Harvard Kennedy School, Cambridge, USA.
2016	An Information Theoretic Lens on Urban Diversity. *2016 Conference on Complex Systems*, Amsterdam, The Netherlands.
	Demand and Congestion in Multiplex Transportation Networks. *2016 Conference on Complex Systems*, Amsterdam, The Netherlands.
2013	Relativism, Cooperation, and the Practice of Inquiry. *Conference on the Metaphysics of Culture*, Helsinki, Finland.
2013	The Right Way to Care About the Truth. *Filosofisk Supplement*, the student philosophical society at the University of Oslo, Oslo, Norway.

Teaching and Mentorship

2017-	**Recitation Leader**: MIT Course 1.204, "Computer Modeling: From Individual Mobility to Networks" with Marta González.
2017	**Organizer**: "Computing in Optimization and Statistics", student-taught January term course at MIT.
2017	**Instructor**: "Advanced Topics in Data Science," 3-hour workshop session at MIT.
2016	**Group Co-Leader**: Workshop in Predictive Policing at the Institute for Computational and Experimental Research in Mathematics, Providence, RI.
	Instructor: "Data Wrangling in R" at MIT's January course "Software Tools in Statistics and Optimization."
2012	**Teaching Assistant** for an advanced undergraduate course in the philosophy of action with Professor Bjrn Ramberg at Universitet i Oslo.
2010-12	**Mathematics Academic Support** at Swarthmore College, Swarthmore PA.
2009-12	**Writing Mentor** at Swarthmore College, Swarthmore PA. Paper areas including philosophy, mathematics, English, sociology, and anthropology. Worked in-depth over a full year with two students writing senior theses.

| 2012 | **Teaching Assistant** for intermediate-level course on the philosopy of Plato with Professor Grace Ledbetter at Swarthmore College, Swarthmore PA. |

Academic Service

| 2017- | **Program Committee Member**. Conference on Complex Systems, Cancun, Mexico. |
| 2016 | **Reviewer**. *PLoS ONE.* |

Research & Professional Experience

2015-	**Group Member**, Human Mobility and Networks Laboratory at MIT, Cambridge MA. Supervised by Marta González.
2013-15	**Analyst**, Health Leads, Boston MA
2012-14	**Research Assistant**, Laboratory for Quantitative Medicine
2012-13	**Visiting Researcher**, Center for the Study of Mind in Nature, Oslo, Norway
2011-12	**Senior Honors Thesis** in philosophy, entitled *Perception and Moral Goodness*, Swarthmore College.
2010	**REU Fellow** in matrix analysis, College of William and Mary, Williamsburg VA.
2009	**Research Assistant** in theoretical plasma physics, James Madison University, Harrisonburg VA.

Community Service

2015 -	**Analytics Consultant**, Health Leads, Boston MA
2014	**Analytics Consultant**, Tech Networks of Boston Pro Bono Consulting Evening
2010-12	**Cofounder and Director**, NinjaGram Charities, Swarthmore College, Swarthmore MA
2011-12	**Assistant Children's Instructor**, Aikido Kokikai of Swarthmore, Swarthmore PA
2008-12	**Cofounder and Director**, Swarthmore Martial Arts Club, Swarthmore PA

Skills

Languages: English (native), German (reading and listening), Norwegian Bokmal (reading and listening)
Software: R, Python, Maple, LaTeX, Linux, Jekyll, Matlab

Other Activities

Aikido (Aikikai). Current rank: 2nd Kyu
Taekwondo (ITF). Current rank: 1st Dan.
Chess. Current Elo: 1937. Virginia High School co-Champion, 2008.

Last updated: November 8, 2017