

AARON L BRAMSON

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EDUCATION

Ph.D. Joint Political Science and Philosophy University of Michigan, Ann Arbor, MI	April 27, 2012
Certificate in Complex Systems & Agent-Based Computational Models University of Michigan, Ann Arbor, MI	Dec 18, 2008
M.S. in Mathematics Northeastern University, Boston, MA	May 1, 2004
B.S. in Economics University of Florida, Gainesville, FL	Aug 7, 1999
B.A. in Philosophy University of Florida, Gainesville, FL	Aug 7, 1999

ACADEMIC AFFILIATIONS

Affiliate Researcher Department of General Economics, Gent University, Gent, Belgium	September 2013 to March 2023
Visiting Scientist Lab for Symbolic Cognitive Development, RIKEN Center for Biosystems Dynamics Research, Kobe, Japan	April 2018 to March 2023
Adjunct Professor Department of Software and Information Systems, University of North Carolina Charlotte, Charlotte NC, USA	June 2016 to June 2019

EMPLOYMENT AND CONSULTING EXPERIENCE

AI Principal Investigator GA Technologies, Roppongi, Japan Lead scientist developing novel analysis methods and algorithms for a variety of business purposes including real estate, financial services, and web-based interactive visualizations. Research includes geospatial data analysis, network theory and applications, multimodal data integration, and machine learning architecture development.	April 2018 to Present
Research Scientist Lab for Symbolic Cognitive Development, RIKEN Brain Science Institute, Wako, Japan Lead data scientist developing analysis algorithms and toolkit for adaptive multi-sensor neuro-behavioral data fusion, experiment automation, unsupervised pattern discovery, supervised pattern matching, web-based interactive visualization, nonparametric statistical approaches, etc. Included grant proposal writing, building inter-disciplinary collaborations, and translation of our patented technology to our venture company.	April 2014 to March 2018
Postdoctoral Appointee Systems Research, Analysis, and Applications, Sandia Labs, Albuquerque, NM Simulations of social network effects in opinion dynamics, multi-model mechanism integration, interface design, bounding unknown unknowns in system dynamics, optimal iterative data course-graining.	Aug 2013 to April 2014

Visiting Research Professor

Oct - Nov 2012, Apr - July 2013

Economics Department, Ghent University, Belgium

Developed “temporal web” intertemporal network approach to track risk propagation in large-scale interbank transaction data, developed an agent-based model for predictive analytics of bank failure and cascading collapse. Continued collaboration includes analysis of virtual world data via multi-layer networks, social balance, hedonic pricing, models of market efficiency, endogeneous hubs, etc.

Research Scientist

Dec 2012 to March 2013

Lab for Symbolic Cognitive Development, Riken Brain Science Institute, Wako, Japan

Adapted my Revealed Dynamics Markov Modeling technique to perform unsupervised classification and identify dynamical patterns in neurological + physiological + environmental data to integrate it into our adaptive research enclosure (Patent JP 6029069).

Consultant on Complexity in Public Policy

September 2012

Civil Service College and Various Government Agencies, Singapore

Engaged with multiple political organizations to advise on incorporating and harnessing complexity. Taught three workshops and connected local complexity-related academics with interested parties.

Human Body Function for Intensive Care Unit Interventions

Feb 2012 to August 2012

Mayo Clinic, Rochester, MN

Initial development of an integrated mesoscopic human body simulator to uncover knowledge gaps in function and response to intensive care interventions.

Post-Doctoral Research Fellow

February 2010 to July 2011

Rotman School, University of Toronto, Toronto, ON

Developed MBA core course on Business Complexity and Bayesian Networks for Business Applications resulting in the first textbook on the subject *Inference and Intervention*.

Modeling Information Transfer across Social Networks

July 2009 to September 2010

Digital Consulting Service, Newbury Park, CA

Created a simulation environment for the United States Military Academy at West Point for message signaling across heterogeneous social networks with various communication properties.

Software Engineer

May 2007 to August 2010

Lockheed Martin Corporation, San Diego, CA

Developed multi-int fusion methodologies for urban operations program and participated in technology development for R&D and new contract proposals for cultural fusion, social network analysis, and incorporating complex systems methods. Top Secret security clearance issued.

TEACHING EXPERIENCE

CSI-ABM Summer School: Agent-based Modeling in Economics

June 2014

Ghent University, Ghent, Belgium

Instructor for intensive workshop at Ghent University in agent-based modeling with focus on model design, analysis, and ABM best practices.

NEH Institute for Advanced Topics in the Digital Humanities

June 2011

University of North Carolina, Charlotte, NC

Instructor and mentor for intensive month-long workshop at UNC Charlotte covering agent-based models, networks, and simulation analysis aimed at humanities graduate students.

Post-Doctoral Research Fellow

February 2010 to July 2011

Rotman School, University of Toronto, Toronto, ON

Worked with Dr. Mike Ryall to develop and co-teach the “Integrated Thinking Practicum” course for first-year MBA students that includes causal models (Bayesian networks), agent-based models, statistical forecasting, and game theory. Course materials published as *Inference and Intervention* textbook on causal models for business applications.

Teaching Assistant

September 2009 to December 2009

University of Michigan, Ann Arbor, MI

Assistant and discussion session instructor for Scott Page’s undergraduate course Applied Complex Systems: Emergent Challenges.

ICPSR Instructor

July-August 2005, 2006, 2007, 2008, and 2009

University of Michigan, Ann Arbor, MI

Developed and taught a four-week workshop on building computational models for complex systems for the Inter-university Consortium for Political and Social Research (ICPSR) Summer Program as part of Scott Page and Ken Kollman's *Complex Systems Models in the Social Sciences* course.

Graduate Teaching Assistant

January 2006 to May 2006

University of Michigan, Ann Arbor, MI

Assistant for Mark Newman's graduate level *Theory of Complex Systems* course. Content required a strong capability in mathematical and computational methods (especially complex networks).

Graduate Teaching Assistant

September 2002 to May 2004

Northeastern University, Boston, MA

Instructor for *College Algebra*, *Calculus 3 for Biological Sciences* (twice), and *Foundations of Mathematics*. The foundations course offered me the rare opportunity as a graduate student to develop and teach my own course in mathematical logic to a general (non-major) student body.

SELECTED PUBLICATIONS

Patrick Grim, Daniel J. Singer, Aaron Bramson, Bennett Holman, Jiin Jung and William J. Berger. "The Epistemic Role of Diversity in Juries: An Agent-Based Model" *Journal of Artificial Societies and Social Simulation* 27 (1), 12 (2024).

Aaron Bramson. "Neighborhood discovery via augmented network community structure" *Applied Network Science* 7 (1), 1-23 (2022).

Aaron Bramson, Kevin Hoefman, Koen Schoors, Jan Ryckebusch. "Diplomatic relations in a virtual world" *Political Analysis* 30 (2), 214-235 (2022).

William Berger, Dan Singer, Aaron Bramson, Patrick Grim, Jiin Jung, Bennett Holman. "Philosophical Considerations of Political Polarization" *The Political Turn in Analytic Philosophy: Reflections on Social Injustice and Oppression* 11 (2022).

Aaron Bramson. "Neighborhood Discovery via Network Community Structure" *International Conference on Complex Networks and Their Applications*, 769-779 (2021).

Aaron Bramson, Megumi Hori. "Effect of Walkability on Rental Prices in Tokyo" *2021 IEEE 4th International Conference on Multimedia Information Processing and Retrieval (MIPR)* (2021).

Jiin Jung, Aaron Bramson, William Crano, Scott Page, John Miller. "Cultural drift, indirect minority influence, network structure, and their impacts on cultural change and diversity." *American Psychologist* 76 (6), 1039 (2021).

Aaron Bramson, Megumi Hori. "The Best Place in Tokyo for Anything: Classifying Stations by Walkability to Specific Amenities" *Annual Conference of the Japanese Society for Artificial Intelligence*, 106-117 (2021).

Dan Singer, Aaron Bramson, Patrick Grim, Bennett Holman, Karen Kovaka, Jiin Jung, William Berger. "Don't forget forgetting: the social epistemic importance of how we forget" *Synthese* 198 (6), 5373-5394 (2021).

Dan Singer, Patrick Grim, Aaron Bramson, Bennett Holman, Jiin Jung, William Berger. "Epistemic networks and polarization" *The Routledge Handbook of Political Epistemology*, 133-144 (2021).

Aaron Bramson, Kazuto Okamoto, Megumi Hori. "Comparing Methods for Measuring Walkability." *Complex Systems*. 30 (4), 539-565 (2021).

Shuto Araki, Aaron Bramson. "Connecting the dots: integrating point location data into spatial network analyses" *International Conference on Complex Networks and Their Applications*, 193-205 (2020).

Aaron Bramson, Megumi Hori, Bingran Zha, Hirohisa Inamoto. "Social and economic flows across multimodal transportation networks in the Greater Tokyo Area" *Applied Network Science* 5(1), 1-35 (2020).

- Patrick Grim, Aaron Bramson, Dan Singer, William Berger, Jiin Jung Scott Page. “Representation in models of epistemic democracy” *Episteme* 17 (4), 498-518 (2020).
- Aaron Bramson. “Toward Universal Data Interoperability in Networked Belief Models” *2020 13th International Conference on Human System Interaction (HSI)*, 124-129 (2020)
- Aaron Bramson, Megumi Hori, Bingran Zha, Hirohisa Inamoto. “Scoring and classifying regions via multimodal transportation networks” *Applied Network Science* 4:97 (2019).
- Daniel Singer, Aaron Bramson, Patrick Grim, Bennett Holman, Karen Kovaka, Jiin Jung, William Berger. “Don’t forget forgetting: the social epistemic importance of how we forget” *Synthese*, 1-22 (2019).
- Daniel Singer, Aaron Bramson, Patrick Grim, Bennett Holman, Jiin Jung, Karen Kovaka, Anika Ranginani, William Berger. “Rational social and political polarization” *Philosophical Studies* 176 (9), 2243-2267 (2019).
- Aaron Bramson. “Formal Measures of Dynamical Properties: Tipping Points, Robustness, and Sustainability” *Complex Adaptive Systems*, 79-128 (2019).
- Aaron Bramson, Megumi Hori, Bingran Zha, Hirohisa Inamoto. “Classification of Accessibility and Synergy in the Tokyo Area Multimodal Transportation Network” *Advances in Artificial Intelligence. JSAI 2019. Advances in Intelligent Systems and Computing* vol 1128; 247-266 (2019).
- Jiin Jung, Patrick Grim, Daniel Singer, Aaron Bramson, William Berger, Bennett Holman, Karen Kovaka. “A Multidisciplinary Understanding of Polarization” *American Psychologist* (2019).
- Aaron Bramson, Adrien Baland, Atsushi Iriki. “Measuring Dynamical Uncertainty with Revealed Dynamics Markov Models” *Frontiers in Applied Mathematics and Statistics*. 5 (2019).
- Andres M. Belaza, Jan Ryckebusch, Aaron Bramson, Corneel Casert, Kevin Hoefman, Koen Schoors, Milan van den Heuvel, Benjamin Vandermarliere. “Social stability and extended social balance—Quantifying the role of inactive links in social networks” *Physica A* 518: 270-284 (2019).
- Patrick Grim, Daniel Singer, Aaron Bramson, Bennett Holman, Sean McGeehan, William Berger. “Diversity, Ability, and Expertise in Epistemic Communities” *Philosophy of Science* 86(1): 98-123 (2019).
- Bennett Holman, William Berger, Daniel Singer, Patrick Grim, Aaron Bramson. “Diversity and Democracy: Agent-Based Modeling in Political Philosophy” *Historical Social Research* 43(1): 259-84 (2018).
- Kevin Hoefman, Aaron Bramson, Koen Schoors Jan Ryckebusch. “The impact of functional and social value on the price of goods” *PLOS ONE* 13(11): e0207075 (2018).
- Jiin Jung, Aaron Bramson, William Crano. “An Agent-Based Model of Indirect Minority Influence on Social Change and Diversity” *Social Influence* 13.1: 18-38 (2018).
- Aaron Bramson, Kevin Hoefman, Milan van den Heuvel, Benjamin Vandermarliere, Koen Schoors. “Measuring Propagation with Temporal Webs” In: Masuda N., Holme P. (eds) *Temporal Network Epidemiology*. Springer, Singapore, p57-104 (2017).
- Andres M Belaza, Kevin Hoefman, Jan Ryckebusch, Aaron Bramson, Milan van den Heuvel, Koen Schoors. “Statistical Physics of Balance Theory” *PLoS ONE* 12(8): e0183696 (2017).
- Aaron Bramson, Patrick Grim, Daniel Singer, William Berger, Graham Sack, Steven Fisher, Carissa Flocken. “Understanding Polarization: Meanings, Measures, and Model Evaluation” *Philosophy of Science* Volume 84.1: 115-159 (2017).
- Atsushi Iriki, Yumiko Yamazaki, Aaron Bramson. “Animal Test Device” *Japanese Patent* JP 6029069 (October 28, 2016).
- Aaron Bramson, Benjamin Vandermarliere. “Benchmarking Measures of Network Influence” *Scientific Reports* 6, 34052; (2016).

Aaron Bramson, Patrick Grim, Daniel Singer, Steven Fisher, William Berger, Graham Sack, Carissa Flocken. “Disambiguation of Social Polarization Concepts and Measures” *Mathematical Sociology* Volume 40, Issue 2, pp. 80-111 (2016).

Aaron Bramson, Benjamin Vandermarliere. “Dynamical Properties of Interaction Data” *Journal of Complex Networks* Volume 4, Issue 1, pp. 87-114 (2015).

Jiin Jung, Aaron Bramson. “An Agent Based Model of Indirect Minority Influence on Social Change” *Proceedings of the 14th International Conference on the Synthesis and Simulation of Living Systems*, eds. H. Sayama, et al. MIT Press pp. 400-407 (2014).

M. D. Ryall, A. L. Bramson. *Influence and Intervention: Causal Modeling for Business Analysis*. Routledge Press (2013).

Patrick Grim, Daniel Singer, Steven Fisher, Aaron Bramson, William Berger, Christopher Reade, Carissa Flocken, Adam Sales. “Scientific Networks on Data Landscapes: Question Difficulty, Epistemic Success, and Convergence” *Episteme* Volume 10, 4 (2013).

Patrick Grim, Aaron Bramson, Daniel Singer, Steven Fisher, Carissa Flocken, William Berger. “Philosophical Analysis in Modeling Polarization: Notes from a Work in Progress” *APA Newsletter on Philosophy and Computers*, Vol. 12, No. 1 (2012).

Jenna Bednar, Aaron Bramson, Andrea Jones-Rooy, Scott Page. “Emergent cultural signatures and persistent diversity” *Rationality and Society*, Volume 22(4) (2010).

Aaron Bramson. “Formal Measures of Dynamical Properties: Robustness” *Symposia Technical Report Series of the AAAI* (2010).

Aaron Bramson. “Formal Measures of Dynamical Properties: Tipping Points” *Symposia Technical Report Series of the AAAI* (2009).

Aaron Bramson. “Evolution of Cooperation and Coordination via Preferential Detachment” *Proceedings of the IEEE TIC-STH Symposium on Complex Systems* (2009).

Jenna Bednar, Aaron Bramson, Andrea Jones-Rooy, Scott Page. “Conformity, consistency, and cultural heterogeneity” *Proceedings of Annual Meeting of the American Political Science Association* (2006).

Aaron Bramson. “Methodology for Building Confidence Measures” *Proceedings of the 2004 S.P.I.E. Defense and Security Conference* (2004).

PROFESSIONAL AFFILIATIONS

President and Owner October 2008 to December 2023
Complexity Research Corporation, Simulation and Education Consulting Services

President and Owner November 2006 to December 2023
Jika-Tabi Incorporated, Footwear Design and Distribution

Co-Founder and Chief Science Officer October 2015 to April 2021
Rikaanalysis K.K., Riken Venture for Research Marketization

TECHNICAL AND SPECIALIZED SKILLS

Research Tools: Python, SQL, Mathematica, L^AT_EX, NetLogo
Web Tools: HTML, CSS, JavaScript
Design Tools: Photoshop, Illustrator

LANGUAGE ABILITIES

English: Native
Japanese: advanced speaking, N3 level reading and writing