

CARTER TRIBLEY BUTTS

CONTACT INFORMATION:

- WORK:
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EDUCATION:

- Ph.D. in Sociology, Carnegie Mellon University, May 2002
“Spatial Models of Large-Scale Interpersonal Networks” (Kathleen M. Carley, Chair)
- M.S. in Sociology, Carnegie Mellon University, May 1998
“Canonical Labeling to Facilitate Graph Comparison” (Kathleen M. Carley, Chair)
- B.S. in Systems Theory (with distinction), Duke University, May 1996
- Diploma, Jordan High School, May 1992

CURRENT POSITION:

- Associate Professor, Department of Sociology and Institute for Mathematical Behavioral Sciences, University of California – Irvine

CAMPUS AFFILIATIONS:

- Department of Sociology
- Institute for Mathematical Behavioral Sciences
- California Institute for Telecommunications and Information Technology (Calit2)
- UCI Center for Machine Learning and Intelligent Systems
- UCI Center for Emergency Response Technology
- UCI Center for Organizational Research

RESEARCH INTERESTS

- Mathematical Sociology
- Social Networks
- Quantitative Methodology
- Human Judgment and Decision Making
- Economic Sociology

AWARDS AND HONORS:

- James Coleman Paper Award for “Rational and Empirical Play in the Simple Hot Potato

Game” (with David Rode), ASA Section on Rationality and Society, 2009

- Linton C. Freeman Award for Distinguished Scholarship, International Network for Social Network Analysis, 2008
- Best Paper Award for “Emergency Phase Networks During the World Trade Center Disaster” (with Miruna Petrescu-Prahova and Remy Cross), Third Joint US-Japan Conference on Mathematical Sociology, Sapporo, Japan, 2005
- Herbert A. Simon Dissertation Award for “Spatial Models of Large-Scale Interpersonal Networks,” Carnegie Mellon University, 2002
- Outstanding Working Paper Award for “Analyzing Life Course Patterns with the Interval Graph Approach” (with Joy Pixley), Cornell Careers Institute, 2002
- Outstanding Graduate Student Paper Award for “Analyzing Life Course Patterns with the Interval Graph Approach” (with Joy Pixley), ASA Section on Aging and the Life Course, 2001
- Three Rivers Network Certification and Award in Social Network Analysis, 1999
- Outstanding Graduate Student Paper Award for “A Bayesian Model of Panic in Belief,” ASA Section on Mathematical Sociology, 1999

GRANTS AND FELLOWSHIPS:

- Butts, Carter T. (PI); Hipp, John (Co-PI); Nagle, Nicholas N. (Co-PI). (10/2008-9/2011). “DHB: Large-scale Spatially Embedded Interpersonal Networks: Measurement, Modeling, and Dynamics.” Grant #BCS-0827027, NSF BCS, Human Social Dynamics. \$749,245.00.
- Smyth, Padhraic (PI); Butts, Carter T. (Co-PI); Eppstein, David (Co-PI); Goodrich, Michael T. (Co-PI); Handcock, Mark S. (Co-PI); Hunter, David R. (Co-PI); Mount, David (Co-PI). (5/2008-5/2013). “Scalable Methods for the Analysis of Network-based Data.” Award #N00014-08-1-1015, ONR. \$5,381,300.00.
- Mendonça, David (PI); Butts, Carter T. (Co-PI); Webb, Gary (Co-PI). (10/2006-9/2010). “AOC: Improvisation in Emergency Response: Linking Cognition, Behavior and Social Interaction.” Grant #CMS-0624257, NSF CMS, Human Social Dynamics. \$710,000.00.
- Butts, Carter T. (PI). (2/2006-7/2007). “SGER: Collaborative Research: Mapping and Analyzing Emergent Multiorganizational Networks in the Hurricane Katrina Response.” Grant #CHE-0555125, NSF CHE, Statistics and Simulations. (Awarded through HSD SGER.) \$69,372.00.
- Butts, Carter T. (PI). (1/2005-3/2005). “Modeling HIV and STD in Drug User and Social Networks.” Subaward 918197 of award 5 R01 DA012831-05, NIH. \$13,294.00.
 - Extension to 1/2006-5/2006, \$26,764.00.
 - Extension to 1/2007-5/2007. \$13,940.00
- Mehrotra, Sharad (PI); Butts, Carter T. (Co-PI); Eguchi, Ronald (Co-PI); Venkatasubramanian, Nalini (Co-PI); and Winslett, Marianne (Co-PI). (10/2003-9/2008). “Collaborative Research: Responding to the Unexpected.” Grant #IIS-0331707, NSF ITR. \$8,957,651.00.
- Carley, Kathleen M. (PI), and Butts, Carter T. (Co-PI). (4/2001). “Dissertation Improvement: Spatial Models of Large-Scale Interpersonal Networks.” Grant #SES-0100999, NSF SBE, Sociology. \$6,512.00.
- Butts, Carter T. (PI). (6/2000). “Monte Carlo Methods for Simulating Large-Scale Interpersonal Networks.” Research Proposal Award from the Center for Computational Anal-

ysis of Social and Organizational Systems, NSF IGERT “Integrated Graduate Education and Research Training in Computational Analysis of Social and Organizational Systems.” \$965.75.

- National Science Foundation Graduate Research Fellowship, 1997-2000

BOOKS:

- Butts, Carter T. (2010). *Space and Structure: Methods and Models for Large-Scale Interpersonal Networks*. Springer, under contract.

ARTICLES AND PEER REVIEWED CONFERENCE PAPERS:

- Gjoka, Minas; Kurant, Maciej; Butts, Carter T.; and Markopoulou, Athina. (2010). “Walking in Facebook: A Case Study of Unbiased Sampling of OSNs.” Forthcoming in *Proceedings of the 29th IEEE Conference on Computer Communications*. (IEEE INFOCOM).
- Butts, Carter T. (2009). “Revisiting the Foundations of Network Analysis.” *Science*, 325, 414–416.
- Butts, Carter T. and Cross, B. Remy. (2009). “Change and External Events in Computer-Mediated Citation Networks: English Language Weblogs and the 2004 U.S. Electoral Cycle.” *Journal of Social Structure*, 10.
- Hilgeman, Christin and Butts, Carter T. (2009). “Women’s Employment and Fertility: a Welfare Regime Paradox.” *Social Science Research*, 38, 103–117.
- Butts, Carter T. (2008). “A Relational Event Framework for Social Action.” *Sociological Methodology*, 38(1), 155–200.
- Butts, Carter T. (2008). “network: a Package for Managing Relational Data in R.” *Journal of Statistical Software*, 24(2).
- Butts, Carter T. (2008). “Social Network Analysis with sna.” *Journal of Statistical Software*, 24(6).
- Butts, Carter T. (2008). “Social Networks: A Methodological Introduction.” *Asian Journal of Social Psychology*, 11(1), 13–41.
- Goodreau, Steven M.; Handcock, Mark S.; Hunter, David R.; Butts, Carter T.; and Morris, Martina. (2008). “A statnet Tutorial.” *Journal of Statistical Software*, 24(9).
- Handcock, Mark S.; Hunter, David R.; Butts, Carter T.; Goodreau, Steven M.; and Morris, Martina. (2008). “statnet: Software Tools for the Representation, Visualization, Analysis and Simulation of Network Data.” *Journal of Statistical Software*, 24(1).
- Hunter, David R.; Handcock, Mark S.; Butts, Carter T.; Goodreau, Steven M.; and Morris, Martina. (2008). “ergm: A Package to Fit, Simulate and Diagnose Exponential-Family Models for Networks.” *Journal of Statistical Software*, 24(3).
- Lind, Benjamin E.; Tirado, Miguel; Butts, Carter T.; and Petrescu-Prahova, Miruna. (2008). “Brokerage Roles in Disaster Response: Organizational Mediation in the Wake of Hurricane Katrina.” *International Journal of Emergency Management*, 5(1), 75–99.
- Petrescu-Prahova, Miruna and Butts, Carter T. (2008). “Emergent Coordinators in the World Trade Center Disaster.” *International Journal of Mass Emergencies and Disasters*, 28(3), 133–168
- Butts, Carter T. (2007). “Models for Generalized Location Systems.” *Sociological Methodology*, 37(1), 283–348.

- Butts, Carter T. (2007). “Permutation Models for Relational Data.” *Sociological Methodology*, 37(1), 257–281.
- Butts, Carter T. and Carley, Kathleen M. (2007). “Structural Change and Homeostasis in Organizations: A Decision-Theoretic Approach.” *Journal of Mathematical Sociology*, 31(4), 295–321.
- Butts, Carter T.; Petrescu-Prahova, Miruna; and Cross, B. Remy. (2007). “Responder Communication Networks in the World Trade Center Disaster: Implications for Modeling of Communication Within Emergency Settings.” *Journal of Mathematical Sociology*, 31(2), 121–147.
- Butts, Carter T. and Rode, David C. (2007). “Rational and Empirical Play in the Simple Hot Potato Game.” *Social Forces*, 85(4): 1787–1806.
- Butts, Carter T. (2006). “Exact Bounds for Degree Centralization.” *Social Networks*, 28(4), 283–296.
- Kalashnikov, Dmitri V.; Ma, Yiming; Mehrotra, Sharad; Hariharan, Ramaswamy; and Butts, Carter T. (2006). “Modeling and Querying Uncertain Spatial Information for Situational Awareness Applications.” Pages 131–138 in *Proceedings of the 14th Annual ACM International Symposium on Advances in Geographic Information Systems* (ACM SIGIR). New York: ACM Press.
- Butts, Carter T. and Carley, Kathleen M. (2005). “Some Simple Algorithms for Structural Comparison.” *Computational and Mathematical Organization Theory*, 11(4), 291–305.
- Butts, Carter T. and Pixley, Joy E. (2004). “A Structural Approach to the Representation of Life History Data.” *Journal of Mathematical Sociology*, 28(2), 81–124.
- Mehrotra, Sharad; Butts, Carter T.; Kalashnikov, Dmitri V.; Venkatasubramanian, Nalini; Altintas, K.; Hariharan, R.; Lee, Haimin; Ma, Yiming; Myers, Amnon; Wickramasuriya, Jehan; Eguchi, Ron; Huyck, Charles. (2004). “CAMAS: A Citizen Awareness System for Crisis Mitigation.” In *Proceedings of ACM SIGMOD International Conference on Management of Data (SIGMOD’04)*, publication and software demonstration, June 13–18, 2004.
- Butts, Carter T. (2003). “Network Inference, Error, and Informant (In)Accuracy: A Bayesian Approach.” *Social Networks*, 25(2), 103–140.
- Butts, Carter T. and Hilgeman, Christin. (2003). “Inferring Potential Memetic Structure from Cross-Sectional Data: An Application to American Religious Beliefs.” *Journal of Memetics - Evolutionary Models of Information Transmission*, 7(2).
http://jom-emit.cfpm.org/2003/vol7/butts_ct&hilgeman.c.html.
- Mehrotra, Sharad; Butts, Carter T.; Kalashnikov, Dmitri V.; Venkatasubramanian, Nalini; Rao, Ramesh; Chockalingam, Ganz; Eguchi, Ron; Adams, Beverly; and Huyck, Charles. (2003). “Project RESCUE: Challenges in Responding to the Unexpected.” *SPIE Journal of Electronic Imaging, Displays, and Medical Imaging*, 5304, 179–192.
- Miller, John H.; Butts, Carter T.; and Rode, David C. (2002). “Communication and Cooperation.” *Journal of Economic Behavior and Organization*, 47, 179–195.
- Butts, Carter T. (2001). “The Complexity of Social Networks: Theoretical and Empirical Findings.” *Social Networks*, 23(1), 31–71.
- Butts, Carter T. (2000). “An Axiomatic Approach to Network Complexity.” *Journal of Mathematical Sociology*, 24(4), 273–301.
- Anderson, Brigham S.; Butts, Carter T.; and Carley, Kathleen M. (1999). “The Interaction

of Size and Density with Graph Level Indices.” *Social Networks*, 21(3), 239–267.

- Fararo, Thomas J. and Butts, Carter T. (1999). “Advances in Generative Structuralism: Structured Agency and Multilevel Dynamics.” *Journal of Mathematical Sociology*, 24(1), 1–65.
- Butts, Carter T. (1998). “A Bayesian Model of Panic in Belief.” *Computational and Mathematical Organization Theory*, 4(4), 373–404.
- Carley, Kathleen M. and Butts, Carter T. (1997). “An Algorithmic Approach to the Comparison of Partially Labeled Graphs.” In *Proceedings of the 1997 International Symposium on Command and Control Research and Technology*. June. Washington, D.C.

CHAPTERS AND OTHER PROCEEDINGS PAPERS:

- Butts, Carter T. and Acton, Ryan M. (2010). “Spatial Modeling of Social Networks.” In Timothy Nyerges, Helen Couclelis, and Robert McMaster (Eds.), *The Sage Handbook of GIS and Society Research*, forthcoming. SAGE Publications.
- Butts, Carter T. (2007). “Statistical Mechanical Models for Social Systems.” In Adrian Bejan and Gilbert W. Merkx (eds.), *Constructal Theory of Social Dynamics*, 197–224. New York: Springer.
- Butts, Carter T. (2003). “Predictability of Large-scale Spatially Embedded Networks” In Ronald Breiger, Kathleen Carley, and Philippa Pattison (eds.), *Dynamic Social Network Modeling and Analysis: Workshop Summary and Papers*, 313–323. Washington, D.C.: National Academies Press.
- Butts, Carter T.; Reilly, Colman; Speh, Marcus; and Wang, Joseph. (1994). “WWW and the Globewide Network Academy.” In *Proceedings of the First International WWW Conference*, 1994. CERN, Switzerland.

BOOK REVIEWS AND INVITED COMMENT PAPERS:

- Butts, Carter T. (2007). Comment on Mark S. Handcock, Adrian E. Raftery, and Jeremy M. Tantrum, “Model-based Clustering for Social Networks.” *Journal of the Royal Statistical Society, Series A*, 170(2), 333.
- Butts, Carter T. (2007). Review of Carrington, Peter J.; Scott, John; and Wasserman, Stanley (eds.), *Models and Methods in Social Network Analysis*, Cambridge, Cambridge University Press. *Social Networks*, 29(4), 603–608.
- Butts, Carter T. (2001). Review of Gerald Jay Sussman and Jack Wisdom, *Structure and Interpretation of Classical Mechanics*, Cambridge, MA, MIT Press. *Computational and Mathematical Organization Theory*, 7(4), 319–342.

GENERAL AUDIENCE PUBLICATIONS:

- Mendonça, David; Butts, Carter T.; and Webb, Gary. (2007). “Learning from the Response to Two Extreme Events.” *Contingency Today*, June 4, 2007.
<http://www.contingencytoday.com/online.article/Learning-from-the-Response-to-Two-Extreme-Events-/356>

SOFTWARE:

- Packages for the R Statistical Computing System:
 - Handcock, Mark S.; Hunter, David R.; Butts, Carter T.; and Morris, Martina M. (2005–2010). *ergm: Exponential Random Graph Modeling of Network and Graph Data*.

- Butts, Carter T. (2001–2010). *metamatrix*: Metamatrix Analysis of Organizational Structure.
- Butts, Carter T.; Handcock, Mark S.; Hunter, David R.; and Morris, Martina M. (2005–2010). *network*: Classes for Relational Data.
- Butts, Carter T. (2005–2010). *netperm*: Permutation Models for Relational Data.
- Butts, Carter T. (2004–2010). *nettheory*: Routines for Exploring Social Network Theory.
- Butts, Carter T. (2000–2010). *sna*: Tools for Social Network Analysis.
- Handcock, Mark S.; Hunter, David R.; Butts, Carter T.; Goodreau, Steven M.; and Morris, Martina M. (2006–2010). *statnet*: Statistical Modeling of Network and Graph Data.
- Butts, Carter T. (2000–2002). *NETSTAT*: A General-purpose Library for the Analysis of Social and Organizational Network Data in the C Language.

WORKING PAPERS AND TECHNICAL REPORTS:

- Butts, Carter T. (2010). “Bayesian Meta-Analysis of Social Network Data via Conditional Uniform Graph Quantiles.” IMBS Technical Report MBS 10-04, University of California, Irvine.
- Butts, Carter T. (2010). “A Note on Generalized Edges.” IMBS Technical Report MBS 10-03, University of California, Irvine.
- Gjoka, Minas; Kurant, Maciej; Butts, Carter T.; and Markopoulou, Athina. (2009). “A Walk in Facebook: Uniform Sampling of Users in Online Social Networks.” [arXiv.org:0906.0060](https://arxiv.org/abs/0906.0060).
- Butts, Carter T. (2006). “Cycle Census Statistics for Exponential Random Graph Models.” IMBS Technical Report MBS 06-05, University of California, Irvine.
- Butts, Carter T. (2006). “A Relational Event Model for Social Action, with Application to the World Trade Center Disaster.” IMBS Technical Report MBS 06-06, University of California, Irvine.
- Butts, Carter T. (2005). “Building Inferentially Tractable Models of Complex Social Systems: a Generalized Location Framework.” IMBS Technical Report MBS 05-08, University of California, Irvine.
- Butts, Carter T. (2005). “Permutation Models for Relational Data.” IMBS Technical Report MBS 05-02, University of California, Irvine.
- Butts, Carter T. and Petrescu-Prahova, Miruna. (2005). “Radio Communication Networks in the World Trade Center Disaster.” IMBS Technical Report MBS 05-04, University of California, Irvine.
- Butts, Carter T.; Petrescu-Prahova, Miruna; and Cross, Remy. (2005). “Responder Communication Networks in the WTC Disaster: IT Implications.” RESCUE Research Highlights Volume, University of California, Irvine.
- Petrescu-Prahova, Miruna and Butts, Carter T. (2005). “Emergent Coordination in the World Trade Center Disaster.” IMBS Technical Report MBS 05-03, University of California, Irvine.
- Butts, Carter T. (2004). “Exact Bounds for Degree Centralization.” IMBS Technical Report MBS 04-08, University of California, Irvine.
- Butts, Carter T. and Leite, Fabio. (2004). “Bayesian Inference from Continuously Arriving

Informant Reports, with Application to Crisis Response.” IMBS Technical Report MBS 04-08, University of California, Irvine.

- Butts, Carter T. and Hilgeman, Christin (2003). “Latent Algebraic Structure in American Religious Belief.” IMBS Technical Report MBS 03-05, University of California, Irvine.
- Butts, Carter T. (2002). “Predictability of Large-scale Spatially Embedded Networks.” IMBS Technical Report MBS 02-13, University of California, Irvine.
- Butts, Carter T. and Carley, Kathleen M. (2002). “Structural Change and Homeostasis in Organizations: A Decision-Theoretic Approach.” CASOS Working Paper, Carnegie Mellon University. (Also appears as IMBS Technical Report MBS 03-04, University of California, Irvine.)
- Butts, Carter T. (2001). “How Much Does Distance Tell Us?: Residual Information in Spatially Embedded Interpersonal Networks.” CASOS Working Paper, Carnegie Mellon University.
- Butts, Carter T. (2001). “Interregional Relations from Spatially Embedded Interpersonal Networks.” CASOS Working Paper, Carnegie Mellon University.
- Pixley, Joy E. and Butts, Carter T. (2001). “Analyzing Life Course Patterns with the Interval Graph Approach.” Bronfenbrenner Life Course Center Working Paper 01-10, Cornell University.
- Butts, Carter T. (2000). “Stochastic Models of Spatially Embedded Interpersonal Networks: Simulations from Tie Frequency Data.” CASOS Working Paper, Carnegie Mellon University.
- Anderson, Brigham S., Butts, Carter T., and Carley, Kathleen M. (1998). “The Interaction of Size and Density with Graph Level Measures.” ICES Research Report 88-05-98, Carnegie Mellon University.
- Butts, Carter T. (1998). “‘An Invisible and Insuperable Barrier’: Enculturation, Stratification, and Ritual Interaction.” ICES Research Report 88-01-98, Carnegie Mellon University.
- Butts, Carter T. (1998). “Generating Panic within Populations.” ICES Research Report 88-03-98, Carnegie Mellon University.
- Butts, Carter T. (1998). “Cluster Analysis of Unlabeled Structures.” ICES Research Report 88-04-98, Carnegie Mellon University.
- Butts, Carter T. and Carley, Kathleen M. (1998). “Canonical Labeling to Facilitate Graph Comparison.” ICES Research Report 88-06-98, Carnegie Mellon University.
- Miller, John H.; Butts, Carter T.; and Rode, David C. (1998). “Communication and Cooperation.” Santa Fe Institute Working Paper, 98-04-37.

INVITED TALKS:

- Butts, Carter T. (3/2010). “Inferring Behavioral Mechanisms Using Cross-Sectional Network Models.” UCLA Social Network Workshop, UCLA, Los Angeles, CA.
- Butts, Carter T. (1/2010). “Modeling Action and Interaction in Complex Environments.” Marschak Colloquium, Anderson School of Management, UCLA, Los Angeles, CA.
- Butts, Carter T. (12/2009). “Dynamic Robustness in Emergent Communication Networks.” Program on Networked Governance Colloquium, Kennedy School of Government, Harvard University, Cambridge, MA.
- Butts, Carter T. (9/2009). “Geographic Variability and Network Structure.” Invited pre-

sentation, 2009 Northwestern Institute on Complex Systems (NICO) Complexity Conference. Northwestern University, Evanston, IL.

- Butts, Carter T. (7/2009). “Assessing Resilience in Networked Systems.” Invited panel presentation, Community and Regional Resilience Institute/Natural Hazards Center Resilience Research Workshop, Broomfield, CO.
- Butts, Carter T. (6/2009). “Merging Space and Structure: Modeling Spatially-Embedded Networks.” Invited presentation, “Capturing Context” Conference. Columbia University, New York, NY.
- Butts, Carter T. (3/2009). “The Importance of Simple Things.” Freeman Award Lecture, 29th Sunbelt Network Conference (INSNA), San Diego, CA.
- Butts, Carter T. (3/2009). “Coping with Disruption: Emergent Networks During Disasters.” Stern School of Business Colloquium, New York University. New York, NY.
- Butts, Carter T. (2/2009). “Ground Zero Personnel, Impacted Populations, and Emergent Networks: ‘Soft’ Infrastructure During Disasters.” Invited Panel Session, National Academy of Science Disaster Roundtable Workshop, “Cascading Disasters: How Disasters Unfold.” Irvine, CA.
- Butts, Carter T. (8/2008). “Modeling Reality Without Sacrificing Data: Inferentially Tractable Models for Complex Social Systems.” Keynote Address, “Challenges and Visions In the Social Sciences” Conference, Zurich, Switzerland.
- Butts, Carter T. (7/2008). “Parameterizing Exponential Family Models for Random Graphs: Current Methods and New Directions.” Invited presentation, “Formation and Function of Social Networks” Mini-Conference, 2008 SIAM Meeting, San Diego, CA.
- Butts, Carter T. (1/2008). “Is There a Viable Social Physics? Yes, No, and In Part.” Invited presentation, SFI Workshop “Is There A Physics of Society?” Santa Fe Institute, Santa Fe, NM.
- Butts, Carter T. (10/2007). “Network Structure In Spatial Contexts.” Department of Anthropology Colloquium, Stanford University. Stanford, CA.
- Butts, Carter T. (9/2007). “Social Networks In the Physical World.” Keynote Address, 2007 Workshop on Spatial and Geographical Structure (in conjunction with COSIT 2007). Mt. Edna, Victoria, Australia.
- Butts, Carter T. and Hilgeman, Christin. (9/2007). “Latent Structure in Religious Belief.” Department of Psychology Colloquium, University of Melbourne. Melbourne, Victoria, Australia.
- Butts, Carter T. (8/2007). “Advancing Mathematical Sociology: Opportunities and Open Problems.” ASA Section on Mathematical Sociology Invited Panel Session, “The Future of Mathematical Sociology.” ASA Meeting, New York, NY.
- Butts, Carter T. (7/2007). “Improvisation in Disaster Response.” Invited Panelist, 32nd Annual Hazards Research and Applications Workshop, Boulder, CO.
- Butts, Carter T. (8/2006). “Error and Missingness in Social Network Data: Problems and Palliatives.” ASA Section on Methodology Invited Panel Session, “Methods for Social Network Analysis.” ASA Meeting, Montreal, Quebec.
- Butts, Carter T. (5/2006). “Dynamic Communication Networks During Extreme Events: an Intertemporal Analysis of Radio Communication During the World Trade Center Disaster.” Invited Conference Presentation, NetSci International Conference and Workshop on

Network Science. Bloomington, IN.

- Butts, Carter T. (5/2006). “Likelihood-based Network Comparison Using Permutation Models.” Invited Workshop Tutorial, NetSci International Conference and Workshop on Network Science. Bloomington, IN.
- Butts, Carter T. (5/2006). “Modeling Communication Dynamics During Extreme Events: The Case of the World Trade Center Disaster.” “Age of Networks” Speaker Series, Center for Advanced Study, University of Illinois at Urbana-Champaign. Champaign, IL.
- Butts, Carter T. (4/2006). “Statistical Mechanical Models for Social Systems with Complex Dependence Structures.” International Workshop on Constructal Theory of Social Dynamics, Duke University. Durham, NC.
- Butts, Carter T. (12/2005). “Extreme Networking: Communication and Coordination Networks During the WTC Disaster.” Organizational Behavior Seminar Series, Graduate School of Business, Stanford University. Stanford, CA.
- Butts, Carter T. (11/2005). “Social Networks: Introduction and Prospect.” Keynote Address, EII-NICTA Workshop on Large-Scale Network Analysis, National Information and Communications Technology Australia. Sydney, New South Wales, Australia.
- Butts, Carter T. (11/2005). “Exponential Family Models for Assignment Systems.” Department of Psychology Colloquium, University of Melbourne. Melbourne, Victoria, Australia.
- Butts, Carter T. (8/2005). “Building Inferentially Tractable Models for Complex Social Systems: a Generalized Location Framework.” ASA Section on Mathematical Sociology Invited Paper Session, “Mathematical Sociology Today: Current State and Prospects.” ASA Meeting, Philadelphia, PA.
- Butts, Carter T. (12/2004). “Social Networks and the Small World.” Japanese/American Beckman Frontiers of Science Conference (National Academy of Sciences/Japanese Society for Promotion of Science). Irvine, CA.
- Butts, Carter T. (10/2004). “Beyond QAP: Parametric Permutation Models for Relational Data.” Quantitative Methods for Social Science Colloquium, University of California at Santa Barbara. Santa Barbara, CA.
- Butts, Carter T. (10/2004). “Physical Distance and the Structure of Large-Scale Interpersonal Networks.” Geography Department Colloquium, University of California at Santa Barbara. Santa Barbara, CA.
- Butts, Carter T. (11/2002). “Predictability of Large-scale Spatially Embedded Networks.” Panel on Dynamic Social Network Modeling and Analysis, National Academy of Sciences. Washington, D.C.
- Butts, Carter T. (12/2001). “The Enduring Problem of Error in Network Data, and Some Thoughts on What to Do About It.” Center for Statistics and the Social Sciences Colloquium, University of Washington. Seattle, WA.
- Butts, Carter T. (4/2001). “Empirical Play in the Hot Potato Game.” Janus Game Theory Group, Department of Sociology, Cornell University. Ithaca, NY.
- Butts, Carter T. (11/2000). “Stochastic Models of Spatially Embedded Interpersonal Networks: Simulations from Tie Frequency Data.” Mathematical Behavioral Sciences Colloquium, University of California at Irvine. Irvine, CA.

CONFERENCE PRESENTATIONS:

- Butts, Carter T. (8/2009). “A Behavioral Micro-foundation for Cross-sectional Network Models.” ASA Meeting, San Francisco, CA.
- Marcum, Christopher S.; Bevc, Christine A.; and Butts, Carter T. (8/2009). “Mechanisms of Control in Emergent Interorganizational Networks.” ASA Meeting, San Francisco, CA.
- Jasny, Lorien; Marcum, Christopher S.; and Butts, Carter T. (3/2009). “Relating Events to Structure: Evidence from the World Trade Center Police Reports. ” 29th Sunbelt Network Conference (INSNA), San Diego, CA.
- Butts, Carter T. and Acton, Ryan M. (8/2008). “Spatial Analysis of Social Networks.” ASA Meeting, Boston, MA.
- Butts, Carter T. (6/2008). “On Having Something In Common: Latent Two-Mode Models for Social Networks.” Networks in Political Science Conference, Cambridge, MA.
- Butts, Carter T. (5/2008). “Latent Focus Models for Network Structure.” Fourth Joint Japan-North America Mathematical Sociology Conference, Redondo Beach, CA.
- Butts, Carter T. (1/2008). “Graph Theoretic Convexity.” 28th Sunbelt Network Conference (INSNA), St. Petersburg, FL.
- Pixley, Joy E. and Butts, Carter T. (11/2007). “Comparing Patterns of Life Course Events.” Annual Meeting of the Gerontological Society of America, San Francisco, CA.
- Butts, Carter T. “A Relational Event Model for Social Action.” (8/2007). ASA Meeting, New York, NY.
- Acton, Ryan M. and Butts, Carter T. (8/2007). “Patterns of Possession and Change: Material Culture in the American Home, 1972–2003.” ASA Meeting, New York, NY.
- Lind, Ben E.; Tirado, Miguel; Butts, Carter T.; and Petrescu-Prahova, Miruna G. (8/2007). “Brokerage Roles in Disaster Response: Organizational Mediation in the Wake of Hurricane Katrina.” ASA Meeting, New York, NY.
- Butts, Carter T. (7/2007). “Likelihood-based Inference for Cycle Structure Bias in Cognitive Models of Social Interaction.” 40th Annual Meeting of the Society for Mathematical Psychology, Irvine, CA.
- Butts, Carter T. “Network Inference from Unstructured Sources.” (5/2007). 27th Sunbelt Network Conference (INSNA), Corfu, Greece.
- Butts, Carter T.; Contractor, Noshir; Acton, Ryan; Harper, Steven; Auvil, Loretta; Petrescu-Prahova, Miruna; Lind, Ben; and Don, Andy. “Mapping and Analyzing Emergent Multi-Organizational Networks in the Hurricane Katrina Response.” (9/2006). Human Social Dynamics Principal Investigator Meeting (NSF), Washington, DC.
- Butts, Carter T. “Cycle Census Statistics for Exponential Random Graph Models.” (8/2006). ASA Meeting, Montreal, Quebec.
- Petrescu-Prahova, Miruna and Butts, Carter T. “Emergent Coordinators in the World Trade Center Disaster.” (8/2006). ASA Meeting, Montreal, Quebec.
- Butts, Carter T.; Acton, Ryan M.; Cross, B. Remy; Jasny, Lorien; Lind, Ben; Petrescu-Prahova, Miruna; Bevc, Christine; Liu, Sophia; and Tierney, Kathleen. (7/2006). “Inter- and Intra-organizational Networks in the World Trade Center and Hurricane Katrina Disasters.” 31st Annual Hazards Research and Applications Workshop, Boulder, CO.
- Acton, Ryan M. and Butts, Carter T. “Implication Structures and Household Artifacts: Analyzing the Changing Patterns of Ownership and Possession in the American Home,

- 1980–2003.” (4/2006). 26th Sunbelt Network Conference (INSNA), Vancouver, BC.
- Bevc, Christine; Butts, Carter T.; Liu, Sophia; and Tierney, Kathleen. “Predictors of Dyadic Interaction in Emergent Multiorganizational Networks Following the World Trade Center Attacks.” (4/2006). 26th Sunbelt Network Conference (INSNA), Vancouver, BC.
 - Butts, Carter T. “Curved Exponential Family Parameterizations for Spatial Network Models.” (4/2006). 26th Sunbelt Network Conference (INSNA), Vancouver, BC.
 - Petrescu-Prahova, Miruna and Butts, Carter T. “Network Inference with Missing Data: A Performance Comparison of Existing Models.” (4/2006). 26th Sunbelt Network Conference (INSNA), Vancouver, BC.
 - Reich, Leah and Butts, Carter T. “Structural Properties of Power-Relevant Relations.” (4/2006). 26th Sunbelt Network Conference (INSNA), Vancouver, BC.
 - Butts, Carter T. and Petrescu-Prahova, Miruna. “Radio Communication Networks in the World Trade Center Disaster.” (8/2005). ASA Meeting, Philadelphia, PA.
 - Butts, Carter T.; Petrescu-Prahova, Miruna; and Cross, Remy. “Emergency Phase Networks During the World Trade Center Disaster.” (6/2005). Third Joint US-Japan Conference on Mathematical Sociology, Sapporo, Japan.
 - Butts, Carter T.; Petrescu-Prahova, Miruna; and Cross, Remy. “Responder Communication Networks During the World Trade Center Disaster.” (2/2005). 25th Sunbelt Network Conference (INSNA), Redondo Beach, CA.
 - Cross, Remy, and Butts, Carter T. “Blogging For Votes: An Examination of the Interaction Between Weblogs and the Electoral Process” (2/2005). 25th Sunbelt Network Conference (INSNA), Redondo Beach, CA.
 - Butts, Carter T. and Leite, Fabio. “Bayesian Inference from Continuously Arriving Informant Reports, with Application to Crisis Response.” (8/2004). ASA Meeting, San Francisco, CA.
 - Butts, Carter T. “An Exponential Family of Permutation Models for Network Comparison.” (7/2004). IMBS Symposium, “Current Research on Network Comparison,” Irvine, CA.
 - Butts, Carter T. “Latent Structure in Multiplex Relations.” (6/2004). NAACSOS Conference, Pittsburgh PA.
 - Lawson, Gabriel C. and Butts, Carter T. “Information Transmission Through Human Informants: Simulation.” (6/2004). NAACSOS Conference, Pittsburgh PA.
 - Mehrotra, Sharad; Butts, Carter T.; Kalashnikov, Dmitri V.; Venkatasubramanian, Nalini; Altintas, K.; Hariharan, R.; Lee, Haimin; Ma, Yiming; Myers, Amnon; Wickramasuriya, Jehan; Eguchi, Ron; Huyck, Charles. 2004. “CAMAS: A Citizen Awareness System for Crisis Mitigation.” (6/2004). SIGMOD 2004, June 13–18, Paris, France.
 - Butts, Carter T. “An Exponential Family of Permutation Models for the Comparison of Adjacency Structures.” (5/2004). 24th Sunbelt Network Conference (INSNA), Portoroz, Slovenia.
 - Butts, Carter T. and Hilgeman, Christin. “Latent Algebraic Structure in American Religious Belief, 1988-1998.” (8/2003). ASA Meeting, Atlanta, GA.
 - Butts, Carter T. “Network Inference and Error Estimation with Structurally Dependent Error Rates, Missing Data, and Covariates.” (6/2003). NAACSOS Conference (formerly CASOS), Pittsburgh, PA.

- Butts, Carter T. “Network Inference and Accuracy Estimation with Covariates, Configurally Dependent Errors, and Non-ignorably Missing Data.” (2/2003). 23rd Sunbelt Network Conference (INSNA), Cancun, Mexico.
- Pixley, Joy E. and Butts, Carter T. “Analyzing Life Course Patterns with the Interval Graph Approach.” (2/2003). 21st Sunbelt Network Conference (INSNA), Cancun, Mexico.
- Butts, Carter T. (8/2002). “Network Inference, Error, and Informant Accuracy” Mathematical and Statistical Issues in Network Analysis Miniconference, Institute for Mathematical Behavioral Sciences, UC Irvine, Irvine, CA.
- Butts, Carter T. (8/2002). “Some Properties of Spatially Embedded Interpersonal Networks” Group Processes Miniconference, Chicago, IL.
- Butts, Carter T. and Carley, Kathleen M. (8/2002). “Structural Change and Homeostasis in Organizations: A Decision-Theoretic Approach” ASA Meeting, Chicago, IL.
- Butts, Carter T. and Pixley, Joy E. (6/2002). “A Structural Approach to the Representation of Life History Data” CASOS Conference (formerly CMOT), Pittsburgh, PA.
- Butts, Carter T. (2/2002). “Predicting the Spatial Structure of Large-Scale Interpersonal Networks by Means of Extrapolative Simulation” 22nd Sunbelt Network Conference (INSNA), New Orleans, LA.
- Butts, Carter T. (8/2001). “How Much Does distance Tell Us?: Residual Information in Spatially-Embedded Interpersonal Networks.” ASA Meeting, Anaheim, CA.
- Butts, Carter T., and Rode, David C. (8/2001). “Empirical Play in the Hot Potato Game.” ASA Meeting, Anaheim, CA.
- Butts, Carter T. (7/2001). “Interregional Relations from Spatially-Embedded Interpersonal Networks.” CASOS Conference (formerly CMOT), Pittsburgh, PA.
- Butts, Carter T. (8/2000). “Network Inference, Error, and Informant (In)Accuracy: A Bayesian Approach.” ASA Meeting, Washington, D.C.
- Butts, Carter T., and Carley, Kathleen M. (7/2000). “Multivariate Analysis of Unlabeled Structures.” CASOS Conference (formerly CMOT), Pittsburgh, PA.
- Butts, Carter T. (6/2000). “Stochastic Models of Spatially Embedded Interpersonal Networks: Simulations from Tie Frequency Data.” First Joint US-Japan Conference on Mathematical Sociology, Honolulu, HI.
- Butts, Carter T., and Carley, Kathleen M. (4/2000). “Cluster Analysis of Labeled and Unlabeled Structures.” 20th Sunbelt Network Conference (INSNA), Vancouver, BC.
- Butts, Carter T., and Carley, Kathleen M. (7/1999). “Spatial Models of Network Formation.” ASA Meeting, Chicago, IL.
- Butts, Carter T. (2/1999). “The Complexity of Social Networks: Theoretical and Empirical Findings.” 19th Sunbelt Network Conference (INSNA), Charleston, SC.
- Butts, Carter T. (8/1998). “Generating Panic in Populations.” ASA Meeting, San Francisco, CA.
- Butts, Carter T., and Carley, Kathleen M. (5/1998). “Visualization of Unlabeled Structures Using Existing Technologies.” 18th Sunbelt Network Conference (INSNA), Sitges, Spain.
- Muhlberger, Peter, and Butts, Carter T. (4/1998). “An Experiment in Deliberative Democracy: Politics Shaping Citizens.” Midwest Political Science Association Meeting, Chicago IL. (Presented by Peter Muhlberger)

- Carley, Kathleen M., and Butts, Carter T. (8/1997). “An Algorithmic Approach to the Comparison of Partially Labeled Graphs.” ASA Meeting, Toronto, Canada. (Presented by Kathleen Carley)
- Butts, Carter T. (5/1997). “A Bayesian Model of Panic in Belief.” CMOT Workshop, San Diego, CA.
- Carley, Kathleen M., and Butts, Carter T. (3/1997). “Measuring C2 Structure.” A2C2 Workshop, Williamsburg, VA. (Presented by Kathleen Carley)
- Butts, Carter T.; Reilly, Colman; Speh, Marcus; and Wang, Joseph. (5/1994). “WWW and the Globewide Network Academy.” First International WWW Conference, CERN, Geneva, Switzerland. (Presented by Marcus Speh)

TEACHING EXPERIENCE:

- POSITIONS:
 - Associate Professor, Department of Sociology, University of California – Irvine, 2007–Present
 - Assistant Professor, Department of Sociology, University of California – Irvine, 2002–2007
 - Teaching Assistant, CASOS Summer Workshop, Carnegie Mellon University, 2001
 - Teaching Assistant, CASOS Summer Workshop, Carnegie Mellon University, 2000
 - Teaching Assistant, IS201, “Structured Analysis and Design,” Department of Social and Decision Sciences, Carnegie Mellon University, 1997
 - Teaching Assistant, IS200, “Data Structures,” Department of Social and Decision Sciences, Carnegie Mellon University, 1996
- COURSES TAUGHT:
 - Analysis of Social Network Data
 - Business Decisions
 - Computational Methods
 - Informant Accuracy – Methods and Findings
 - Issues in Crisis Response
 - Network Theory
 - Networks and Information Transmission
 - Networks and Organizations
 - Social Networks
 - Professional Development
- DOCTORAL COMMITTEE CHAIR:
 - Miruna Petrescu-Prahova (Ph.D. Spring 2009)
 - Christin Hilgeman (Ph.D. Spring 2007)

RESEARCH EXPERIENCE:

- Associate Professor, Department of Sociology, University of California – Irvine, 2007–Present
- Assistant Professor, Department of Sociology, University of California – Irvine, 2002–2007
- Research Assistant for Kathleen M. Carley, Department of Social and Decision Sciences, Carnegie Mellon University, 2000–2002

- Research Assistant for Kathleen M. Carley, Department of Social and Decision Sciences, Carnegie Mellon University, Summer 1997

SERVICE:

- DISCIPLINE
 - Organizing Committee, National Academy of Sciences US-France Frontiers of Science Conference, 2008
 - Co-Organizer, Fourth Japan-North America Mathematical Sociology Conference, 2008
 - Organizer, *statnet* and *sna* Workshops at the Networks in Political Science Conference, 6/2008, Cambridge, MA.
 - Section Awards Committee, ASA Section on Mathematical Sociology, 2006
 - Discussant, NSF Workshop on Modeling Social Dynamics, Washington, DC, 2006
 - Council Member, ASA Section on Mathematical Sociology, 2005–2006
 - Co-Organizer, *statnet* Workshop (held in conjunction with the 26th International Sunbelt Social Network Conference), 2006–2008.
 - Guest Speaker, UCSB Workshop on GIS and Population Science, 2005, 2006
 - NSF Proposal Reviewer, 2003, 2004, 2006
 - Co-Organizer, 25th International Sunbelt Social Network Conference, 2005
 - Session Presider, “Communication” and “Statistical Models,” 25th Sunbelt Network Conference (INSNA), Redondo Beach, CA, 2005
 - Session Chair, “Social Networks,” Japanese/American Beckman Frontiers of Science Conference (National Academy of Sciences/Japanese Society for Promotion of Science), Irvine, CA, 2004
 - Session Chair, “Social Networks,” Japanese/American Beckman Frontiers of Science Conference (National Academy of Sciences/Japanese Society for Promotion of Science), Irvine, CA, 2004
 - Session Presider, Workshop on Networks and the Population Dynamics of Disease Transmission, Institute for Mathematics and Its Applications, University of Minnesota, Minneapolis, MN, 2003
 - Discussant and Presider, “Mathematical Sociology,” Regular Session on Mathematical Sociology, ASA Meeting, Chicago, IL, 2002
 - Student Council Member, ASA Section on Mathematical Sociology, 2000–2001
 - Session Presider, “Interfirm Relations,” Regular Session on Economic Sociology, ASA Meeting, Anaheim, CA, 2001
 - Session Organizer, “Roundtables on Mathematical Sociology,” ASA Meeting, Washington, D.C., 2000
 - Session Presider, “New Analytical Approaches,” 20th Sunbelt Network Conference (INSNA), Vancouver, B.C., 2000
- UNIVERSITY
 - Executive Committee Member, Institute for Mathematical Behavioral Sciences, 2009–Present
 - Division Council Member, California Institute for Telecommunications and Information Technology, 2005–Present
 - Calit2/Emulex Graduate Fellows Committee, 2006
 - Calit2 Nicholas Prize Committee, 2005

- Organizer, IMBS Symposium, “Current Research on Network Comparison,” Irvine, CA, 2004
- DEPARTMENT
 - Faculty Recruitment Committee, 2006
 - Merit Review Committee, 2002, 2004, 2006, 2007, 2008, 2009
 - Co-Organizer, Introduction to Social Network Analysis Workshop, 2003–2008
 - Organizer, UCI Network Research Group, 2003–2009
 - Graduate Education Committee, Department of Sociology, 2004–2005, 2007–2010
 - Undergraduate Education Committee, Department of Sociology, 2003–2004
 - Faculty Computing Committee, Department of Sociology, 2003
 - Graduate Education Committee Student Representative, Department of Social and Decision Sciences, 1997–2000
 - Graduate Curriculum Restructuring Committee, Department of Social and Decision Sciences, 1998–1999

EDITORIAL ACTIVITIES:

- Area Editor for Computation and Social Networks, *Computational and Mathematical Organization Theory*, 2003–Present.
- Editorial Board, *Journal of Mathematical Sociology*, 2007–Present.
- Editorial Board, *Sociological Methodology*, 2009–Present.
- Editorial Board, *Structure and Dynamics*, 2005–Present.

REFEREE ACTIVITIES:

- *American Journal of Sociology*
- *Applied Statistics*
- *Artificial Life*
- *Computational and Mathematical Organization Theory*
- *Economics of Governance*
- *Games and Economic Behavior*
- *Journal of Economic Behavior and Organization*
- *Journal of Mathematical Sociology*
- *Journal of the Royal Economic Society*
- *Journal of Social Structure*
- *Management Science*
- *Organization Science*
- *Rationality and Society*
- *Social Forces*
- *Social Networks*
- *Social Problems*
- *Social Psychology Quarterly*
- *Sociological Forum*

OTHER REVIEWER ACTIVITIES:

- National Science Foundation proposal reviewer
- Reviewer for Brandes, U. and Erlebach, T. (Eds.) 2005. *Network Analysis: Methodological Foundations* Berlin: Springer.

PROFESSIONAL MEMBERSHIPS:

- American Association for the Advancement of Science
- American Sociological Association
- International Network for Social Network Analysis
- Sigma Xi
- Society for Anthropological Sciences
- Society for Mathematical Psychology
- Three Rivers Network

ADDITIONAL ACTIVITIES:

- Apis Beowulf Project; Designed and implemented a Beowulf parallel processing system for scientific computing (w/ John Miller), 1999-2000