


VOL. 1 • 2013 • NO. 1



NETWORK SCIENCE

CAMBRIDGE
UNIVERSITY PRESS

Network Science Editorial Team

EDITORS

Lada Adamic, Information Science, University of Michigan, USA
Ulrik Brandes, Computer Science and Mathematics, University of Konstanz, Germany
Noshir Contractor, Communication, Engineering, and Management, Northwestern University, USA
Sanjeev Goyal, Economics, University of Cambridge, UK
Garry Robins, Psychology and Political Science, University of Melbourne, Australia
Thomas Valente, Public Health and Medicine, University of Southern California, USA
Alessandro Vespignani, Physics, Northeastern University, USA
Stanley Wasserman (Coordinating Editor), Statistics and Sociology, Indiana University, USA

ASSOCIATE EDITORS

Sinan Aral, Information Science, Management, New York University, USA
Alain Barrat, Physics, CNRS, France
Yann Bramouille, Economics, Aix-Marseille University, France
Dirk Brockmann, Computer Science, Applied Mathematics, Northwestern University, USA
Nicholas Christakis, Sociology, Medicine, Public Health, Yale University, USA
Jonathon Cummings, Business, Duke University, USA
Padraig Cunningham, Computer Science, University College Dublin, Ireland
Matthew Elliott, Economics, California Institute of Technology, USA
Christos Faloutsos, Computer Science, Data Mining, Carnegie-Mellon University, USA
Katherine Faust, Sociology, University of California, Irvine, USA
James Fowler, Political Science, Public Health, Genetics, University of California, San Diego, USA
Andrea Galeotti, Economics, University of Essex, UK
David Hunter, Statistics, Pennsylvania State University, USA
Yoshihisa Kashima, Psychology, University of Melbourne, Australia

Peter Key, Mathematics, Microsoft Research, UK
Laura Koehly, Psychology, Public Health, National Institutes of Health, USA
Eric Kolaczyk, Statistics, Boston University, USA
David Krackhardt, Public Policy, Business, Carnegie-Mellon University, USA
David Lazer, Information Science, Political Science, Northeastern University, USA
Roger Leenders, Business, Organization Studies, Tilburg University, Netherlands
Kristina Lerman, Computer Science, ISI and University of Southern California, USA
Mark Lubell, Political Science, Environmental Policy, University of California, Davis, USA
Winter Mason, Psychology, Cognitive Science, Stevens Institute, USA
Filippo Menczer, Informatics, Computer Science, Physics, Indiana University, USA
James Moody, Sociology, Duke University, USA
Sue Moon, Computer Science, Korea Advanced Institute of Science and Technology, Republic of Korea
Romualdo Pastor-Satorras, Mathematics, Physics, Polytechnic University of Catalonia, Spain
Bernice Pescosolido, Sociology, Indiana University, USA
Richard Rothenberg, Public Health, Epidemiology, Georgia State University, USA
Olaf Sporns, Psychology, Neuroscience, Indiana University, USA
Jaideep Srivastava, Computer Science, University of Minnesota, USA
Douglas Steinley, Psychology, Statistics, University of Missouri, USA
Adam Szeidl, Economics, Central European University, Hungary
Zoltan Toroczkai, Physics, University of Notre Dame, USA
Marco van der Leij, Economics, University of Amsterdam, Netherlands
Fernando Vega-Redondo, Economics, European University Institute, Italy

MANAGING EDITOR
Ann McCranie, Sociology, Indiana University, USA

Network Science

Network Science is a new journal for a new discipline - one using the network paradigm, focusing on actors and relational linkages, to inform research, methodology, and applications from many fields across the natural, social, engineering and informational sciences. Given growing understanding of the interconnectedness and globalization of the world, network methods are an increasingly recognized way to research aspects of modern society along with the individuals, organizations, and other actors within it.

The discipline is ready for a comprehensive journal, open to papers from all relevant areas. *Network Science* is a defining work, shaping this new discipline. The journal welcomes contributions from researchers in all areas working on network theory, methods, and data.

SUBSCRIPTION INFORMATION

Network Science (ISSN: 2050-1242) is published three times per year, in April, August, and December by Cambridge University Press, 32 Avenue of the Americas, New York, NY 10013, USA.

The subscription price of Volume 1 (2013) including delivery by air where appropriate (but excluding VAT), is \$580.00 (£363.00) for institutions print and online; \$550.00 (£344.00) for institutions online only.

Orders, which must be accompanied by payment, may be sent to a bookseller, subscription agent or direct to the publisher: Cambridge University Press, Journals Fulfillment Department, 100 Brook Hill Drive, West Nyack, NY 10994-2133, USA; or Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 8RU, England. Alternatively, you can place an order online at <journals.cambridge.org/nws>.

For single issues, please contact customer_service@cambridge.org.

ADVERTISING

For information on display ad sizes, rates, and deadlines for copy, please visit the journal homepage at <journals.cambridge.org/nws> or contact ad_sales_cambridge.org.

INTERNET ACCESS

Network Science is included in the Cambridge Journals Online service, which can be accessed at <journals.cambridge.org>. For information on other Cambridge titles, visit <www.cambridge.org>.

ISSN: 2050-1242

EISSN: 2050-1250

Copyright © Cambridge University Press 2013. All rights reserved. No part of this publication may be reproduced, in any form or by any means, electronic, photocopying, or otherwise, without permission in writing from Cambridge University Press. Policies, request forms and contacts are available at: <http://journals.cambridge.org/action/rightsAndPermissions>

Permission to copy (for users in the U.S.A.) is available from Copyright Clearance Center <http://www.copyright.com>, email: info@copyright.com.

Postmaster: Send address changes to *Network Science*, Cambridge University Press, 100 Brook Hill Drive, West Nyack, NY 10994-2133, USA.

NETWORK SCIENCE

Volume 1

Number 1

CONTENTS

Editorial

- What is network science?
ULRIK BRANDES, GARRY ROBINS, ANN MCCRANIE AND STANLEY WASSERMAN 1

Articles

- Friendship networks and social status
BRIAN BALL AND M.E.J. NEWMAN 16
- A dyadic reciprocity index for repeated interaction networks
CHENG WANG, OMAR LIZARDO, DAVID HACHEN, ANTHONY STRATHMAN,
ZOLTÁN TOROCZKAI AND NITESH V. CHAWLA 31
- Diffusion and contagion in networks with heterogeneous agents and homophily
MATTHEW O. JACKSON AND DUNIA LÓPEZ-PINTADO 49
- Dynamic elicited priors for updating covert networks
JEFF GILL AND JOHN R. FREEMAN 68
- Gravity's Rainbow: A dynamic latent space model for the world trade network
MICHAEL D. WARD, JOHN S. AHLQUIST AND ARTURAS ROZENAS 95

End Note

- Portrait of Political Party Polarization
JAMES MOODY AND PETER J. MUCHA 119