
The Supernetwork Sentinel

The Newsletter of the Virtual Center for Supernetworks

Winter 2006



Welcome to the Winter 2006 edition of **The Supernetwork Sentinel**, the newsletter of the Virtual Center for Supernetworks at the Isenberg School of Management, UMass Amherst. **The Supernetwork Sentinel** is published in Fall, Winter, and Summer editions. Its purpose is to keep you informed of events, activities, and successes of the Virtual Center for Supernetworks, the Center Associates, and the Supernetworks Laboratory for Computation and Visualization. In this newsletter, we include news items, a report on the Radcliffe Fellowship program experience, events/activities of special interest, noteworthy recognitions, as well as upcoming conferences. We also have a list of our recent publications.

Anna Nagurney
John F. Smith Memorial Professor
Director – Virtual Center for Supernetworks
<http://supernet.som.umass.edu>

Participants in the INFORMS Sessions with



Professors Martin Beckmann and Bart McGuire (in the center with plaques) honoring the 50th Anniversary of the publication of their book, *Studies in the Economics of Transportation*.

INFORMS Sessions in Honor of the 50th Anniversary of the Publication of *Studies in the Economics of Transportation* a Big Success

Two sessions marking the 50th anniversary of the publication of the book, **Studies in the Economics of Transportation**, and organized by David Boyce and Anna Nagurney for the INFORMS National Meeting, November 13-16, 2005, in San Francisco, California were a big success. The authors of the book are: M. Beckmann, C. B. McGuire, and the late C. B. Winsten. The book was published by Yale University Press in 1956. These special sessions took place on Monday morning, November 14, 2005, to a standing room only audience.

Both Professors Martin Beckmann and Bart McGuire attended the sessions and spoke and their wives were in attendance as well. Professor McGuire is a Professor Emeritus of the University of California at Berkeley whereas Professor Martin Beckmann is a Professor Emeritus of Brown University.

Professors Beckmann and McGuire were presented with commemorative plaques provided by Dr. Philip Haile, the Director of the Cowles Foundation at Yale University, and a citation from Dr. Haile was read by Anna Nagurney.

The presentations by the session invited speakers as well as photos from the event and the luncheon that followed can be found at <http://supernet.som.umass.edu/classics.htm>

Inside

**Report on the Radcliffe Fellowship
INFORMS Speaker Series Announced
Center Associates at INFORMS
National Meeting in San Francisco
Two Talks Presented at Harvard
Kudos and Congratulations
More Center Associate News
Upcoming Conferences
Center Publications**

Center Director Reports on her Radcliffe Institute Fellowship Experiences

Anna Nagurney began her year-long appointment as a Radcliffe Institute Fellow at the Radcliffe Institute for Advanced Study, Harvard University, Cambridge, Massachusetts in September 2005. The title of her project is, "Dynamic Networks with Applications: A Unified Theory of Projected Dynamical Systems and Evolutionary Variational Inequalities." She is also working on completing a new book.

Nagurney reports that the fellowship year has been an incredible experience. There are 51 Fellows this year (selected out of about 800 applicants) and she is one of 13 Science Fellows. The Fellows meet several times a week for organized lunches and seminars as well as other special events. Scientists, artists, novelists, historians, playwrights, and other scholars in the humanities and the social sciences work on their year-long projects in a rich intellectual and supportive community. The discussions at the lunches, after the seminars, and on numerous occasions in which the Fellows see one another at Harvard and Cambridge provide a wonderful backdrop to the hard work that accompanies the projects. The administration of the Radcliffe Institute and the staff are commended for their professionalism. Nagurney thanks the Fellows for their warmth, friendship, wonderful advice, fascinating seminar presentations, and spirited conversations!

More information on the Radcliffe Institute can be found at:
<http://www.radcliffe.edu>

Spring 2006 INFORMS Seminar Series Announced

The Spring 2006 University of Massachusetts INFORMS Speaker Series in Operations Research/Management Science, organized under the auspices of its Student Chapter, will be announced online soon. We are extremely pleased and delighted that the following speakers have been confirmed: David Lazer from the Kennedy School of Government at Harvard University, Georgia Perakis of the Sloan School at MIT, Dietrich Braess of Ruhr University Bochum, Ed Kaplan of the Yale School of Management and the Yale School of Medicine, and Albert-Laszlo Barabasi of the University of Notre Dame.

Updated information regarding the UMass Amherst INFORMS seminar series is available at:
<http://supernet.som.umass.edu/informs/speakernw.html>

Professor Nagurney with Professor Aura Ganz and several students at the luncheon following her INFORMS Student Chapter Seminar Presentation on November 18, 2005



Center Associates Well-Represented at the INFORMS National Conference in San Francisco

Student Associate, Tina Wakolbinger, joined Center Associates: Ding Zhang, Jose Cruz, Monica-Gabriela Cojocar, and Anna Nagurney at the INFORMS National Meeting in San Francisco, California, November 13-16, 2005. Tina also participated in the Doctoral Colloquium for Future Academicians preceding the conference and presented a paper co-authored with Nagurney.

UMass Amherst INFORMS Student Chapter members: Christian Wernz, Dayo Shittu, and Tina Wakolbinger (**see photo below**) were at



the FORA breakfast meeting at which Anna Nagurney received the **2005 INFORMS Moving**

Spirit Award for her work with the UMass Amherst INFORMS Student Chapter. Having the UMass Amherst students present at the awards ceremony was a wonderful surprise for Professor Nagurney!

The various activities of the student chapter, including presentations of seminar speakers and photos, can be found on the chapter's website: <http://student.som.umass.edu/informs/>

Two Talks Presented at Harvard

On November 9, 2005, Anna Nagurney gave a talk entitled, "Dynamic Networks with Applications," in the Fellows Seminar Series at the Radcliffe Institute for Advanced Study. Her doctoral students traveled from Amherst to attend her talk and presented her with a big bouquet of flowers.



Students with Professor Nagurney after her talk

On December 12, 2005 Anna gave the talk, "The Evolution and Emergence of Integrated Social and Financial Networks," at the Kennedy School of Government at Harvard in the Cambridge Colloquium on Complexity and Social Networks series. Her host was Dr. David Lazer. Both Harvard presentations can be downloaded from: <http://supernet.som.umass.edu/visuals.html>

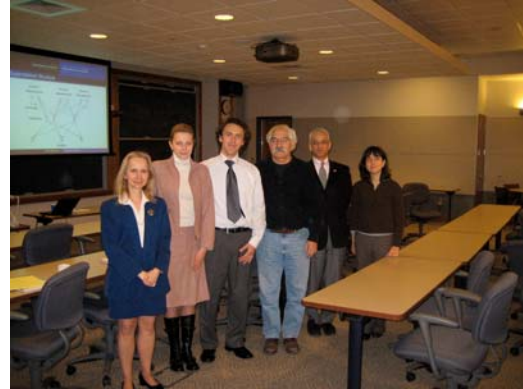
For additional information regarding this colloquium series, its sponsorship, as well as discussions related to the presentation(s), including a blog on social networks, see: <http://www.ksg.harvard.edu/netgov/html/index.htm>

Kudos and Congratulations

Dmytro Matsypura, a doctoral candidate in Management Science at the Isenberg School of Management, successfully defended his proposal dissertation, "Dynamics of Global Supply Chains and Electric Power Networks: Models, Pricing

Analysis, and Computations," on December 8, 2005. Congratulations to Dmytro!

Dmytro expects to complete his doctoral dissertation in 2006 and is hoping to assume a tenure-track academic position.



Dmytro Matsypura with his wife and dissertation committee members

Congratulations to Professor Panos M. Pardalos of the University of Florida, Gainesville, and to Dr. Mauricio G. Resende of AT&T Labs Research in Florham, New Jersey, for the completion of their edited volume, **Handbook of Optimization in Telecommunications**, available in February 2006. More info can be found at:

<http://www.research.att.com/%7Emgcr/hot.html>

More Center Associate News

Patrizia Daniele has completed her book on dynamic networks and variational inequalities and it will be published in 2006 in the **New Dimensions in Networks** series by Edward Elgar Publishing. For more information about books in this series, please see the following: <http://supernet.som.umass.edu/newdimne.html>

Tina Wakolbinger will be attending a course on Complex Systems at MIT in Cambridge in mid-January 2006. The course is hosted by the New England Complexity Systems Institute. See: <http://www.necsi.org>

Anna Nagurney was featured in the most recent *INFORMS Computing Society Newsletter*; see: <http://mason.gmu.edu/%7Easofer/ics/v26n1.pdf> Professor Nagurney would like to thank the President of the INFORMS Computing Society,

Professor Ariela Sofer of George Mason University, for the writeup in the Member Profile.

Anna Nagurney's essay, "Transportation and Energy: The Route to Prosperity and Sustainability," will appear in the Spring 2006 issue of **UMass Magazine**. In the essay, Anna discusses the relationships between transportation and energy consumption and provides a prescription for reducing our dependence on oil and associated emissions.

Anna Nagurney was appointed to the editorial board of the new journal, *The Journal of Financial Decision Making*, whose Editor-in-Chief is Professor Constantin Zopounidis. The first issue of the journal appeared in June 2005. Congratulations to the Editor-in-Chief and members of the editorial board!

Taylor & Francis has announced a new journal for 2007, the *International Journal of Sustainable Transportation*, which will be co-edited by Dr. Chang-Ho Park of Seoul National University and Dr. S. C. Wong of The University of Hong Kong. Anna Nagurney has agreed to join the editorial board.

Upcoming Conferences

Upcoming conferences in which the Director of the Virtual Center for Supernetworks and several of its associates will be participating are as follows.

The 3rd International Conference on Computational Management Science will take place in Amsterdam, The Netherlands, May 17-19, 2006. See: <http://www.cwi.nl/projects/ccms/> for more information.

The 12th International Conference on Computing in Economics and Finance will take place in Limassol, Cyprus, June 22-25, 2006. See: <http://www.csdassn.org/europe/cef06>

The 21st European Conference on Operational research will be in Iceland, July 2-5, 2006. For information, see: <http://www.euro2006.org/>

Center Publications

Copies of these (and other) center articles may be found at:
<http://supernet.som.umass.edu/dart.html>

Projected Dynamical Systems and Evolutionary Variational Inequalities via Hilbert Spaces with Applications, M.-G. Cojocaru, P. Daniele, and A. Nagurney, *Journal of Optimization Theory and Applications* (2005), **37**, no. 3, 1-15.

Global Supply Chain Network Dynamics with Multicriteria Decision-Making under Risk and Uncertainty, A. Nagurney and D. Matsypura, appears in *Transportation Research E* (2005), **41**, 585-612 (special issue on Global Logistics).

Supernetworks, A. Nagurney, Invited Chapter for **Handbook of Optimization in Telecommunications**, P. M. Pardalos and M. G. C. Resende, Editors, Springer, New York (2006).

The Evolution and Emergence of Integrated Social and Financial Networks with Electronic Transactions: A Dynamic Supernetwork Theory for the Modeling, Analysis, and Computation of Financial Flows and Relationship Levels, A. Nagurney, T. Wakolbinger, and L. Zhao, to appear in *Computational Economics* (2006).

On the Relationship Between Supply Chain and Transportation Network Equilibria: A Supernetwork Equivalence with Computations, A. Nagurney, to appear in *Transportation Research E* (2005); published online by Elsevier, May, 2005.

Statics and Dynamics of Global Supply Chain Networks with Environmental Decision-Making, A. Nagurney, J. Cruz, and F. Toyasaki, **Pareto Optimality, Game Theory and Equilibria**, A. Migdalas, P. M. Pardalos, and L. Pitsoulis, Editors, Springer, Berlin, Germany (2005), in press.

Projected Dynamical Systems, Evolutionary Variational Inequalities, Applications, and a Computational Procedure, M.-G. Cojocaru, P. Daniele, and A. Nagurney, **Pareto Optimality, Game Theory and Equilibria**, A. Migdalas, P. M. Pardalos, and L. Pitsoulis, Editors, Springer, Berlin, Germany (2005), in press.

A Supply Chain Network Perspective for Electric Power Generation, Supply, Transmission, and Consumption, A. Nagurney and D. Matsypura, to appear in **Advances in Computational Economics, Finance and Management Science**, E. J. Kontoghiorghe and C. Gatu, Editors, Springer, Berlin, Germany (2005).

Supernetworks: An Introduction to the Concept and its Applications with a Specific Focus on Knowledge Supernetworks, A. Nagurney and T. Wakolbinger, to appear in the *International Journal of Knowledge, Culture and Change Management* (2005).

A Network Modeling Approach for the Optimization of Internet-Based Advertising Strategies and Pricing with a Quantitative Explanation of Two Paradoxes, L. Zhao and A. Nagurney (2004), to appear in *Netnomics*.

Double-Layered Dynamics: A Unified Theory of Projected Dynamical Systems and Evolutionary Variational Inequalities, M.-J. Cojocaru, P. Daniele, and A. Nagurney (2004), *European Journal of Operational Research*, in press.

Applications of Double Layered Dynamics Theory to Human Migration Problems, M.-G. Cojocaru, A. Nagurney, and P. Daniele (2005).

Static and Dynamic Transportation Network Equilibrium Reformulations of Electric Power Supply Chain Networks: A Transportation Network Equilibrium Transformation, A. Nagurney, Z. Liu, M.-G. Cojocaru, and P. Daniele (2005).

A Network Equilibrium Framework for Internet Advertising: Models, Qualitative Analysis, and Algorithms, L. Zhao and A. Nagurney (2005).

Modeling Generator Power Plant Portfolios and Pollution Taxes in Electric Power Supply Chain Networks: A Transportation Network Equilibrium Transformation, K. Wu, A. Nagurney, and Z. Liu (2005).

Knowledge Collaboration Networks: Optimal Collaboration Across Disciplines and Communication Distance, Q. Qiang and A. Nagurney (2005).

Transportation Network Equilibrium Reformulations of Electric Power Networks with Computations, A. Nagurney and Z. Liu (2005).

Financial Networks with Intermediation and Transportation Network Equilibria: A Supernetwork Equivalence and Reinterpretation of the Equilibrium Conditions with Computations, Z. Liu and A. Nagurney (2005).

In closing, the Center Director and its Associates wish everyone a wonderful New Year and we thank everyone for their support!

Students and guests enjoying the end of the semester UMASS INFORMS Holiday Party in December 2005 (right)

**Virtual Center for Supernetworks
Eugene M. Isenberg School of Management
University of Massachusetts at Amherst**

Center Director

Dr. Anna Nagurney
John F. Smith Memorial Professor

Associates

Dr. Monica-Gabriela Cojocaru
Dr. Jose M. Cruz
Dr. Patrizia Daniele
Dr. June Dong
Dr. Ke Grace Ke
Dr. Ladimer Nagurney
Dr. Padma Ramanujam
Dr. Stavros Siokos
Dr. Fuminori Toyasaki
Dr. Ding Zhang

Doctoral Students

Zugang "Leo" Liu
Qiang "Patrick" Qiang
Tina Wakolbinger
Trisha Woolley

Center Website:
<http://supernet.som.umass.edu>

If you would like to be put on our email list, contact supernet@som.umass.edu

The Virtual Center for Supernetworks
Isenberg School of Management
University of Massachusetts at Amherst
Amherst, MA 01003

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