



Transportation Science and Logistics Society

Outgoing President's Note Laurie Garrow



As 2013 draws to a close, I would like to offer a heartfelt "thank you" to all of the outgoing and continuing TSL officers who I had the pleasure of working with this past year. This includes Past President

Elise Miller-Hooks, Vice President/President-elect M. Grazia Speranza, Secretary/Treasurer Ann Campbell, Communications Chair Maciek Nowak, SIG Chairs and Vice-Chairs: Yanfeng Ouyang and Tom Van Woensel (freight transportation and logistics), Yueyue Fan and Kevin Taaffe (urban transportation), Ananth Krishnamurthy and Sadan Kulturel-Konak (facility logistics), Jeff Ban and Steve Boyles (intelligent transportation systems), Thomas Vossen and Senay Solak (air transportation), and International Liaisons: Stein Wallace (Europe and Africa), Travis Waller (Asia, Australia and New Zealand) and Ricardo Giesen (the Americas). I would also like to thank Nick Lownes for his outstanding efforts as 2013 cluster chair (which included coordinating more than 70 sessions and 250 talks!) and Kevin Furman, Faram Engineer and other members of the organizing committee for their efforts in making the 2013 TSL workshop on maritime transportation and port logistics a success.

I have to admit, I had a lot of fun working with everyone this past year. I remember fondly the day that I sent out an email for input from the TSL officers (that had omitted a key piece of information) and within an hour receiving comments along the line of "what are you possibly thinking, Laurie??!!" That was the day I knew everyone felt comfortable enough to voice their opinions and push the group to think in innovative ways. It is through these dynamic interactions among the TSL board members that we were able to accomplish several new initiatives this past year.

One of my primary objectives was to find ways to better position TSL financially. Simply stated, over the past five years TSL has grown as a society, but has maintained a section budget. However, as a society, it has been clear that our members want to engage in new activities to support our members. For example, ITS Chair and Vice-Chair Jeff Ban and Steve Boyles initiated a best presentation award this past year, as did the Aviation Applications section. Warren Powell is currently chairing a committee that is looking at potentially offering a new TSL Fellows award. As the publication backlog for Transportation Science approaches a year, some members have suggested the possibility of TSL purchasing additional pages for the journal (other INFORMS societies currently do this for their respective journals). All of these activities require finan-

cial resources. More importantly, as TSL has embarked on offering a mid-year meeting, it has become clear that we need more reserves to budget against unforeseen events and forecast uncertainties. Managing the finances for a small workshop or conference is actually more challenging than managing the finances for a large conference, as a handful of (usually last minute) registrations can quickly swing the financial outlook from a loss of \$5,000 to a profit of \$5,000.

At the end of 2010, TSL reserves were approximately \$7,500. Over the past three years, reserves have grown to just over \$18,000 – this has been driven in large part due to the small profit TSL has made on the 2013 workshop (\$4,300) and a small profit TSL saw from the 2011 workshop. Our current reserves will better position TSL to “be the society” its members envision TSL can (and should) be, but it is important to note that even at \$18,000 our budget is one of the lowest among the INFORMS societies. Looking ahead, we anticipate that our reserves will continue to grow at a modest rate. To support this growth, the 2011 TSL board approved charging student fees of \$5/year and the 2013 TSL board approved increasing fees for regular members by \$5/year. Both of these fee changes were implemented this past year. In addition, TSL is working

closely with AAS to restructure their existing revenue sharing agreement. Our initial assessment has suggested that this revenue sharing agreement is diluting revenue for both TSL and AAS. In addition, significant resources are being expended by our TSL and AAS treasurers (understanding and managing the complexity of this financial arrangement). Our goal is to simplify the existing revenue sharing agreement, which should have the added benefit of freeing our officers’ time to focus on more strategic planning efforts.

A few other changes were implemented this year – most notably, we collected abstract information for all submissions to the TSL dissertation prize. The abstracts, which used to be published in *Transportation Science*, show the depth and breadth of research across the world that our younger members are working on. Stay tuned for the next edition of the TSL newsletter, which will feature the abstracts from the 2013 TSL dissertation competition.

In closing, I would again like to thank all members for your support this past year and close with a special note of appreciation to Ann, Maciek and Grazia who provided invaluable support and advice this past year ... along with quite a few laughs along the way!

Incoming President's Note M. Grazia Speranza



A few words on how I happened to become TSL Vice President/President-elect. For many years I had responsibilities within my university, including being dean. I am pleased I have done that kind

of experience and I believe I have learned a lot but I cannot say I have enjoyed it all the time. The conflicts with the colleagues are one of the most unpleasant sides of that kind of activity. Other unpleasant sides are receiving complaints about whatever goes wrong and almost no positive feedback for whatever goes right. Not to mention the lack of time for research and traveling. I never stopped being

active in research, relying however heavily on the work on my younger colleagues I will always be grateful to. During a long period of sabbatical, I started being involved within scientific associations. My first experience was within IFORS. The President at that time was Elise del Rosario, always friendly, committed, and professional. I was one of the members of the administrative committee, together with a group of colleagues covering all continents. One of the major problems we had was to find a time for the skype calls that was not night time for any of us. I learned what the role of a scientific association is, basically to support the members and to contribute to the development of the discipline. And I learned the relevance of scientific associations. I enjoyed each moment of that first experience, also because we were all working for the scientific community, without any personal interest. When I became EURO President Elect, I had already clear in mind what I should have tried to do for EURO. The experience within EURO was exciting and rewarding, thanks also to the colleagues I had the privilege and the pleasure to work with. Organizing skype calls was easier, in terms of the time of the day...

Last year I was contacted by a colleague, whom I personally and scientifically value, who proposed I run as Vice President/President-elect for TSL. After a little thinking I accepted, based on the belief that working for scientific associations is rewarding and hoping my previous experience might be of help. I was thrilled when I was informed I had been elected. It was a sign several TSL members trusted me and I felt the responsibility of not disappointing their expectations. From January I have learned a lot about the TSL society. Elise Miller-Hooks, Past President, introduced

me to the TSL organization and activities. Later, I had several opportunities to interact with Laurie Garrow, current President, and to learn more about TSL. I wish to warmly thank both of them for creating a situation that makes me feel comfortable with my responsibilities next year.

I wish to express my gratitude to all the outgoing members of the TSL board. I know Laurie in this newsletter will say more about their contribution.

Let me now present the 2014 TSL board. I will have the support of Laurie, and the pleasure to interact with her, also next year as she will still be TSL officer as Past President. I am also very pleased that Ann Campbell, Secretary/Treasurer in 2013, will maintain the role in 2014. Her experience and commitment will be extremely valuable. I take this opportunity to warmly welcome the new officers: Barrett Thomas (Vice President/President-elect) and Mike Hewitt (Communications Chair). I am enthusiastic about our next year collaboration.

The TSL board includes, besides the officers, the SIG Chairs and the International Liaisons. Thomas Vossen, current Chair of SIG Air Transportation, will maintain the role in 2014. The recently elected SIG Chairs are: Yingyan Lou (Intelligent Transportation Systems), Kevin Furman (Freight Transportation and Logistics), Song Gao (Urban Transportation), Zuo-Jun (Max) Shen (Facility Logistics). The 2014 new International Liaisons are: Harilaos Psaraftis (Europe), Mark Hickman (Australia) and Andrés Medaglia (Americas). In addition, Justin Goodson will serve as our newsletter editor and Irina Dolinskaya will serve as the 2014 cluster chair. It is a fantastic group of colleagues and I am thrilled to have the opportunity to work with them.

With almost 1000 members, TSL is one of the largest INFORMS societies. The presence of five special interest groups confirms the richness of the TSL community. About half of the members are students and this is very reassuring for the future of TSL.

The economy and the society keep evolving and changing, offering always new challenges to all of us working in transportation science and logistics. The advent of the Internet has had a huge impact and has modified the transportation needs for people and goods. The global economic system is characterized by a growing level of integrated services, which require improved transportation and logistics. Agile supply chains and e-commerce require the transportation systems to become more flexible, customized, and responsive to the dynamic and uncertain characteristics of demand. Demographic and societal trends, e.g. ageing population, smaller household size, single parent families, call for more flexible, customized, and responsive mobility services. High levels of emissions are not sustainable for health reasons, even more than

for economic ones. Technology and mobile devices provide data on transportation and mobility requests and on the status of the systems, offering ample opportunities for planning and real time optimization of customized transportation and mobility systems that are at the same time economically and environmentally sustainable. There is an ever increasing need for the contributions of TSL to economic and societal challenges and this is a guarantee for a successful future.

I am convinced that 2014 will be an exciting year for the TSL community. A major event will be the TSL workshop, organized by Mike Hewitt, Maciek Nowak, Theo Crainic, and hosted by the Loyola University in Chicago, June 30-July 2. The up-to-date theme is 'Handling uncertainty in planning logistics and transportation systems'. The workshop will provide a great opportunity for listening to stimulating talks, making your research known, exchanges in ideas, fruitful discussions, collaborations.

Warmest wishes for a Happy 2014!



Certified Analytics Professional (CAP™) is the new vendor-, application-, and software-neutral analytics certification offered by INFORMS, the world's largest professional association devoted to analytics. Certification is designed to enhance the credibility of your professional profile and separate you from the crowd. Surveys show that certification has a positive impact on salaries and continued professional development.

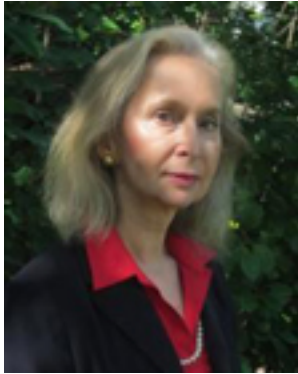
Exams are scheduled for Vienna, VA on January 11; Tuscaloosa, AL on January 29; and

Philadelphia, PA on March 6.

Not sure analytics certification is for you? Take a look at the Candidate Handbook online. It includes detailed instructions on eligibility criteria, how to apply, prepare, earn, and use your new CAP™ credential. Take a look at the 24 sample questions to help you judge your readiness, but remember, you don't have to get them all right to pass the exam. The detailed Analytics Job Task Analysis will give you a good idea of what the exam will cover.

Congratulations Newly Inducted INFORMS Fellows!

Anna Nagurney



For her distinguished leadership as an operations research educator and ambassador, through her extensive contributions to the concepts and properties of transportation and supply chain networks.

Martin Savelsbergh



For his lifetime contributions to the theory of integer programming and the advancement of algorithms for solving practical, real-world problems in vehicle routing and scheduling, fleet management, and network design.

Patrick Jaillet



For opening the field of a priori optimization for stochastic programming and for being regarded as the world leader in the field of probabilistic and online optimization.

TSL Robert Herman Lifetime Achievement Award

Winner: Carlos Daganzo



The Robert Herman Lifetime Achievement Award in Transportation Science is awarded at most every second year by TSL to an individual who throughout his or her professional career has made fundamental and sustained contributions to transportation science and logistics, and has influenced the field through her or his writings, teaching, service, and nurturing of younger professionals. This year's committee, chaired by Patrick

Jaillet with members Michel Bierlaire, Samer Madanat, Richard Hartl, and Anton Kleywegt unanimously selected Carlos Daganzo for this prestigious award. The following is an excerpt from Dr. Daganzo's acceptance letter.

"Although I am not here with you, I am working to advance something I strongly believe in: putting the word "operations" back into "Operations Research". I strongly believe that the field of Operations Research should not be a sterile branch of mathematics focused on algorithms for optimization and simulation of imaginary and easily solved problems, but be what the name implies: "Research of Operations"—a blend of experimentalism and

mathematics to improve the operation of real transportation systems. I have always tried to look at real world problems without allowing the mathematics I'm most comfortable with to shape my understanding of the issues. I believe that a good understanding of the issues

and a good, unfiltered understanding of how things actually work are the basis for the inspiration that leads to path-breaking ideas. Perhaps the award that you now honor me with is evidence that this approach has worked for me."

TSL Dissertation Prize

The 2013 TSL dissertation prize faced a difficult decision this year. A total of 35 dissertations spanning 10 countries were submitted to the competition. Dissertation chair Martine Labbé, along with committee members Satish Ukkusuri, Thomas Vossen, Juan-José Salazar-González, and Douglas Fearing selected a

winner and honorable mention. Congratulations to Max Klimm of the Technische Universität Berlin (advisor Tobias Harks) and Dimitri Papageorgiou of the Georgia Institute of Technology (advisors George Nemhauser and Joel Sokol)!

Winner: Max Klimm, Competition for Resources: The Equilibrium Existence Problem in Congestion Games



Weighted congestion games are an elegant model to study the effects of selfish resource usage by a finite number of players. In such a game, each player is associated with a positive demand and a set of feasible allocations

where each allocation

is a subset of the resources. Each player chooses an allocation so as to minimize the sum of the costs of all resources used. The costs of a resource depend on the aggregated demand of all players using that resources and is given as a resource-specific function. An allocation vector constitutes a pure Nash equilibrium if no player can decrease her costs by a unilateral deviation. It is known that games

with affine or exponential cost functions always possess a pure Nash equilibrium but it has been open whether there are further sets of cost functions that guarantee the existence of a pure Nash equilibrium in all weighted congestion games. In this thesis, we give a complete answer to this question as we show that there are no further sets of such functions. We also explore the existence of pure Nash equilibria for two important extensions of weighted congestion games. First, we allow that the demand of a player may depend on the resource used. Moreover, we examine a class of games in which each player may adapt her demand strategically on the congestion on the resources. Next, we consider games, in which the players strive to minimize the maximum of the costs of the resources costs and show the existence of a strong equilibrium. Finally, we explore the complexity of computing strong equilibria in such games.

Honorable Mention: Dimitri Papageorgiou, Optimization in Maritime Inventory Routing

The primary aim of this thesis is to develop effective solution techniques for large-scale maritime inventory routing problems (MIRPs) that possess a core substructure common in many real-world applications. When formulated as mixed-integer programs, these models involve tens of thousands of binary decision variables and tens of thousands of constraints and require days to solve on a personal computer. Although a large body of literature already exists for inventory routing problems for road-based applications, relatively little work has been published in the realm of maritime transportation. This research introduces novel methods for tackling problems orders of magnitude larger than those considered in the literature. Computational results reveal that our algorithms outperform competing state-of-the-art methods on such problems. The major contributions of this thesis are: (1) The first publicly available library of MIRP instances, called MIRPLIB, to make maritime transportation problems more accessible to the research community and to expedite the

development of better algorithms. (2) An aggregation-disaggregation algorithm called “Zoom” that iteratively zooms in and out on split-pickup split-delivery IRP. In the “zoomed out” phase, customers are aggregated into regions and a system-level manager routes vessels from region to region. In the “zoomed in” phase, a regional-level manager routes vessels from customer to customer, decides delivery quantities, and ensures that inventory constraints are met. (3) An approximated dynamic programming (ADP) algorithm for quickly finding good solutions to long-horizon MIRPs. Our ADP framework is one of the first of its kind to solve mixed-integer programming subproblems and to use nonconvex value function approximations. (4) A polyhedral study of fixed-charge transportation problems that include the opportunity to blend raw materials to make higher value products. This research is the first to address problems with fixed-charge and blending components simultaneously.

TSL Best Paper Award

Our 2013 TSL Best Paper Award committee, chaired by Ann Campbell, faced a record number of submissions for the 2013 TSL Best Paper Award. Ann, together with committee

members Rajesh Ganesan, Jan Fabian Ehmke, Jennifer Pazour, and Markos Papageorgiou, ultimately selected one winner for this prize.

Winners: Dimitris Bertsimas, Guglielmo Lulli, and Amedeo Odoni An Integer Optimization Approach to Large-Scale Air Traffic Flow Management

This paper presents a new integer programming (IP) model for large-scale instances of the air traffic flow management (ATFM) problem. The model covers all the phases of each flight—i.e., takeoff, en route cruising, and

landing—and solves for an optimal combination of flow management actions, including ground-holding, rerouting, speed control, and airborne holding on a flight-by-flight basis. A distinguishing feature of the model is that it



allows for rerouting decisions. This is achieved through the imposition of sets of “local” conditions that make it possible to represent rerouting options in a compact way by only introducing some new constraints. Moreover, three classes of valid

inequalities are incorporated into the model to strengthen the polyhedral structure of the underlying relaxation.

Computational times are short and reasonable for practical application on problem instances of size comparable to that of the en-

tire U.S. air traffic management system. Thus, the proposed model has the potential of serving as the main engine for the preliminary identification, on a daily basis, of promising air traffic flow management interventions on a national scale in the United States or on a continental scale in Europe.



Upcoming Conferences

TSL Workshop: Handling Uncertainty in Planning Logistics and Transportation Systems. Hosted at Loyola University, Chicago, June 30 - July 2, 2014.

Researchers have long recognized the practical importance of incorporating uncertainty into planning models for logistics and transportation systems. Now, with advances in computational tools and techniques for solving such models, more and more researchers are building and solving them. Similarly, the rise of “big data” provides opportunities to better understand and estimate the degree of uncertainty in many transportation problems.

The 2014 TSL Workshop will consist of talks focused on recognizing uncertainty in planning logistics and transportation systems. We believe this workshop will establish the landscape for the state-of-the-art in this research area and guide researchers in their fu-



ture efforts.

The workshop will include talks related to novel applications as well as innovative and effective solution techniques. In addition, the workshop will feature talks that focus on how uncertainty is modeled and how it impacts the plans organizations should execute. Finally, we also anticipate talks that focus on resiliency

issues, including how one integrates them into planning models and processes and how one recovers from undesired events.

We plan to have a special issue of a premiere transportation journal focused on

talks presented at the workshop.

For more information visit www.informs.org/Community/TSL/TSL-Workshop.

20th Conference of the International Federation of Operational Research Societies (IFORS). Barcelona, Spain, July 13-18, 2014.



We invite you to participate in the IFORS 2014 Conference and to submit an abstract by January 31.

The IFORS 2014 Triennial Conference will be held in Barcelona, Spain, July 13-18 2014. It will bring operational researchers from around the globe together.

Barcelona is a dynamic, open, and inviting city, in the Mediterranean coast of Spain, which displays the characteristics of major Mediterranean cities and inherits a millenarian tradition in science, art and commerce. The venue is Barcelona International Convention Center, which was built for Barcelona's International Cultural Forum in 2002 and counts with all the facilities to host major conferences.

Vehicle Routing and Logistics Optimization (VeRoLog). Hosted at the University of Oslo, Norway, June 22-25, 2014.

The conference is the regular meeting of the large community of researchers and practitioners interested in Vehicle Routing optimization and its relations with Logistics. The

The Conference Organizing and Program Committees together represent many countries from all five continents, bringing the research, applications and perspectives of their areas to this international forum. We are working to prepare an attractive scientific program covering the full spectrum of topics in our field, with a diverse and high quality number of participants sharing their knowledge and experience of operational research.

We invite you to learn, enjoy, and be part of the great IFORS community by participating in IFORS 2014. Organize a session, give a talk and experience this great city!

For more information visit ifors2014.upc.edu.

conference is open to high quality methodological contributions and relevant, real-world applications from the industry and services.

Oslo is the capital of Norway, but also a



university city with more than 60,000 students. It was ranked number one in terms of quality of life among European large cities in the European Cities of the Future 2012 report by fDi Magazine. Oslo has a rich cultural scene and plenty of opportunities for recreation and outdoor life.

For more information visit
www.sintef.no/Projectweb/verolog2014/.



To suggest items for future newsletters, contact Justin Goodson at goodson@slu.edu or Mike Hewitt at mhewitt3@luc.edu.

