

METRANS NEWS

National Center for Metropolitan Transportation Research
University of Southern California / California State University, Long Beach

Research Profile

RANDY HALL IS REDEFINING INDUSTRIAL AND SYSTEMS ENGINEERING IN TODAY'S TERMS

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METRANS, a partnership of the University of Southern California and California State University, Long Beach, is a U.S. Department of Transportation designated University Transportation Center. Its mission is to solve transportation problems of large metropolitan areas through research, education and outreach.

In early 2002, Daniel J. Epstein, Chairman and CEO of The ConAm Group, one of the nation's largest real estate and property management companies, gave the University of Southern California \$10 million to help turn the same department in the School of Engineering from which he graduated into one of the elite in the nation. This generous gift to what is now known as the Daniel J. Epstein Department of Industrial and Systems Engineering is the largest-ever naming gift to either a USC academic department or to any other American university industrial and systems engineering department. It has enabled department Chairman Randolph Hall to implement his vision for a progressive program that builds leaders.

But just a decade ago, the year before Hall joined the department, its fate was far from certain. An investigation was launched to determine whether ISE should continue to exist at USC. What grew from an almost terminal situation was a new

focus on providing the best possible experience for students who want an education that integrates technology and business.

Hall says the endowment tops a decade of growth and change and gives the program the prestige and recognition it deserves. The growing program now focuses on the integration of technology and commercial enterprise, engineering management, supply chain analysis and management, decision analysis, information systems engineering, and modeling/simulation of manufacturing systems, rather than the more traditional aspects of industrial and systems engineering.

Before joining the Industrial and Systems Engineering faculty in 1994, Hall served as a Senior Research Engineer at General Motors, Assistant Professor at the University of California at Berkeley and Manager of Systems Engineering for Partners for Advanced Transit and Highways (PATH). He also served as visiting Associate Profes-



Professor Randolph Hall

sor in the USC School of Business.

Hall has published over 100 refereed articles on topics in transportation systems, operations research and logistics, including *Queuing Methods for Service and Manufacturing*, *Control of Vehicle Dispatching on a Cyclic Route Serving Truck Terminals* and *Highway/Street Interfaces and the Effects of Roadway Orientation*. He served as editor for the Handbook of Transportation Science 1st and 2nd editions, as well as currently serving as editor-in-chief for the Intelligent Transportation

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*METRANS Education and Training***GLOBAL LOGISTICS SPECIALIST® TRAINING GOES ONLINE**

A tremendous growth in international trade, along with a trend toward just-in-time delivery, has generated a corresponding need for well-trained individuals with the knowledge and skills that will keep goods and trade flowing. The Global Logistics Specialist (GLS®) certificate program of CSULB's Center for International Trade and Transportation was created in 1997 to answer an industry need for trained professionals who hold a

clear understanding of international goods movement and supply chain management.

The 122-hour, six-module program, taught by top practitioners from every facet of the industry, has trained over 600 students and awarded the professional designation to more than 350 individuals in this group.

Continued demand and nationwide interest for the GLS® program to be offered

in a format that would allow students to enroll without having to spend weeks in residence in Southern California has resulted in the development of an online, web-based version of the program.

Supported by METRANS funding, together with a significant cost sharing commitment from CSULB, the online version of the course's first module is being tested this fall and the first cohort of online students is planned to begin

in the Spring of 2004.

The online curriculum was developed with guidance of the International Trade Logistics Advisory Committee (ITLAC), consisting of leading professionals from all the industry segments covered in this training program.

A streaming video introducing the GLS® online program will be available soon at www.metrans.org and www.ucsb.edu/citt.

RANDY HALL:

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Systems Journal. And he is past Chairman of the Transportation Research Board's Transportation Network Analysis committee.

Indeed, transportation operations and logistics, maintenance, routing, scheduling and system design are the focus of his extensive research. His METRANS funded projects have included research on alternative access and locations for air cargo, as well as a new project on freight routing and containerization. He is currently funded by the National Science Foundation for a project, in collaboration with UPS, that is creating a new method for routing pickup and delivery vehicles.

Also, he has received funding from PATH for research on automated highway systems and real-time information systems.

He first became interested in transportation as a junior high school student in Palo Alto, California, studying its effects on the environment. This study sparked his desire to learn more about alternative transportation possibilities. In high school he excelled at math and science which led him to enter the University of California at Berkeley where he earned his B.S. degree in industrial engineering and operations research in 1979. He received his M.S. and Ph.D. degrees in civil engineering with an emphasis on transportation from U.C. Berkeley in 1980 and 1982 respec-

tively. While earning his graduate degrees, his studies centered on the issues surrounding mass transit. During his two years with General Motors following the completion of his doctorate, Hall worked mainly within logistics, moving parts and supplies to GM's far flung distribution centers and plants in the dawning days of just-in-time delivery.

Just three years after joining the School of Engineering, Hall along with other academicians, government officials and industry professionals called upon their educational and professional experience to apply an integrated approach to solving the transportation problems of Southern California, an area that includes five percent of the nation's

population. The outgrowth of this collaboration was METRANS, now in its sixth year of operation as a University Transportation Center. Hall authored the strategic plan and served as METRANS' first Director.

In 2002, Hall took up another challenge as senior associate dean for research of the USC School of Engineering responsible for research administration, research development and technology transfer. Although he stepped aside from his role as Director of METRANS to take on these new responsibilities, he continues to serve on the METRANS Executive Committee, as well as to be deeply involved in the high-priority topics and issues of urban transportation.

METRANS Education and Training

USC STUDENTS CONTINUE TO WIN AWARDS AND RECOGNITIONS

National Student Competitions

The following students, all specializing in transportation planning or policy, have been recognized for their individual achievements.

Patrick Golier finished his first year as a Master of Planning candidate at the University of Southern California with a 4.0 GPA, the California Planning Foundation's First Year Student Award for Meritorious Achievement and a Transportation Policy Fellowship to attend the Eno Transportation Foundation's Leadership Development Conference.



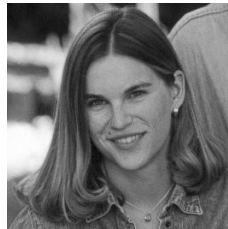
Patrick Golier

The Leadership Conference is an intensive five-day program designed to build early professional development and leadership qualities among the most promising graduate students in the transportation field. In its tenth year, the annual conference brings together 20 graduate students from universities and colleges around the nation to meet with many of the nation's top transportation policy and decision makers. The program provides a forum for students to interact, network and gain perspectives on how transportation policies are drafted, debated,

shaped and determined.

Golier, who earned his bachelor's degree in economics and communications from the University of Michigan, said although he was initially attracted to Southern California by the sunny lifestyle it offers, he soon recognized the complexity of the region as typified by the challenges that residents face and, more importantly, the greater challenges the future will bring. "The immense population and land-area of the region, coupled with a rapidly growing and increasingly diverse populace is putting added strain on an already overburdened transportation system, both at the passenger and freight levels," he said.

Also attending the Leadership Development Conference was Stephanie "Tesse" Roberts, a 2000 Masters of Planning and Transportation Systems alumna, who won a Women's Transportation Seminar Endowment Fellowship. She is an engineer-in-training/planner at Parsons Brinckerhoff Quade and Douglas, Inc., a Los Angeles-based international engineering firm. Roberts also won the Parsons Brinckerhoff Emerging Professional World Paper Competition and was named one of the American Society of Civil Engineering's Top 20 New Faces of Civil Engineering.



Stephanie Roberts

Through high school, Roberts wanted to be an architect, but her physics teacher encouraged her to think about civil engineering. His selling

point was that engineering was a terrific base for whatever she wanted to do. Once at Bucknell University, she was introduced to planning and the myriad opportunities in the transportation field, and became motivated to get a Masters in Planning. The combination of her two degrees has been invaluable as she proves herself to be a good engineer as well as one who can explain her conclusions.

Alex Kenefick, who will be graduating with a B.S. in Planning and Development with an emphasis in urban design in Dec., 2003, was one of eight undergraduates from across the nation selected to attend the Western Transportation Institute's Undergraduate Research Experience in Rural Transportation program at Montana State University, Bozeman. Because of his research experience at the summer Institute evaluating



Alex Kenefick

the popularity and usability of a travel and tourism information system, Kenefick is now considering pursuing a research-based graduate degree.

State and Local Student Competitions

Lea Webb, a Master of Public Administration student, won the Women's Transportation Seminar graduate scholarship in the Sacramento, California region.

Internal and External Graduation Awards

Ph.D. candidate Yueyue Fan was named Teaching Assistant of the Year by the Department of Civil and Environmental Engineering. Fan completed her doctoral studies in Spring, 2003. She has joined the U.C. Davis Department of Civil Engineering as assistant professor.

Master of Planning 2003 graduate Ajay Agarwal received the Master of Planning Comprehensive Examination Prize. He has been admitted to the USC Ph.D. in Planning program.

Master of Real Estate 2003 graduate Dhiraj Narayan received a Certificate of Merit for Outstanding Master's candidates.

At the undergraduate level, B.S. in Public Policy and Management 2003 graduate Jennifer Bassett-Hales received the Dean's Senior Letter of Merit.

*METRANS Research***METRANS LAUNCHES PROGRAM IN APPLIED RESEARCH**

In order to better connect METRANS research with outreach programs conducted through CSULB's Center for International Trade and Transportation (CITT), further enhance METRANS strength in goods movement and international trade and involve more CSULB faculty in research, METRANS has launched an experimental program in applied research. The applied research program is directly linked with METRANS goods movement and international trade outreach activities, and is managed by METRANS Deputy Director Marianne Venieris. Under the theme of "Monitoring the Ports," CSULB faculty were solicited for proposals on topics such as terminal gate operations, International Longshore and Warehouse Union (ILWU) contract labor arrangements, cargo modal shares, empty container movements and security identification cards. The first projects selected for funding are short-term, small-scale efforts to determine the feasibility of the program. The intent is to:

1. build an empirical base of information that can be used to inform future outreach activities,
2. support future port-related research, and
3. increase METRANS visibility as a center for goods movement research.

There is a wealth of information on port operation and goods movement issues provided by industrial stakeholders. However, much of that information is anecdotal. It has become clear that valid data is needed to proceed with the CITT's planned Goods Movement Summit. The proposed summit is the culmination of the applied research program, as well as stakeholder workshops and the annual State of the Trade and Transportation Town Hall Meetings held over the last five years.

The following projects were selected for funding in Fiscal Year 2003/4.

Evaluating the Impact of AB 2650 on Harbor Drayage

Principal Investigator: Lisa Grobar, Professor, Department of Economics, CSULB
Co-Principal Investigator: Kristen Monaco, Associate Professor, Department of Economics, CSULB

Project Description: The Lowenthal Bill (AB 2650), which took effect July 1, 2003, was designed to reduce truck idling times at ports. Terminal operators will be assessed a \$250 fine for each truck that spends more than 30 minutes idling at terminal gates. Terminals can avoid a fine by implementing either extended gate hours or an appointment system. Not only could this bill have important envi-

ronmental implications, it could also improve the efficiency of goods movement in and out of the port.

The purpose of this study is to assess the impact of the Lowenthal Bill on harbor drayage, focusing on the impact on firms and the driver labor market. In light of the constraints imposed by infrastructure, such as the resistance to expand the I-710, it is necessary to explore existing options for improving port efficiency. This project will provide some evidence of the relative efficiency gains under both extended gate hours and appointment systems. In order to improve goods movement in the region, it is important to assess whether efficiency gains can be realized without imposing additional costs on taxpayers. In addition, it seems likely that the public would be more willing to accept changes in infrastructure if there was evidence that industry would also innovate their approach to goods movement.

This study will assess whether extended gate hours and the appointment system have had an impact on firm performance. This will be done by obtaining data on truck movement from drayage companies over time to test whether the implementation of the Lowenthal Bill decreased truck waiting times. In addition, a larger sample of port

drayage firms will be surveyed about the impact of the bill's provision on freight movement as well as their impressions of the costs and benefits of both appointment systems and extended gate hours.

Finally, the study will focus on the impact on labor by conducting a survey of wages and working conditions of port drivers, a labor force that is largely overlooked, but provides a critical link in the movement of goods in and out of the port. The survey will also measure the gains from appointment systems and extended gate hours received by drivers.

Labor at the Ports: Comparing the Work Rules and Working Conditions of the ILA and ILWU

Principal Investigator: Kristen Monaco, Associate Professor, Department of Economics, CSULB

Project Description: The efficient movement of freight is essential for growth in trade between the U.S. and its trading partners. In order to assess the efficiency of port operations (and the potential for efficiency improvements), it is necessary to identify "hold up" points – points in freight movement where one party has the ability to prevent efficient transactions. Typically parties at hold-up points have

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METRANS Education and Training

FIRST CLASS EARNS MASTERS IN GLOBAL LOGISTICS AT CSULB

Although members of the first graduating class to complete requirements for Master of Arts degrees in Global Logistics will have to wait until the June, 2004 formal CSULB campus graduation ceremony to officially receive their sheepskins, November 6, was a day of great celebration. That was when the 18 graduates along with their instructors, families and friends gathered at the Port of Long Beach to recognize the group's accomplishments during their 18-month course of study.

Dr. Joseph Magaddino, Chairman of the Department of Economics at CSULB, said three members of the inaugural class have maintained a perfect 4.0 GPA. Jason Blovard, Chris Dixon and Gareth Osborn share that honor as well as authoring one of two outstanding Capstone research projects titled "A Study of the Future of Foreign Trade Zones in an Era of Free Trade." The other project being honored at the Nov. 6 reception is "Logistics, Infrastructure and the World Trade Organization: Implications for the Development of China's Inland Regions," authored by Scott Huntress, Jean Lin and Fran Thompson.

The 30 unit, interdisciplinary Master of Arts in Global Logistics degree program was launched in March, 2002 by



the Center for International Trade and Transportation (CITT), a university center at CSULB and the technology transfer arm of METRANS,

RESEARCH:

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monopoly power due to the need for their cooperation to ensure goods movement. There are many groups with the power to hold up port operations; one of the most cited but least understood is longshore workers.

These workers, organized by the ILA on the East Coast and the ILWU on the West Coast, have a monopoly in their labor markets due to the power of the union, which endures due to their ability to "hold-up" goods flowing through the port.

Though a great deal has been written about the background of these unions, little academic attention is currently being paid to the collective bargaining activities of the ILA and ILWU. Indeed, it appears that few outside of the unions and management understand the specific work rules set forth in their contracts and the implications of these

in recognition of the growing demand for strategic logistics providers who are

global, multi-skilled and capable of taking on responsibilities that range far beyond traditional services. The program combines the

analytical skills of an MBA with a strong emphasis on logistics in a global setting. It is the only advanced degree program of its kind in the Western United States. A second cohort began studies for a MAGL degree in March and is expected to complete the program in October, 2004.

rules on port operations.

The purpose of this study is to perform a detailed contract analysis for both the ILA and ILWU to clarify the current work rules as well as the changes in work rules that have occurred over time. Particular attention will be paid to differences in contract provisions between the two labor unions. Finally, the wages and hours of longshore workers will be compared to other workers in transportation operations.

New Research RFP

METRANS has issued its sixth annual request for research proposals for the 2003/4 academic year. The RFP was issued in August, and an addendum listing topics of particular interest to Caltrans was issued shortly thereafter. The deadline for submissions was October 15, 2003. Total funding available under this RFP is approximately \$500,000. Faculty and research staff from USC and CSULB faculty are eligible to

propose projects under the four METRANS research focus areas:

Commercial goods movement and international trade

Mobility of urban populations

Highway infrastructure and infrastructure renewal

Safety, security and vulnerability

The RFP solicits both regular proposals and research initiation proposals to encourage junior faculty to conduct transportation research, and provides incentives for joint work between the two universities. A total of 18 proposals have been submitted. The proposals will undergo an extensive outside review process, with reviewers drawn from universities around the U.S., the U.S. Department of Transportation, Caltrans and the professional community. Selection of winning proposals is scheduled for late December, with projects beginning in January, 2004.

METRANS RESEARCH PROJECTS

Project No.:	Project Title:	Investigators:
Recently Completed Projects (2003)		Final Reports Now Available at www.metrans.org
00-08	Travel Patterns of the Elderly	G. Giuliano
00-13	Distributed Architecture for Real-time Coordination in Transit Networks	S. Bukkapatnam, M. Dessouky
01-05	Re-engineering the Logistics of Empty Cargo Containers in the SCAG Region	L.D. Hanh
Draft Report Submitted		
99-20	Use of Robotics and Expert Systems in Improving the Handling of Containers at Port Terminals	T. Jordanides
00-07	Solid State Sorption Air Conditioner System for Containerships and Vehicles - II	R. Toossi
00-12	Freeway Bus Station Area Development: Critical Evaluation and Design	T. Banerjee
01-02	Reducing Pollutants from Mobile Sources	H. Rahai
01-06	A Methodology for Joint Optimization of Service and Life Cycle Environment Impact Assessment of Transport Systems	M. Rahimi, M. Dessouky
01-10	Smart Damping for Monitoring the Health of Bridge Structures	E. Johnson
01-14	Developing and Testing Methodologies for the Evaluation of Highway Widening Plans to Facilitate Freight Flows	P. Gordon, C. Williamson
01-16	Automated Trucks on Dedicated Lanes for Cargo Movement	P. Ioannou, A. Chassiakos
Research in Progress		
00-11	Investigating the Role of Driver Decision Styles in Highway-Rail Crossing Accidents	N. Meshkati, M. Rahimi, M. Driver
01-03	Analysis of Vibrations as Infrastructure Deterioration Caused by High-Speed Rail Transit	H. L. Wong
03-06	Robust Investment Decisions for Highway Capacity Expansions	F. Ordonez
03-07	Freight Routing and Containerization	R. Hall
03-13	Hydrogen Storage System for Transportation Applications	R. Toossi
03-17	Innovative Bridge Structural Health monitoring Using Variable Stiffness	E. Johnson
03-18	Cooperative Optimum Time Window Generation for Cargo Delivery/Pick Up with Application to Container Terminals	P. Ioannou, A. Chassiakos
03-19	Measuring California's Role in Supporting Interstate Goods Movement: Comprehensive Assessment of Interstate Freight Flows	H. Richardson, P. Gordon, J. Moore
03-20	Neighborhood Attributes and Commuting Behavior: A Comparative Study of California's Major Metropolitan Areas	P. Gordon
03-24	Increasing Bus Transit Ridership: Dynamics of Density, Land Use and Population Growth	T. Banerjee, D. Myers, C. Irazabal
03-25	Development of an Artificial Intelligence Based Traffic Simulation Model Using the Discrete Element Method	E. Parentela, A. Ronnau

METRANS 2002/3 ANNUAL REPORT

The 2002/3 METRANS Annual Report was issued in September 2003 and is now available on the METRANS website. The Annual Report is submitted to the Research and Special Projects Administration of the U.S. Department of Transportation as part of the University Transportation Center reporting requirements. The purpose of the report is to provide an assessment of METRANS' annual progress in achieving strategic plan goals and objectives. It summarizes

METRANS accomplishments in research, education and technology transfer, and provides detailed information on all of METRANS' 2002/3 activities. The Annual Report contains a description of the Year 5 research proposal and selection process, a list of all research projects funded through Year 5, reports on transportation degree programs at USC and CSULB, and descriptions of conferences, workshops and other outreach activities.

METRANS FACULTY

METRANS has funded 32 faculty at USC and CSULB who are now members of the METRANS Center. Keeping to METRANS' interdisciplinary theme, the faculty come from five branches of engineering (civil, electrical, mechanical, industrial & systems and engineering technology), as well as business, economics, geography and public policy, planning & public administration. These faculty act as principal investigators on METRANS-funded projects and have responsibility for overseeing individual research projects. They also come together periodically to share insights through coordination meetings and conferences.

California State University, Long Beach:

Daniel Barber	Public Administration
Anastasios Chassiakos	Engineering Technology
Lisa Grobar	Economics
Ken James	Electrical Engineering
Tim Jordanides	Electrical Engineering
Joseph Magaddino	Economics
Kristen Monaco	Economics
Emily Parentela	Civil Engineering
Hamid Rahai	Mechanical Engineering
Reza Toossi	Mechanical Engineering

University of Southern California:

Tridib Banrjee	Policy, Planning & Development
Satish Bukkapatnam	Industrial & Systems Engineering
Maged Dessouky	Industrial & Systems Engineering
Michael Driver	Business Administration
Genevieve Giuliano	Policy, Planning & Development
Peter Gordon	Policy, Planning & Development
Randolph Hall	Industrial & Systems Engineering
Le Dam Hanh	Civil Engineering
Petros Ioannou	Electrical Engineering Systems
Clara Irazabel	Policy, Planning & Development
Erik Johnson	Civil Engineering
Behrokh Khoshnevis	Industrial & Systems Engineering
John Kuprenas	Civil Engineering
Naj Meshkati	Civil Engineering
James E. Moore II	ISE and SPPD
Dowell Myers	Policy, Planning & Development
Fernando Ordonez	Industrial & Systems Engineering
Mansour Rahimi	Industrial & Systems Engineering
Harry Richardson	Policy, Planning & Development
Paul Ronney	Mechanical Engineering
Chris Williamson	Geography
Hung Leung Wong	Civil Engineering

METRANS EXECUTIVE COMMITTEE

Genevieve Giuliano, Director
Professor, School of Policy, Planning, & Development, USC

Marianne Venieris, Deputy Director
Executive Director, Center for International Trade & Transportation, CSULB

Anastasios G. Chassiakos, Professor, Engineering Technology, College of Engineering, CSULB

Randolph Hall, Associate Dean, School of Engineering;
Department Chair, Industrial & Systems Engineering, USC

Petros Ioannou, Professor, Electrical Engineering, USC

Joseph Magaddino, Chairman, Department of Economics, CSULB

James E. Moore II, Professor, Industrial & Systems Engineering and Public Policy & Management, USC

Michael Mahoney, Dean, College of Engineering, CSULB

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CSULB

WE'RE ON THE WEB
WWW.METRANS.ORG

Dear Reader:

Welcome to the third issue of METRANS News. As this issue goes to press, the Los Angeles County public transit system is on strike, providing incontrovertible evidence that public transit plays a critical role in the mobility of the central core of this vast region. A few weeks earlier, the Texas Transportation Institute issued its annual congestion report, and once again the Los Angeles metro area had dubious first place honors. Prior to that, proposals for major improvements to the I-101 and I-710 freeways—the result of years of planning and outreach—met a swift demise in the face of local public opposition. At the ports, a gate appointment system was implemented in July, in response to state legislation that threatens terminal operators with fines if trucks wait more than 30 minutes to enter the terminal. The legislation is a response to growing pressure to reduce truck volumes during peak hours. METRANS' mission is to solve transportation problems of large metropolitan areas through interdisciplinary research, education and outreach. Clearly we are in the right place.

Genevieve Giuliano
Director, METRANS Transportation Center

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