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METRANS NEWS

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

Research Profile

DAN BARBER HAS HELPED TO RAISE CSULB'S PROFILE AS RESEARCH RESOURCE

INSIDE THIS ISSUE:

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.

A lifelong interest in how things work was the impetus that prodded Prof. Daniel Barber into a career in public policy. Born into a family of engineers, Barber struck out to find his own path in a then new degree program, Urban and Regional Studies, at Miami University, where he earned his bachelor's and Master's degrees.

Armed with his sheepskin and an abiding interest in public policy, Barber was named the first director of the regional planning council in the South Florida area. He built that agency from three counties and a budget of about $40,000 to seven counties and a significantly higher budget.

His inspiration to go back to school came from an early role model, Dr. John Dyer of the Florida Department of Transportation and later with the Metropolitan Transportation Authority in Los Angeles County. "I used to have to go into meetings on behalf of elected officials in my area and do battle with the transportation people," said Barber. "I was so impressed with Dr. Dyer's title, that I decided then and there to go back to school for my doctorate. That was also my introduction to transportation policy," he said.

When he completed his doctorate in 1975, Barber moved west to join the faculty at California State University Long Beach. Now, after an academic career spanning nearly 30 years, he is a professor in the Graduate Center for Public Policy & Administration with a special interest in grants and intergovernmental relations. He serves as an emeritus member of the executive committee of METRANS.

"Some of us at Long Beach had been kicking around the idea of becoming more of a research resource around the basin," said Barber. "When you would pick up the newspaper, you'd read of someone from UCLA, USC or Claremont being quoted instead of someone from our campus," he continued. "So, institutionally, we began to realize that Long Beach was holding its light under a basket, so to speak."

Professor Daniel Barber

In order to become a more viable research resource, the university began to look at the persistent and vexing needs of the area and how it could apply an interdisciplinary approach to solving those problems. Transportation was an urban issue that was crying for attention in

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METRANS Research

U.S. DOT and Caltrans Award Research Grants to METRANS

In August, 2002, METRANS began the process of soliciting proposals from USC and CSULB faculty members to perform research on critical metropolitan transportation problems. The U.S. DOT and Caltrans, which fund the projects, dictate that each proposal be directed at ground transportation in one of four focus areas:

1. Commercial goods movement and international trade issues

2. Mobility of urban populations

3. Highway infrastructure and infrstructure renewal

4. Safety, security and vulnerability

METRANS received 29 proposals requesting a total of $2.696 million. Of these, ten proposals were in the area of commercial goods movement and international trade; eight in mobility of urban populations; six in highway infrastructure; and five in safety, security and vulnerability.

The proposals went through extensive reviews that included academics and public and private sector professionals. A total of 71 different referees from throughout the U.S. contributed to the review process.

In mid-January, nine proposals were selected by METRANS for funding of a total of $818,593. Of the selected proposals, six were funded from USC principal investigators, two from CSULB and one project is a joint effort from both campuses. The projects were approved by Caltrans in February and will begin this summer. The following chart summarizes the selected research projects.

03-06	F. Orndonez	Investment decisions for highway capacity expansions
03-07	R. Hall	Freight routing & containerization
03-13	R. Toossi	Hydrogen storage system for transportation applications
03-17	E. Johnson	Bridge structural health monitoring using variable stiffness and damping devices
03-18	P. Ioannou, A. Chassiakos	Optimum time window for cargo delivery/pick-up with application to container terminals
03-19	H. Richardson, P. Gordon, J. Moore	Measuring California's role in supporting interstate goods movement
03-20	P. Gordon	Neighborhood attributes & commuting behavior
03-24	T. Banerjee, D. Myers, C. Irazabel	Increasing bus transit ridership
03-25	E. Parentela	Development of artificial intelligence based traffic simulation

Dan Barber:

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large metropolitan areas such as Los Angeles. Because of USC's broad interdisciplinary strengths in transportation research and CSULB's innovative professional training in the transportation field, a joint venture was formed. "A real advantage to the joint venture between CSULB and USC that has been underscored in METRANS, is the synergy that has developed between the two campuses." said Barber.

"Richard Willliams, the CSULB Dean of Engineering at that time, was a man of great foresight who had a lot of grant experience and early on committed his college to this idea. The other partners he needed were the other corners of the three cornered hat – business and public policy. That's how I became involved in writing the original CCDoTT grant that established the University Transportation Center," said Barber. "USC, of course, had faculty in engineering, planning, economics and public policy who had the capacity to study transportation problems in depth."

Dr. Barber, along with CSULB colleague Lisa Grobar, received funding through METRANS for a research project in 1999, the first year that METRANS awarded research grants. The project, titled "Implementing a Statewide Goods Movement Strategy and Performance Measurement of Goods Movement in California," sought to create solutions to improve capacity utilization of intermodal corridors serving the ports of Los Angeles and Long Beach.

However, after 28 years with CSULB, Dr. Barber is cutting back his schedule to prepare for his retirement. His expertise in assisting METRANS to advance its issues and concerns has been invaluable.

METRANS Outreach

Los Angeles/Long Beach Transportation Infrastructure in Crisis Say Town Hall Speakers and Panelists

A panel of industry and community stakeholders at the Fifth Annual CITT State of the Trade and Transportation Industry Town Hall meeting called for an integrated approach to solve the infrastructure crisis in Southern California. This year's town hall meeting, titled "What's In It for Me? Collaborative Strategies for New Transportation Infrastructure in California," attracted roughly 1,000 people, largely ILWU members, who observed a "stop work" in lieu of work that evening.

Marianne Venieris, executive director of the CITT, kicked things off by identifying the infrastructure gap as the greatest threat to a healthy future for international trade in our area. "But by preparing now, our region's global commerce can continue – without a hitch – to prosper and enrich our economy," she said. Dr. Robert Maxson, president of CSULB, delivered a welcome to the crowd and Dr. Genevieve Giuliano, director of METRANS Transportation Center, the event's major sponsor, provided an explanation of the purpose of the conference. A provocative video set the stage for the meeting with a summary of the current situation on freeways, highways, bridges and marine terminals.

Growth in Trade Places Strain on Infrastructure

One of the evening's keynote speakers, Richard Nordahl, chief of the Office of Goods Movement for the California Department of Transportation, cited the startling predictions for growth in the number of truck trips a day to serve the ever expanding growth in containerized cargo. That cargo is expected to triple from present volumes to more than 36 million twenty-foot equivalent units (TEUs) by 2020. The growth in trade will place great strain on an already overused and out-of-date 710 Freeway as well as other major port access routes and bridges.

Rail Systems Also Need Attention

Railroad systems also are facing major capacity and congestion challenges said Gill Hicks, long-time general manager of the Alameda Corridor and now president of his own consulting firm specializing in transportation planning, project management and intergovernmental relations. The Alameda Corridor, the $2.4 billion rail link connecting the ports of Los Angeles and Long Beach to the rail transfer yards just south of downtown Los Angeles, has eased some of the congestion since it open just over a year ago. The breakdown comes when cargo leaves the railyards for destinations outside of Los Angeles County where lack of grade separations impact the flow of traffic between trains and motor vehicles.

Hicks also commented on the need for fees on cargo containers to help pay for needed infrastructure improvements. Although there is fear that cargo will be diverted to other ports if fees are placed on containers, he warned that diverting cargo to other ports is more likely to happen if improvements to existing infrastructure aren't made.

Study Defines Alternatives for I-710 Corridor

David M. Levinsohn, vice president and senior project manager with Parsons Brinckerhoff, presented an overview of the I-710 Major Corridor Study undertaken by his company. The study was designed to define the congestion, safety and traffic operations problems along the corridor and develop solutions which are consistent with the desires of the contiguous communities and residents. An initial set of 12 strategies was developed, screened and subsequently narrowed to three corridor improvement strategies plus two baseline alternatives. The options range from a no build strategy to a high truck strategy that includes exclusive truck lanes throughout the length of the corridor. Levinsohn said the likely course of action will include some features of all five strategies.

Infrastructure Gap Debated by Panel of Experts

The highlight of the evening was a panel discussion led by Richard Hollingsworth, president/CEO of Gateway Cities Partnership, Inc. The panel of experts discussed the implications and potential consequences of the infrastructure gap from their perspectives.

Downey Councilman Keith McCarthy, representing the 27 member Gateway Cities

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METRANS Education and Training

Four New Courses Offered at USC

Four new courses will be offered this fall at USC that have been designed for master's level students interested in transportation systems, planning and engineering. The courses will be cross listed in the Civil Engineering Department and the School of Policy, Planning and Development.

PPD 599: Coastal Policy and Planning

This course, taught by Prof. James A. Fawcett, examines coastal management in the urban coastal zone as a microcosm of the more general conflicts that exist between public and private users of scarce land resources. Through the examination of urban seaports, this course will look at the diseconomies of their operation balanced by the benefits of such activities.

CE 589: Port Engineering: Planning and Operations

Assist. Prof. Hanh Dam Le will teach this course, which will present a comprehensive analysis of the institutions, economics and technological developments working to shape a new and highly competitive environment for seaports. In response to the demands of the industry, large investments in modern technology, facilities and enhanced productivity are becoming essential to compete in the new environment.

CE 579: Introduction to Transportation Planning Law

The course, taught by Jeremy G. March, is intended to provide an overview of the major federal, state, regional and local transportation agencies; summarize the major laws and regulations governing transportation planning and finance; explain the requirements imposed on transportation planning by federal and state Clean Air Acts, and other major environmental and civil rights laws; and provided step-by-step instructions for conducting legal research on the Internet and in law libraries.

CE 552: Managing and Financing Public Engineering Works

This course, also taught by Attorney Jeremy March, introduces students to the major federal and state legal requirements and procedures for financing and contracting for the planning, construction, operation and maintenance of public works projects.

Town Hall:

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Council of Governments, cited the burden of impacted quality of life as too much to bear for the communities along the I-710 corridor who are affected by port growth.

Tom Warren, a Los Angeles Harbor commissioner and ILWU member, said organized labor supports freight infrastructure funding to keep cargo moving.

William Hamlin, president of APL's Americas Region, said that from the perspective of efficiency, security and fuel cost, shipping lines must take full advantage of on-dock rail, thereby improving regional mobility at the same time.

Joel Anderson, executive vice president of the California Trucking Association, spoke of open hostility by the public toward truckers as the visible symbol of congestion, pollution and safety problems. He said that though California's highway capacity is insufficient to meet the demands of present and future goods movement needs, the political will does not exist to solve these problems.

Captain Craig Klein of the California Highway Patrol provided some revealing highway safety statistics. Although truck traffic accounts for only seven percent of the state's total vehicular traffic, it represents 13 percent of Los Angeles County's total and 34 percent of the traffic on the I-710 freeway. He went on to explain that from 2000 until 2002, trucks accounted for 40 percent of the sig alerts on that major artery.

Closing Summary

Domenic Miretti, ILWU Senior Liaison, Ports of Los Angeles and Long Beach, offered the closing summary by citing the CITT for educating the public to the value and need for improvements in regional transportation infrastructure. He said that our "high tech" ports were developed to serve an economy based upon the needs of consumers for rapid just in time goods movement. Miretti reiterated that we must find a way to balance moving goods with reducing truck traffic and preserving the quality of life and environment within the region. He concluded with an appeal to the common good over individual interests and suggested a CITT Summit was timely and necessary to bring all stakeholders together to address the issues raised in the discussion.

USC Graduate Named University of California Student of the Year

A University of Southern California graduate has been named the University of California's Student of the Year for 2002-2003. Pablo Durango-Cohen, who earned his bachelor's degree from USC, recently completed his Ph.D. in UC Berkeley's Department of Industrial Engineering and Operations Research. Durango-Cohen also was recognized for his achievements in the field of transportation by winning the Outstanding Student and

Outstanding Student Instructor awards, as well.

Durango-Cohen's dissertation, which was supported by a University of California Transportation Center project, addressed the problem of development of infrastructure management policies in cases where a decision-maker either lacks a performance model or has access to several competing models. Using adaptive-control methods, he demonstrated how prior beliefs, budget and level of service constraints, and reinforcement learning affect results. His work combines methods from control theory, optimization and artificial intelligence in an original manner to develop methods that decision-makers can use when there is limited information about facility performance.

Durango-Cohen recently joined the Transportation faculty in the Department of Civil and Environmental Engineering at Northwestern University, where he holds the position of Louis Berger Junior Professor of Civil Engineering. Currently, he is working on publishing a series of papers based on his Berkeley dissertation work.

METRANS Education and Training

Masters in Global Logistics Now Offered at CSULB

The Center for International Trade and Transportation (CITT), a university center at CSULB and the technology transfer arm of METRANS, recognized the growing demand for strategic logistics providers who are global, multi-skilled and capable of taking on responsibilities that range far beyond traditional services. By combining the analytical skills of an MBA program with a strong emphasis on logistics in a global setting, an interdisciplinary, 30 unit Master of Arts in Global Logistics degree program was launched in March, 2002. The first class of 23 students will complete the requirements for a Master's Degree this fall, and a second class began in March of this year.

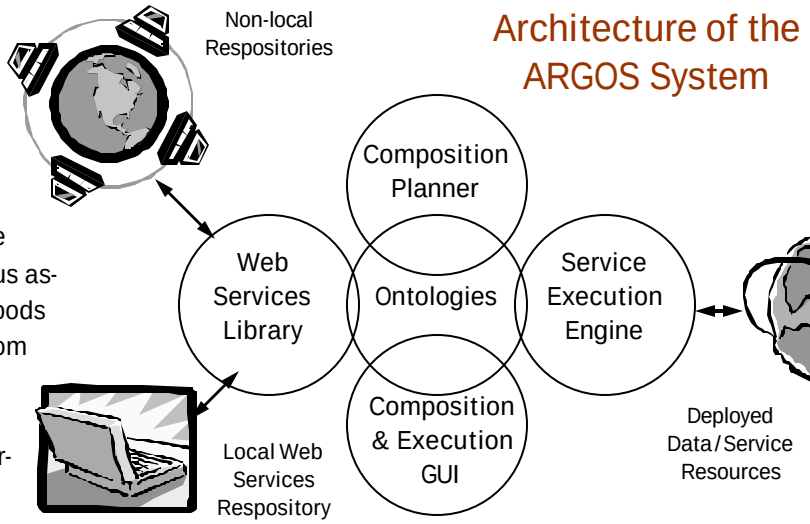
The Master of Arts in Global Logistics is designed for working professionals who need a fast-track program that can be completed in less than two years. It is an all-inclusive program offered in an accelerated format, which attempts to minimize the impact on work, family and other obligations.

Classes typically meet for six hours per week during each eight-week session. Each session focuses on a single course.

Applicants must have a bachelor's degree from an accredited institution and possess a strong employment history in supply chain management/logistics. Graduation from the Global Logistics Specialist program is not a prerequisite, but is highly recommended.

The program draws on CSULB faculty from the departments of Economics, Civil Engineering, Management and Human Resources and Public Policy and Administration. It is designed to prepare professionals to deal with the complexities of supplier relations, supplier selection, purchasing negotiations, operations, transportation, inventory, warehousing, third-party vendors, electronic commerce and customer relations. It is unique in that it is the only program of its kind in the Western United States.

FREIGHT MODELING RESEARCH AT USC



Because of the huge growth in containerized trade experienced in this region, researchers at both USC and Cal State Long Beach have been involved in various aspects of research in goods movement, ranging from modeling of container movements within the region to looking at surface congestion at the ports.

One such project funded by METRANS in 1999 sought to develop an origin-destination matrix of intra- and interregional freight requirements in this area that utilized a compilation of data from many overlapping and incomplete sources.

Two problems motivated this research. First, state and metropolitan transportation agencies often have difficulty assembling data on freight traffic. Second, geographic information systems remain an underutilized analytical tool in transportation planning. This project explored the possibility of organizing freight data in a GIS format and creating a freight origin-destination matrix consistent with Southern California planning procedures.

Shortly after this project was completed, METRANS faculty started working with computer scientists at USC's Information Sciences Institute (ISI) through their Digital Government Research Center (DGRC) to explore the feasibility of using "information integration" and other emerging information science technologies in freight modeling. "Information integration" is a set of tools used to automate the retrieval of data and computations to make modeling faster and easier.

The research team comprised of Prof. Genevieve Giuliano, Dr. Jose Luis Ambite, Isadore Gordon and Dr. Stefan Decker received funding for the project through a "Small Grants for Experimental Research" grant from the National Science Foundation (NSF).

At the conclusion of the year-long project, it was decided to submit a major proposal to the NSF to develop a flexible data query and analysis system based on the web services paradigm. Of 140 proposals submitted to the NSF, only 12 were funded, including the METRANS project. The three-year project, titled "ARGOS: Dynamic Composition of Web Services for Goods Movement Analysis and Planning," received $1.05 million in funding.

The research, which began last month, has three objectives:

1. To advance computer science research by developing an expressive web services description language and techniques for dynamically composing web services;

2. To develop and conduct test applications of an intra-metropolitan goods movement flow model using web services in cooperation with government partners; and

3. To use the model to conduct social science research on intra-metropolitan economic linkages and spatial structure.

Although the focus is on the specific topic of goods movement, the approach to web service composition is general and can be applied to other scientific date gathering and analysis tasks. The research will be conducted in cooperation with state and local government agencies, and will share the methodological results and software tools for general use in the public sector. Since web services constitute crucial elements of the emerging electronic marketplace, the research team expects their approach to web services composition to have a broad impact across many disciplines and economic activities by significantly reducing the cost of accessing and processing information.

"The growing partnership of METRANS and ISI will hopefully lead to more innovative and visible transportation research across the fields of information science, engineering and social sciences," said Prof. Giuliano. "The more we are able to leverage METRANS funding, the better we are able to deliver on our mission of solving the transportation problems of large metropolitan areas."

METRANS RESEARCH PUBLICATIONS

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Giuliano, G., Pickup, L. *Transport and Social Exclusion in Europe & the USA* Trend Note 2, STELLA Project, 2002

H. Jula, H., Dessouky, M., Ioannou, P., Chassiakos, A. *Container Movement by Trucks in Metropolitan Networks: Modeling and Optimization* European Journal of Operational Research, 2001

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Meshkati, N., Sloniowski, K. *Time to Reduce Area's Rail Carnage* The Orange County Register, 2003

Rahimi, M. Weidner, M. *Multi-attribute Value Theory (Part 1): Model Development from a Single LCIA Methology* Journal of Industrial Ecology, 2002

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