



CTS celebrates 20 years of growth, contributions

This special six-page issue contains highlights from the CTS 20th Anniversary Celebration, held October 23 in Minneapolis.

In his welcoming remarks, CTS director **Robert Johns** noted the many faces in the audience who played key roles in the history of CTS, “some from 20 years ago.” He gave a brief timeline of CTS, beginning with its formation by **Richard Braun**. (To download the timeline, see

www.cts.umn.edu/About/History.)

Johns then introduced **Genevieve Giuliano**, who gave the event’s keynote presentation (page 2). Following the keynote, two panels of University faculty shared their accomplishments and thoughts for the future (page 3).

The celebration concluded with a reception moderated by CTS associate director **Laurie McGinnis** (page 5). **CTS**



CTS ranks second in national survey

Earlier this year, the Council of University Transportation Centers (CUTC) published results of a survey of university transportation centers using fiscal year 2006 data. Of the 40 universities responding, CTS ranked second in total expenditures, behind the Texas Transportation Institute (TTI) at Texas A&M and ahead of the University of Michigan Transportation Research Institute (UMTRI). CTS also ranked second in research expenditures and in technol-

ogy transfer expenditures, as shown below.

In terms of expenditures by mode, 75 percent of CTS expenditures were for highway research and 19 percent for transit research. TTI spent 95 percent of its funds on highway research while UMTRI spent half on highway research and the other half on highway-related studies (human factors, occupant protection, etc.). CTS research topics are similar to TTI’s, with the highest percentages on safety, traffic

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Ranking	Total Expenditures		Research Expenditures		Technology Transfer Expenditures	
	Center	Amount	Center	Amount	Center	Amount
First	Texas A&M (Texas Transportation Institute–TTI)	\$51,363,815	Texas A&M (TTI)	\$37,975,580	North Carolina State (Institute for Transportation Research and Education–ITRE)	\$2,409,000
Second	Univ. of Minnesota (CTS)	\$16,950,696	Univ. of Minnesota (CTS)	\$13,431,048	Univ. of Minnesota (CTS)	\$1,484,458
Third	Univ. of Michigan (Univ. of Michigan Transportation Research Institute–UMTRI)	\$15,788,834	Univ. of Michigan (UMTRI)	\$13,390,486	Univ. of South Florida (Center for Urban Transportation Research–CUTR)	\$1,100,000
Fourth	North Carolina State (Institute for Transportation Research and Education–ITRE)	\$15,048,000	Univ. of Texas (Center for Transportation Research–CTR)	\$9,786,700	Univ. of Kentucky (Kentucky Transportation Center–KTC)	\$924,614
Fifth	Univ. of Texas (CTR)	\$11,980,662	Penn State (Pennsylvania Transportation Institute–PTI)	\$7,519,161	Univ. of Massachusetts (Univ. of Massachusetts Transportation Center–UMTC)	\$705,000

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Winter Luncheon: The Future of Vehicle Safety

If you own a relatively new car, it is likely the most advanced piece of technology that you own. And while technology is transforming every aspect of our lives, the possibilities and challenges that it holds for vehicle safety are immense.



Ronald Medford

Ronald Medford will discuss the National Highway Traffic Safety Administration’s vehicle safety research activities at the CTS Winter Luncheon on February 13 in Minneapolis.

Medford’s presentation will focus on how future technologies will monitor driver behavior—our own as well as those in vehicles around us—to avoid crashes. He will also discuss a new activity to develop in-vehicle technologies to combat the persistent problem of impaired driving, and how the government and industry are working together on this important issue.

Medford is the senior associate administrator for vehicle safety at the National Highway Traffic Safety Administration (NHTSA),

Medford continued on page 6

Keynote: Policy environment hinders acceptance of research solutions



Transportation researchers have made significant contributions over the years, particularly in engineering and technology. Progress stalls, however, when transportation problems require policy solutions, said **Genevieve Giuliano**. And dramatic changes under way in the policy environment—devolution, fragmentation, and privatization—may make it even harder for research to shape transportation policy in the future.

Giuliano shared her outlook for the future of transportation research at the CTS 20th Anniversary Celebration, held October 23 in Minneapolis. Giuliano is a professor in the School of Policy, Planning, and Development and a senior associate dean for research and technology at the University of Southern California. She is also a former chair of the Transportation Research Board Executive Committee.

Giuliano divided the work of researchers into four areas: increasing knowledge, improving productivity and efficiency, articulating problems, and finding solutions. Research has played a huge role in the first two, evidenced by the use of tools such as travel behavior models and traffic flow simulation. “One-hundred years of work has generated tremendous progress,” she said.

Research has also been critical in discovering and defining transportation problems. For example, a series of health studies of 1960s smog in the Los Angeles region generated the first air quality regulations in California, which in turn led to national standards. Studies in the 1970s demonstrated that public transit was not servicing the needs of the poor and elderly as cities decentralized. Other research analyzed traffic safety.

These three examples also illustrate where research sometimes falls short—implementation—and why some solutions work and others do not. Foremost is the key role of engineering and technological developments. Emissions reductions were all achieved through technology, she said, and progress in traffic safety was largely due to engineering improvements in infrastructure (road design, lighting, signage) and vehicles (seat belts, air bags, braking systems). These solutions tend to

be incremental and relatively low cost, and the costs are often hidden (as in the case of catalytic converters and seat belts).

Solutions that generally are not implemented are those that make the costs—and who will pay them—explicit, “unless that group is small and without political influence,” Giuliano said. A pricing solution was never part of the policy discussion for reducing emissions, she noted.

Solutions that focus on changing indi-



Genevieve Giuliano, Robert Johns

vidual behavior also fall short. Rideshare programs, for example, had no effect on L.A. air quality. Behavioral solutions are resisted even when lives are at stake: The 55-mph speed limit “was not politically supportable and went away...Only in recent years have we dabbled in restrictions on teenage driving,” Giuliano said.

Also rejected are solutions that are explicitly redistributive. “Our tomes of research have had no impact” on improving equity in public transit, Giuliano said, and fare and finance policy have become increasingly regressive. “We are writing the same papers, but with different data.”

The reality is that researchers have solutions to many problems, but institutions and politics may prevent their implementation. What’s more, Giuliano said, transportation itself has become a policy problem. Projects have high local visibility and impose concentrated costs on specific areas—such as the “diesel death zone” extending from the ports of Long Beach—but generate benefits into the economy nationwide.

Still, the public views transportation as a public good and holds government accountable for its delivery. The policy environment itself, however, is undergoing dramatic changes in three key areas—devolution, fragmentation, and privatization—that present additional challenges.

Devolution is the shedding of responsibilities by higher levels of government to lower levels, or eliminating funding or programs, such as in transportation finance. Fragmentation is the proliferation of government units and the dispersion of funding authority among them. Privatization, begun in the 1980s with deregulation, has moved on to private-sector provision of public services and the outright ownership of major facilities like tollways, she said.

What are the consequences of these changes? Devolution makes it unclear what unit of government is responsible for a problem or how to solve it. Fragmentation makes consensus and decision making more difficult; the smaller local focus trumps broader priorities. Privatization runs counter to the public perception of transportation.

“The bottom line,” Giuliano said, “is that the policy environment is increasingly less amenable to solutions that require trade-offs and difficult choices.” Another consequence may be growth in interest group politics and a declining role for expert opinion.

What can researchers do? First, conduct public policy research to gain a better understanding of the changing policy environment. Second, study and communicate the consequences of public policy decisions. “Absent careful data and evaluation, how can we demonstrate that a policy was efficient or inefficient? Our job is to communicate the research, stick to the facts to the extent that we know them...be honest to the extent that we don’t know them, and translate them into layperson terms,” she asserted. And last: “We must join the public discussion.” **CTS**

University leaders share perspectives



Following **Genevieve Giuliano's** keynote, two University of Minnesota faculty panels reviewed how the University has contributed to state and national transportation issues in the past two decades and suggested future research possibilities. **Robert Johns**, CTS director, served as moderator.

Panel 1: Engineering and Technology Research and Education

Max Donath, Director, Intelligent Transportation Systems (ITS) Institute, and Professor, Department of Mechanical Engineering; **Catherine French**, Professor, Department of Civil Engineering (CE); **Mihai Marasteanu**, Associate Professor, CE; **Panos Michalopoulos**, Professor, CE; **Nikolaos Papanikolopoulos**, Director, Security in Transportation Technology Research and Applications (SECTTRA) Program, and Professor, Computer Science and Engineering

Max Donath kicked off the first panel with comments about safety. Each year more than 42,000 Americans die on our roadways, and traffic crashes are expected to be the number three cause of death worldwide by 2020. "We need some new approaches," he said.

The Institute's philosophy has been to focus its work on the highest risk areas. In this country, that means rural areas, where fatalities—mostly caused by lane-departure crashes—outnumber those in urban areas by about 2:1. Institute researchers have developed and deployed lane-keeping technology, including the first use of high-accuracy GPS, on snowplows and other vehicles.

Another area of Institute research looks at the policy implications of technology. Teens make up 5 percent of drivers but 14 percent of fatalities, yet there is continued resistance to tools like seat belt ignition locks. "I think we need to change that for certain at-risk drivers," Donath said. "We are all concerned with privacy, but is it a red herring, an excuse, for not allowing some of this technology into our daily lives?"

For the future, Donath predicts more powerful tools inside the vehicle to improve driver performance and decision making, and better sensor technology and wireless communication that will "see



Max Donath, Nikolaos Papanikolopoulos, Catherine French, Panos Michalopoulos, Mihai Marasteanu

around a corner" to avoid collisions.

In closing, Donath called for the creation of a "culture of traffic safety" that would allow the use of technology—such as electronic speed enforcement—to achieve a serious reduction in fatalities.

"We have an aging infrastructure," began **Catherine French**, "and we need to come up with the means to retrofit systems and evaluate the condition of what's out there." French also noted the need to build more durable, long-lasting systems.

One of the great successes in past years has been the partnership with CTS, Mn/DOT, and local industry, French said. One result of the partnership is the application of high-strength concrete to bridge systems, which allows longer spans. Because a key component of such systems is the aggregate, which is unique to local areas, research is needed at the local level. "We're not just doing research for the sake of research, which is valuable, but so that it can be directly applied and translated into practice," she said.

French also credited CTS for its work in bringing disciplines together for proposal development and problem solving and for providing seed money for research.

Mihai Marasteanu pointed out that when universities perform research, they also educate students. "Sometimes sponsors say research is difficult to apply, but they should not forget that we are educating students who will work for them and

are giving them fundamental concepts...It's a win-win situation."

Research at the MnROAD pavement research facility has looked at a number of important problems, such as low-temperature cracking. Other research is investigating various technologies to improve the maintenance and rehabilitation of pavements, which is particularly important given the "huge need" for infrastructure investment. "If you own a house, you need to put money into it periodically," he said.

He also identified a concern with the future of pavement research: "There is no continuous flow" of funding, so long periods pass between projects and expertise is lost. "Researchers must analyze pavements over a long time to understand how they work."

When **Panos Michalopoulos** joined the University 30 years ago, there was no active graduate program in transportation and little funding for research. His first priority was to establish a transportation center, which he and other CTS founders accomplished in 1987. Over the years the CE department attracted more funding for transportation research and was able to add a faculty position. "More importantly," he said, "we reached a point where we are recognized nationally among the top transportation programs...CTS provided vital funding."

CE researchers made contributions in many dimensions of transportation, such



Lane-keeping technology developed by the ITS Institute has been deployed on buses and other vehicles.

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as an improved ramp metering strategy for Twin Cities metro freeways. Since the strategy was implemented in 2003, he said, benefits in fuel consumption and delays are estimated at \$200 million per year. Other areas of research included traffic flow simulation, crash mechanics, and crash prediction.

Moving forward, Michalopoulos sees a need for continued funding of technology research, noting its key role in economic development.

"I view transportation as a way of implementing ideas and having an impact," said **Nikolaos Papanikolopoulos**. His

video detection research, which began as a tool to detect drug dealers at bus stops, became a springboard for a \$4 million grant from the Department of Homeland Security. "[CTS provided] the seed support to enable us to be very competitive at the national level," he said.

A major issue will be adapting technology, such as video cameras, to meet society's needs for security and safety while respecting privacy and cultural concerns. He believes CTS can play a big role in this area by forming teams of engineers, policymakers, and others who understand the broader implications. "We have the tech-

nology," he said. "Can we make it acceptable for widespread use?"

Papanikolopoulos also praised CTS for providing a conduit between researchers and practitioners, who "often want the same thing but talk in a different language." Technology transitioning is another important area in which CTS is well positioned to contribute. "We want at the end of our careers to see some of our technologies used," he concluded. "Otherwise it's just research for the sake of research." **CTS**



Panel 2: Policy and Planning Research and Education

John Adams, Associate Dean, Hubert H. Humphrey Institute of Public Affairs; **Gary Davis**, Professor, Department of Civil Engineering; **Lee Munnich**, Director, State and Local Policy Program, Humphrey Institute; **Mary Vogel**, Senior Research Fellow, Department of Landscape Architecture

John Adams described some findings from his work in the Transportation and Regional Growth Study, a multiyear, multidisciplinary effort managed by CTS. For example, Adams found that development in distant Twin Cities suburbs shaped changes in inner-city neighborhoods years later. "In other words, people look for cause and effect in the same time and place, but that isn't the way metro systems work," he said.

In another project, Adams studied dispersal patterns in 40 regional centers in Greater Minnesota. He discovered that small towns are becoming suburbs of these small metro systems, similar to the development patterns of the Twin Cities. At a national scale, "megapolitan" areas—those linked by heavily used interstates—are emerging. "The question becomes whether our transportation and communication systems and governance arrangements can keep up with the demands on them," he said.

Adams called for moving beyond short-term thinking to a view that takes



Mary Vogel, John Adams, Lee Munnich, Gary Davis

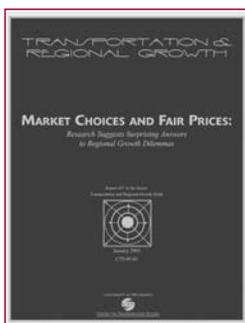
into account a region's long-term critical assets. If cash flow is the principle measure of vitality, he said, we overlook how we are drawing down our assets in the natural environment, the built environment (such as bridges), and human capital. "We're kind of in a smug drawing-down of assets in our national life," he concluded. "Something has to happen to reverse that and begin to divert some of our expenditures from consumption...to investment."

Gary Davis noted his research into Twin Cities freeway capacity. In a 2003 report, his team calculated that the Twin Cities freeway system will require at least a 70 percent expansion by 2020 to provide uncongested free-flow travel. In concrete terms, the numbers add up to several more lanes in each direction at critical points on the metro freeway system. For instance, where I-35E and I-94 meet in St. Paul near the state capitol, an additional eight eastbound lanes and six westbound would be needed.

Transportation, said **Lee Munnich**, is the most political of all issues. Everyone has expertise from their own experiences, "and you must deal with that individual expertise." At same time, most solutions don't offer an immediate impact, so elected officials tend to avoid transportation because they don't reap the benefits of their actions.

Munnich touched on some of the joint efforts by the Humphrey Institute and CTS, such as policy seminars held for state legislators and the Center for Excellence in Rural Safety, funded through the 2005 federal funding bill. Safety problems of the future will require major innovations across institutional boundaries. "One thing CTS does is break down silos, whether within the University or between the DOT and other entities," he said. "Those silos continue to exist, but if we are going to solve problems, we need to find ways to break down those silos."

Twenty years ago, said **Mary Vogel**,



Results of the Transportation and Regional Growth Study, synthesized in the 2003 document Market Choices and Fair Prices, have influenced local transportation planning efforts.

Closing reception features key sponsors

“A 20th anniversary is a time for reflection on the past, acknowledgment of accomplishments, and appreciation for those who helped make it happen,” **Laurie McGinnis** said at the closing reception of the anniversary celebration. McGinnis, the associate director of CTS, then introduced key supporters of CTS.

Fred Corrigan, chair of the CTS Executive Committee, noted some of the major initiatives over the past years, such as the Transportation Engineering Road Research Alliance (TERRA), the ITS Institute, and the Oberstar Forum. “All demonstrate the unique role that CTS plays,” he said. “The Executive Committee will continue to work with this excellent staff in bringing together all the support they need in the community.”

McGinnis then returned to the podium



Laurie McGinnis



Fred Corrigan



Tom Colbert



Lisa Freese

to introduce the next two speakers, representatives of two key CTS sponsors: the Minnesota Local Road Research Board (LRRB) and the Minnesota Department of Transportation (Mn/DOT). “Both organizations have provided ongoing funding for research and training that CTS has been able to leverage on a national level and have been key in building a foundation of knowledge at the University,” she said.

Tom Colbert, public works director for the city of Eagan and a former chair of the LRRB, explained how CTS helped board members understand the value of knowledge building, which creates a foundation for other research and is leveraged to obtain funds from other agencies. “It almost exponentially expands itself,” he said. He also praised the Minnesota Local Technical Assistance Program (LTAP) for

its work in getting research results to practitioners.

“That’s been so important to us, and that’s why the LRRB has been such a strong supporter.”

Lisa Freese, Mn/DOT’s deputy commissioner, said she “can’t stress enough the importance of the research we do together with CTS.” Through the partnership, valuable research is conducted in all areas of transportation, from planning and design to maintenance and operations. CTS has also helped Mn/DOT deliver training, she said, and “we have all benefited from the many valuable conferences” held by CTS. “The future of transportation depends on good research,” she said. “We look forward to a long future as a CTS partner.”

McGinnis then introduced a short video highlighting CTS research, outreach, and education efforts (see below), and thanked the current and former staff for their contributions over the years. “Their work ethic and spirit has enabled CTS to achieve its reputation around the world,” she said.

Robert Johns then closed the celebration: “To hear all of your words is just wonderful, and I thank you all.” **CTS**



New video introduces CTS

CTS has created a short video highlighting its research, outreach, and education efforts. The video, which made its premiere at the CTS 20th Anniversary Celebration on October 23, features an array of leaders discussing the accomplishments of CTS and the benefits it brings to the

transportation community.

The video—titled *A Catalyst for Transportation Innovation*—is narrated by **Victor Bloomfield**, associate vice president for public engagement at the University of Minnesota. Other speakers include founding director **Richard Braun**;

former state legislator **Carol Flynn**; former Mn/DOT division director **Randy Halvorson**; Olmsted County Engineer **Mike Sheehan**; and **Robert Johns**, **Max Donath**, and **Gina Baas** of CTS.

To view the video, please go to www.cts.umn.edu/About/History. **CTS**

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Minnesota had done very little in linking transportation and community design, and the state was “transit-challenged.” Public spaces were undervalued, and development projects were often disconnected from the context of the larger community. “But things have changed, and CTS has been part of that change,” she said.

“Transportation’s broad role in how we live is now recognized, and transportation is seen as a shaper of who we are as individuals, as a community, and as a state,” Vogel continued. An

interdisciplinary network of experienced researchers is now in place to address critical issues, thanks to successful research efforts such as the Transportation and Regional Growth Study. “TRG was an interdisciplinary watershed in which the University positioned itself nationally,” she said. It eventually led to a recent study funded by the American Institute of Architects through SAFETEA-LU. “We’ve come from being behind to being prominent nationally,” she said.

Future research needs to respond to large trends such as changing demographics, climate change, and continued globalization. Most of all, Vogel said, “we need to address the challenge of sustainability in the state, the country, and the world, in all of its interrelated dimensions.” Particularly important is the issue of water. “If oil was the issue of the 20th century, water will be for the 21st,” she predicted. CTS can contribute greatly to the kinds of interdisciplinary solutions that are needed, she concluded. **CTS**

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operations, policy/planning, and pave-
 ments, while UMTRI spent 85 percent of
 its research funding on safety.

Total expenditures by all the report-
 ing centers and institutes exceeded \$174
 million.

“We are proud to join the upper echelon
 of the nation’s transportation centers, many
 of which were established years before
 CTS,” says **Robert Johns**, CTS director.

Medford from page 1

U.S. Department of Transportation. In this
 role, Medford is responsible for overseeing
 the NHTSA Rulemaking, Enforcement,
 and Applied Research Programs. Prior to
 joining NHTSA, Medford was the assistant
 executive director for hazard identifica-
 tion and reduction at the U.S. Consumer
 Product Safety Commission. He holds
 bachelor’s and master’s degrees from the

“CTS runs a multifaceted program with
 measurable impacts.”

The major transportation research cen-
 ters and institutes in the United States
 established CUTC in 1979. CUTC pro-
 motes continued dialogue among its mem-
 ber institutions and provides a forum for
 the centers to interact collectively with
 government and industry. **CTS**

University of Maryland.

The Intelligent Transportation Systems
 (ITS) Institute, housed within CTS, is
 sponsoring the luncheon.

A registration form is enclosed. For
 more information, contact **Julie Grazier**,
 612-624-3708, cceconf5@umn.edu, or
 visit www.cts.umn.edu/Events. **CTS**

Organizations encouraged to exhibit at Career Expo

Next year’s Transportation Career Expo
 will take place March 13 in Minneapolis.
 Representatives from a variety of compa-
 nies and agencies will be on hand to net-
 work with students and recent grads and
 tell them about their organizations and job
 opportunities.

A Call for Exhibits is enclosed with this
Report. If your organization would like to
 participate, please return the form. For more
 information, contact **Mindy Carlson** at
 612-625-1813, carlson@cts.umn.edu. **CTS**

CTS seeks program coordinator, financial associate

CTS is seeking applications for two posi-
 tions: a full-time program coordinator and
 a half-time financial associate.

For more information, please see
www.cts.umn.edu/Education/Careers/JobPostings/CTSJobs/index.html or
 contact **Keith Carlson** at 612-625-0044,
keith@cts.umn.edu. **CTS**

New research reports available

The enclosed insert lists research reports written by University researchers and
 published by CTS, Mn/DOT, the Minnesota Local Road Research Board, and other
 sponsors since August 2007. **CTS**

Upcoming events

To publicize your event, call CTS at 612-626-1077, fax 612-625-6381, or e-mail snopl001@cts.umn.edu. Visit the CTS Web site—
www.cts.umn.edu—for more comprehensive event information.

Jan. 22–25	Minnesota County Engineers Association Annual Conference, Brainerd. Contact Carrie Alkins , 612-624-3492, cceconf3@umn.edu , or visit www.mncountyengineers.org .	Feb. 14	12th Annual Minnesota Pavement Conference, St. Paul. Contact Shirley Mueffelman , 612-624-4754, cceconf2@umn.edu .	March 13–14	Concrete Paving Association of Minnesota 47th Annual Concrete Paving Workshop, Mankato. Contact Deb LaValle , 651-762-0402, www.concreteisbetter.com .
Jan. 30–Feb. 1	City Engineers Association of Minnesota Annual Conference, Brooklyn Center. Contact Carrie Alkins , 612-624-3492, cceconf3@umn.edu , or visit www.ceam.org .	March 5	52nd Annual Asphalt Contractors’ Workshop/MN Quality Initiative Workshop, Brooklyn Center. See www.asphaltisbest.com or e-mail jthomas@mnapa.org .	Apr. 15–16	Minnesota Spring Maintenance Training Expo, St. Cloud. Contact Shirley Mueffelman , 612-624-4754, cceconf2@umn.edu .
Feb. 13	CTS Winter Luncheon, Minneapolis, with Ronald Medford , National Highway Traffic Safety Administration. Contact Julie Grazier , 612-624-3708, cceconf5@umn.edu .	March 13	Transportation Career Expo, Minneapolis. Contact Mindy Carlson , 612-625-1813, carlson@cts.umn.edu .	May 20–21	CTS 19th Annual Transportation Research Conference, St. Paul. Contact Julie Grazier , 612-624-3708, cceconf5@umn.edu . CTS