



Traffic congestion a sign of economic vitality, says luncheon speaker

You may not think so when you're stuck in traffic, but a congested road system isn't a sign of failure—it's simply an inevitable byproduct of vibrant, successful cities. This was the premise of Professor **Brian Taylor's** speech—"Traffic Congestion: Annoying Friend or Dangerous Foe?"—at the CTS Fall Luncheon on October 28. Taylor is an associate professor and vice chair of urban planning at the University of California Los Angeles, where he also directs UCLA's Institute of Transportation Studies. The well-attended luncheon attracted state legislators **Ann Rest**, **Phil Krinkie**, and **Ron Erhardt**, and coverage by two local television stations and the Minneapolis *Star Tribune*. (See www.cts.umn.edu/news/2003/11/congestion.html to read the article.)

After opening remarks by CTS director **Robert Johns**, Humphrey Institute assistant professor **Kevin Krizek** introduced Taylor, his advisor when both were at the



Brian Taylor

University of North Carolina. Taylor began by describing what he called conventional planning wisdom:

- Traffic congestion exacts a terrible social and economic toll on society.
- Expanding transportation capacity helps in the short term but not in the long run.
- Redesigning cities and expanding alternative transportation modes offer the best long-term means for reducing traffic congestion.

These views aren't necessarily wrong,

Taylor said, but each one can be questioned and challenged—which he then proceeded to do with a number of propositions. (Highlights are shown below; for the full list, see Taylor's Powerpoint presentation at the CTS Web address shown at left.)

- *Traffic congestion is evidence of social and economic vitality; empty streets and roads are signs of failure.* Culturally and economically vibrant cities have the worst congestion problems; declining and depressed cities don't have much traffic—just think Flint, Michigan, or

Taylor continued on page 3

Inside

- Asphalt cracking study 2
- Research partnership award 3
- Roads Scholar, LTAP Web launch .3
- Grad Certificate session 4
- ITS Institute annual report 4
- Freight & logistics symposium ... 4

U of M researchers calculate how much freeway expansion is needed to address congestion woes

No matter how you look at it, traveling in Minnesota is getting tougher. More people, a lot more cars, and even more vehicle-miles traveled mean increasing delays on more of the metro freeway system. In a recently published report, University researchers have calculated that the freeway system will require at least a 70 percent expansion (or, an estimated 1,146 lane-miles) by 2020 to provide uncongested "free-flow" travel at a minimum level of service where movement is restricted and greater care is needed to drive safely.

While clogged transportation arteries around Minnesota may come as no surprise, figuring out just how bad it is and what to do about it is making the news. University civil engineering professor **Gary A. Davis** and graduate student **Kate Sanderson** presented their latest findings from research examining area congestion in a CTS research seminar on October 8 titled "Building Our Way Out of Congestion?" In addition to a University classroom packed with fellow academics, transportation professionals, and policymakers, WCCO-TV news and the *Star Tribune* also covered the hour-long seminar based on research sponsored by the Minnesota Department of Transportation (Mn/DOT).

"A substantial fraction of the public thinks we ought to build more roads," Davis observed, referencing several sources that suggest adding more capacity to area road networks is the best way to deal with traffic congestion. "Our question is, 'What would it take to build our way out of congestion?'"

To answer the question, Davis and Sanderson developed an algorithm to determine a minimal set of highway-capacity expansions necessary to accommodate future travel demand and guarantee mobility. Their model for accommodating future growth is based on projected travel demands for the year 2020 and does not factor in changes in travel behavior away from the use of single-occupant vehicles during peak times. Davis classified the modeling task as a "network design problem" and said that the problem of implementing formulations and solution algorithms for large-scale networks has challenged researchers

Seminar continued on page 2



Gary Davis and Kate Sanderson

Minnesota leads study of low-temperature cracking in asphalt pavements

Minnesota winters can make even the hardiest souls feel like cracking. It turns out our pavements crack even more easily than we do. Mn/DOT pavement management data show that 69 percent of Minnesota highways have a low-temperature crack at least every 50 feet. This cracking is the main cause of pavement roughness and reduced service life of hot-mix asphalt (HMA) pavements.



To solve the low-temperature cracking problem, Mn/DOT is leading a nationally supported pooled-fund research effort with participants from state DOTs, the Federal Highway Administration (FHWA), industry, and four universities led by the University of Minnesota.

“Low-temperature cracking is the most prevalent distress found in HMA pavements built in cold weather climates,” says **Glenn Engstrom**, until recently the manager of Mn/DOT’s Road Research Section in the

Office of Materials. These cracks form when temperatures drop to a critical point where the stresses exceed the strength of the HMA. The current asphalt binder specification attempts to address this issue by specifying a limiting low temperature. However, this specification is not accurate for polymer-modified asphalt binders that are manufactured to reach the very cold temperature grades needed in cold climates.

The pooled-fund research effort is aimed at developing an updated nationally accepted specification for polymer-modified asphalts needed in cold climates. “The ultimate goal is the elimination of low-temperature cracking in both new and rehabilitated HMA pavements,” Engstrom says.

The pooled fund study will use the following groups to accomplish this goal:

- A National Technical Advisory Panel (TAP) to assist in the technical direction of the project, made up of leaders from academia, industry, the FHWA, and other participating states. The initial meeting (held with funding thanks to the FHWA) took place August 20–21, 2003, at the University of Minnesota.
- A technical team of four Universities to complete the study. These include the Universities of Minnesota (lead technical team), Wisconsin, and Illinois, and Michi-

gan Tech. Led by Assistant Professor **Mihai Marasteanu**, Minnesota’s research team also includes Associate Professor **Lev Khazanovich** along with other researchers in the Department of Civil Engineering.

- Mn/DOT’s Road Research Section will use the Minnesota Road Research (Mn/ROAD) facility near Monticello, Minn., to field validate the findings of the study through reconstruction of test sections in 2005.

A number of other states are working to enter their state’s commitments into the project (solicitation 776 at www.pooledfund.org). Mn/DOT will continue to work with these states to attain the \$750,000 goal to fund this effort. Currently \$465,000 has been raised from Connecticut, Idaho, Illinois, Kansas, Minnesota, North Dakota, and Wisconsin. Other states including California, Iowa, Maine, Michigan, New Hampshire, New York, Texas, Washington State, Vermont, and Wyoming are expected to contribute.

The next step is to use comments from the TAP and participating states to develop a final work plan. “This project will provide engineers and designers practical solutions to solve the low-temperature cracking problem,” Engstrom says.

If you have any comments please e-mail Mn/DOT in care of **Ben Worel**, ben.worel@dot.state.mn.us, or call 651-779-5522. [CTS](#)

Seminar from page 1 for three decades.

The researchers focused their initial efforts on testing transportation networks in Sioux Falls, South Dakota, and in Waseca, Minnesota, before taking a crack at the much larger Twin Cities network. Despite using a supercomputer, computational difficulties with the large amount of data from the Twin Cities network eventually forced the team to develop an alternate approach, which involved incorporating their sequential linear expansion (SLIE) algorithm into the method of successive averages. In the end, Davis and Sanderson solved the large-scale problem on a personal computer. What’s more, their results using the alternative procedure were consistent with standard methods when applied to smaller-scale scenarios such as Sioux Falls and Waseca.

In concrete terms, the numbers add up to several more lanes in each direction at critical points on the metro freeway system—and that’s just to meet minimally acceptable levels of service. Davis and Sanderson defined levels of service in terms of traffic speed

The numbers add up to several more lanes in each direction at critical points on the metro freeway system—and that’s just to meet minimally acceptable levels of service.

and density, with free-flowing traffic being the ideal. They also presented several examples of where more lanes would be needed by 2020. For instance, where I-35E and I-94 meet in St. Paul near the state capitol—and near Mn/DOT’s offices—an additional eight eastbound lanes and six westbound would be needed. On I-94 northwest of the beltway, seven additional lanes in each direction would be needed.

During their presentation and the question-and-answer session that followed, both Davis and Sanderson stressed that their solution algorithm is simply a quantitative exercise and they declined to make policy recommendations for fixing traffic congestion. However, the pair suggested that future research could test the effect different transit ridership scenarios might have on the level of roadway capacity expansion needed. In addition, future research also might incorporate the solution algorithm into a standard travel-demand model.

Davis and Sanderson’s report of their Mn/DOT-sponsored research, *Building Our Way Out of Congestion? Highway Capacity for the Twin Cities*, may be found online at www.research.dot.state.mn.us/detail.cfm?productID=1846. [CTS](#)

CTS seeks nominees for Research Partnership Award

CTS is accepting nominations for the eighth Research Partnership Award. Initiated in 1996, the award is designed to recognize research projects within the CTS program that have resulted in significant impacts on transportation, and to reward those teams of individuals who have drawn on the strengths of their diverse partnerships to achieve those results. Criteria and submission instructions are in the enclosed form.

Last year's recipient was titled "Implementation of Climatological Summaries for Blowing Snow Control: Design, Training,

and Website Development." Partners included University researchers, Mn/DOT, the Minnesota DNR, the Minnesota Department of Finance, and the USDA Natural Resources Conservation Service.

An evaluation committee will review the nominations and recommend a winning partnership to the CTS director for approval. The award will be presented at the CTS annual awards ceremony in April. Please return your nomination form to Linda Pelkofer of CTS by January 31, 2004. [CTS](#)

Minnesota LTAP launches Roads Scholar Program, redeveloped Web site

The Minnesota Local Technical Assistance Program (LTAP), housed within CTS, has launched a new certificate program. The LTAP Roads Scholar Program is designed for local agency and Mn/DOT maintenance personnel who are committed to learning new skills and expanding their knowledge in the latest road and bridge innovations and best practices. The program combines Minnesota LTAP's many training options into a structured curriculum of half-day and one-day training sessions.

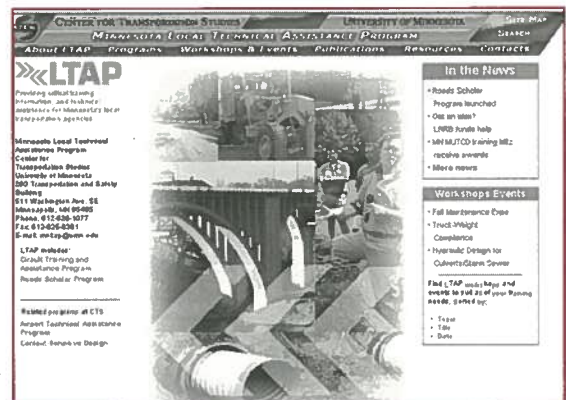
Participants must earn eight credits to complete the program: three credits from required LTAP workshops and five elective credits from a combination of LTAP workshops, maintenance expos, and Circuit Training and Assistance (CTAP) work-

shops. There is no enrollment fee, and students have five years to complete the certificate. Graduates will be recognized through various means, such as a press release to their local newspapers and coverage in the Minnesota LTAP newsletter and on the Web site.

A new brochure describing the curriculum, enrollment procedures, and more was mailed to the LTAP mailing list in October. If you haven't received a copy or would like additional ones, please call **Mindy Jones** at 612-625-1813, or e-mail jones154@umn.edu.

The Roads Scholar certificate is just one of the new pages featured on the redesigned Minnesota LTAP Web site.

Updated this fall, the site includes LTAP's new logo and graphic look, plus improved navigation tools and new content. Check it out at www.mnltap.umn.edu. [CTS](#)



www.mnltap.umn.edu

Taylor from page 1

Brownsville, Texas, Taylor said.

• *Short-lived congestion relief from capacity expansion is not proof that adding capacity is a bad idea.* When lanes are added on heavily used roads, the increased capacity makes travel more attractive for new users, so the road recon-gests—known as the latent/induced demand effect. But to understand if an expansion was worth it anyway, Taylor said, we have to ask the right question: was the goal to get rid of congestion, or was it to foster greater social and economic activity?

• *The effects of latent/induced demand are not confined to capacity expansion.* Improvements such as a ramp metering program or even a new rail line are no less vulnerable to the reconstituting effects of latent/induced demand.

• *Changing land use patterns in an attempt to change travel behavior is a very long-term endeavor.* Significant changes to current land use arrangements would have to be maintained for decades before they could significantly reshape metro development patterns and, in turn, overall travel origins and destinations.

• *Compact development increases congestion.* Increased densities may lead to increased walking and transit use and to less car travel, but they do so in part by increasing congestion.

• *Autos are a central part of metro life, and efforts to manage congestion must accept this fact.* Widespread auto use unquestionably imposes significant costs on society, but it also brings enormous private benefit. The challenge is to recognize all the costs.

• *Absent some form of congestion/parking pricing, development patterns congruent with private vehicle travel offer the best chance for land use planning to reduce congestion.* In the

short term, Taylor recommends solutions including the application of new technologies and "adroit" capacity expansions, and in the long term, some forms of road and parking pricing.

Taylor then posed the following question: if congestion is such a serious problem, why is there so much hostility to the most promising long-term solutions? Most research confirms that motorists do not pay the full costs they impose on society, and there is general agreement that proper pricing of auto use would reduce congestion and increase the attractiveness of other modes. The reason for the hostility, Taylor said, is that public officials see congestion tolls and parking charges as risky and unpopular, and prefer to mitigate congestion with other (less effective) means.

He closed his speech with one final question: does the traveling public's "frosty" reception of pricing suggest that people see congestion as less of a problem than they let on, or do such attitudes reflect that traffic congestion and its solutions are not readily understood or accepted? [CTS](#)

Additional references:

- "Rethinking Traffic Congestion," *Access Magazine*, www.uctc.net/access/access.asp, No.21, Fall 2002
- *Traffic Congestion: Issues and Options*, conference proceedings, www.uclaextension.edu/unex/departamentalPages/publicpolicy/report.pdf

CTS holds Grad Certificate information session

Current and prospective University graduate students joined CTS staff and faculty October 2 to learn more about the center's Graduate Certificate Program in Transportation Studies. The information session drew more than a dozen students and professionals, including transportation planners, civil engineers, and a public policy consultant.

CTS director **Robert Johns** explained that CTS works with a wide range of transportation-related disciplines to help address today's increasingly complex transportation challenges. The 16-credit certificate program is built around an interdisciplinary set of four core courses, two of which are required, a transportation technology seminar, and a growing smorgasbord of electives.

After outlining the requirements for admission, CTS assistant director **Cheri Marti** described the details of the program, which she said offers students an opportunity to deepen their studies in one area or broaden their program beyond a particular field of study. Marti added that the customizable program could also serve as an easy way to move into a full degree program, or simply meet the specific needs of an employer.

Next, Marti and Johns introduced the program's new Director of Graduate Studies, associate professor of civil engineering **Gary**



Staff and faculty met with prospective students October 2.

Davis. Three program faculty members—geography professor **John Adams**, public affairs assistant professor **Kevin J. Krizek**, and civil engineering assistant professor **David Levinson**, also participated in the session. Each emphasized the personal attention given by faculty to certificate program students.

CTS launched the certificate program in 2001 together with the University of Minnesota Graduate School.

For more information about the Graduate Certificate Program in Transportation Studies, contact Student Support Services at the College of Continuing Education (612-624-4000, adv@cce.umn.edu), or visit online at <http://cce.umn.edu/certificates/transportation.shtml>. [CTS](#)

ITS Institute publishes annual report

The Intelligent Transportation Systems (ITS) Institute, housed within CTS, has published its 2003 annual report. Copies were mailed in October; if you haven't received one or would like an extra, please contact CTS. You may also download a PDF of the document at www.its.umn.edu. [CTS](#)

Register now for Freight & Logistics Symposium

There's still time to register for the Seventh Annual Freight and Logistics Symposium, to be held December 5 in Minneapolis.

Topics will include:

- Leading edge trends and concepts
- Community-integrated logistics
- Federal initiatives and legislation

To register, contact Shirley Mueffelman, 612-624-4754, smueffel@cce.umn.edu, or check the CTS Web site at www.cts.umn.edu/events/.

[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.

Dec. 2 Minnesota Association of Asphalt Paving Technologists (MAAPT) 50th Annual Asphalt Conference, Northland Inn, Brooklyn Park. Contact **Paula Quinlan**, 651-636-4666, PJQMOT@concentric.net.

Dec. 5 Freight and Logistics Symposium, Four Points Sheraton Minneapolis Hotel. Contact **Shirley Mueffelman**, 612-624-4754, smueffel@cce.umn.edu.

Jan. 20–23 Minnesota County Engineers Association Annual Conference, Brainerd. Contact **Shirley Mueffelman**, 612-624-4754, smueffel@cce.umn.edu.

Feb. 4–6 City Engineers Association of Minnesota Annual Conference, Brooklyn Center. Contact **Ruth Martin**, 612-624-3492, rmartin@cce.umn.edu.

Feb. 18 CTS Winter Luncheon: **Allan Williams**, chief scientist, Insurance Institute of Highway Safety, Radisson Metrodome Hotel, Minneapolis. Contact **Shirley Mueffelman**, 612-624-4754, smueffel@cce.umn.edu.

Mar. 3 Transportation Career Expo, Coffman Union, Minneapolis. Contact **Mindy Jones**, 612-625-1813, jones154@cts.umn.edu.

Mar. 23–24 Northland "How To" Training and Education Workshop, Fargo, N.D. Sponsor: Northland Chapter of American Traffic Safety Services Association. Visit www.atssa.com.

Apr. 27–28 Minnesota Spring Maintenance Training Expo, St. Cloud Civic Center. Contact **Mindy Jones**, 612-625-1813, jones154@cts.umn.edu.

May 4–5 CTS Fifteenth Annual Transportation Research Conference, RiverCentre, St. Paul. Contact **Shirley Mueffelman**, 612-624-4754, smueffel@cce.umn.edu. [CTS](#)



CAREERS IN TRANSPORTATION

Transportation Jobs and Internships

November 2003

APPLICANTS: If you are interested in these positions, please contact the person(s) listed.

EMPLOYERS: If you have job opportunities related to the field of transportation, CTS will help you publicize them. You can obtain a submission form from the CTS web site at www.cts.umn.edu/education/employfrm.pdf or by calling 612-625-6687. Please send your text by mail, fax, or e-mail; we must receive your text by the 25th of each month in order to list it in the next *CTS Report*. Send submissions to:

Careers in Transportation
Center for Transportation Studies
University of Minnesota
200 Transportation and Safety
Building
511 Washington Avenue S.E.
Minneapolis, MN 55455
Phone: 612-625-6687
Fax: 612-625-6381
E-mail: snopl001@cts.umn.edu

Students interested in civil engineering positions can check the Civil Engineering Department's site at: www.ce.umn.edu/empopp/coop.

Accuracy of ads is the responsibility of the employer. CTS reserves the right to edit ads for length and format. Unless otherwise notified, CTS will run announcements until the application deadlines expire. Ads without a deadline will be run for three consecutive issues, unless otherwise arranged.

The University of Minnesota is committed to the policy that all persons shall have equal access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation. This publication is available in alternative formats upon request. Recycled paper with 20% postconsumer waste.

ENGINEERING & TECHNICAL

WSB & Associates, Inc.

Senior Design Engineer—Municipal Group

WSB & Associates, Inc., a civil engineering consulting firm, has an opening for a senior design engineer. Candidates must have a bachelor's degree in engineering from an accredited engineering school and at least six years of progressive experience in developing feasibility reports and construction plans for city-related projects, street reconstructions, state aid, sewer/water, and new developments, etc. Applicant must have excellent technical, communication, and organizational skills. PE registration required.

Position available in the Minneapolis office. Submit a cover letter and resume to: WSB & Associates, Inc. Attn: Human Resources, 4150 Olson Memorial Hwy., Suite 300, Minneapolis, MN 55422.

Project Manager—Municipal Group

Applicant must have a bachelor's degree in engineering from an accredited engineering school, a P.E. license, and a minimum of 10 years of experience managing municipal projects and clients. Excellent technical, communication, and organizational skills required.

Position available in the Minneapolis office. Submit a cover letter and resume to: WSB & Associates, Inc. Attn: Human Resources, 4150 Olson Memorial Hwy., Suite 300, Minneapolis, MN 55422.

CADD Technician—Water/Wastewater Group

Candidates should have a degree from a two-year accredited technical institution with an emphasis in CADD design (mechanical drafting) using 2-D AutoCADD software. A working knowledge of AutoCADD release 2002, Microsoft Word, Excel, and Windows Explorer is required. A working knowledge of Microstation software is a plus.

Position available in the Minneapolis office. Submit a cover letter and resume

to: WSB & Associates, Inc. Attn: Human Resources, 4150 Olson Memorial Hwy., Suite 300, Minneapolis, MN 55422.

LHB Engineers & Architects

Civil Project Manager

LHB Engineers & Architects is seeking a civil project manager to work in either its Minneapolis or Duluth office. This position requires a bachelor's degree in civil engineering; a P.E.; 10-plus years of experience managing and coordinating municipal projects entailing roadway, utility, sanitary/storm sewer, and bike trail design.

The successful candidate must possess a demonstrated ability to perform as a lead designer and financial manager for all assigned projects.

Knowledge of AutoCAD v.14 and supervisory experience are a plus.

Position offers an excellent compensation and benefits package along with an opportunity to pursue a career path that leads to ownership. LHB Engineers & Architects is an equal opportunity employer.

If interested, please send a resume and cover letter to: Human Resources Manager, LHB Engineers & Architects, 21 West Superior Street, Suite 500, Duluth, MN, 55802. Phone: 218-279-2244; fax 218-727-0751; e-mail Markr.Anderson@LHBCorp.com.

Benshoof & Associates, Inc.

Transportation Engineer

Benshoof & Associates, Inc. seeks a highly motivated person with strong technical and communication skills. The Benshoof firm (www.benshoof.com) is a dynamic, growing consulting organization that focuses on providing services in traffic engineering and transportation planning to public and private organizations. The person hired for this position will serve as a project engineer on a variety of assignments, including sub-area studies, traffic impact studies, environmental assessments, corridor studies, parking studies, and traffic signal design. The position provides excellent opportunities for



fulfillment and growth, including:

- Compensation and benefits package that is highly competitive and responsive to personal capabilities
- Work experiences that provide strong sense of satisfaction and pride
- Congenial and supportive relationships with others in office
- Strong potential for growth in project responsibilities, leadership in firm, and compensation

The minimum educational requirement is a bachelor of science degree in civil engineering, with a transportation engineering emphasis. Potential candidates preferably would have two to four years of transportation engineering experience. Candidates need to demonstrate a strong understanding of transportation engineering principles and methodologies and strong capabilities in computer applications. Effective written and verbal communication skills are highly important.

Send resume to Jim Benshoof, Benshoof & Associates, Inc., 10417 Excelsior Blvd., Suite Two, Hopkins, MN 55343, by fax at 952-238-1671, or by e-mail to jbenshoof@benshoof.com

phone 617-494-2214; e-mail Jarrell@volpe.dot.gov.

SCHOLARSHIPS

Minnesota Chapter, Women's Transportation Seminar

The Minnesota Chapter of Women's Transportation Seminar (WTS) is pleased to offer a \$1,000 scholarship to a female undergraduate and graduate student to encourage the pursuit of careers in transportation-related fields. The scholarship is competitive and is based on the applicant's specific transportation goals, academic record and transportation related activities or job skills.

The minimum criteria for selection are as follows:

- Open to women;
- GPA of 3.0 or higher;
- Currently enrolled in a degree program in a transportation-related field, such as transportation engineering, planning, finance or logistics.
- Plans to pursue a career in transportation or a transportation-related field;
- Proof of enrollment in graduate or undergraduate degree program.

Applications will be mailed to colleges and universities in October.

Applications are also available by contacting Erin Mitchell by phone at 612.349.7780 or e-mail at Erin.Mitchell@metc.state.mn.us. The application form, an accompanying transcript, personal statement, and letter(s) of recommendation are due Wednesday, November 26, 2003 (postmark date).

MISCELLANEOUS

US/DOT's Volpe Center

Transportation-related positions

US/DOT's Volpe Center has a variety of opportunities for individuals at both junior and mid-levels in a wide range of transportation project applications.

The following are some of the available positions: transportation economists and analysts; transportation and community planners; policy analysts; operations research analysts; travel survey researchers; traffic engineers; mechanical engineers; and organizational development and design specialists. The John A. Volpe Transportation Internship is also available.

The positions are located in the Office of System and Economic Assessment at the US/DOT's Volpe Center in Cambridge, MA.

For more information on career opportunities at the Volpe Center visit www.volpe.dot.gov/career/index.html or contact Susan Jarrell, DTS-84, Office of Human Resources, RSPA/Volpe Center, Kendall Square, Cambridge, MA 02142,