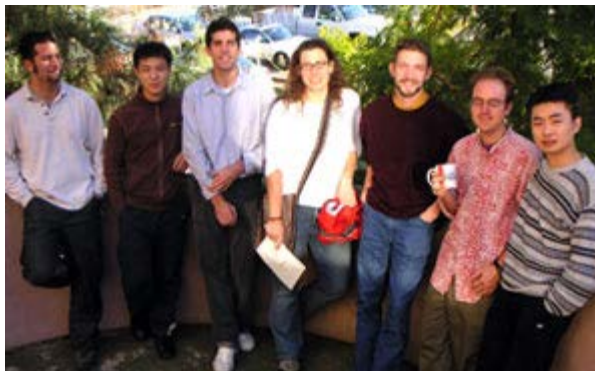


# ITS UC DAVIS e-news



ITS-Davis e-news is the electronic newsletter of the UC Davis Institute of Transportation Studies. Written for alumni and friends, ITS-Davis e-news reports information from ITS-Davis and affiliated campus departments that host transportation-related programs. For previous issues, see the [e-news archives](#).

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## ▶ Research Results

### MEET AND GREET: ITS-Davis Students and Faculty off to TRB

At least 17 ITS-Davis students and a collection of faculty are off to Washington, D.C. for the 84th Annual Meeting of the Transportation Research Board, January 9 - 13. The meeting provides transportation researchers, planners, policy makers, and administrators an opportunity to learn the latest trends in the field and share their research. A majority of this year's ITS-Davis delegation is also presenting papers or participating on panels. To see the list of papers, [click here](#). The classy and always entertaining annual ITS-Davis reception at TRB is January 11, 8:00 p.m. - midnight, at the Omni Shoreham Hotel.

### WILL THEY WALK? ITS-Davis Researchers Present Findings at TRB on Link between Neighborhood Design and Travel Behavior

Local governments face tough planning decisions that must balance the need for new housing with citizen concerns about traffic congestion, air pollution, and quality of life. More and more, they are considering "smart growth" strategies designed to



Trees shade sidewalks in pedestrian-friendly downtown Davis

counter sprawling patterns that now dominate new development in many metropolitan areas.

Studies show that people who live in smart growth areas - higher-density, mixed use neighborhoods that are pedestrian-friendly and have good transit access - drive less than people who live in more conventional suburban neighborhoods. But there's been little study of whether neighborhood design, itself, influences travel behavior or of whether other factors, such as attitudes about travel, explain the connection between neighborhood design and travel behavior.

Until now, that is.

UC Davis researchers are presenting findings at the Annual Transportation Research Board meeting this month that support the notion that land-use policies designed specifically to reduce the need to drive will actually lead to less driving.

Professor Susan Handy, with students Xinyu Cao and Ted Buehler, and professor Pat Mokhtarian will present new evidence that helps answer the question: If cities increase the opportunities for driving less through land-use policies, will people drive less and walk more, thereby reducing energy use and pollution?

The objectives of the study were, first, to confirm the role of attitudes and preferences in explaining the observed link between neighborhood design and travel behavior, and, second, to more directly test the general hypothesis that neighborhood design has a causal effect on travel behavior. The research design enabled both cross-sectional and quasi-longitudinal analyses.

While acknowledging that more study is necessary, the researchers found a causal relationship between changes in travel behavior and changes in neighborhood design, even when accounting for attitudes: an increase in accessibility leads to a decrease in driving, all else equal.

Policies that could increase accessibility range from mixed-use zoning in new areas to "Main Street" programs that promote revitalization and infill development in older neighborhoods.

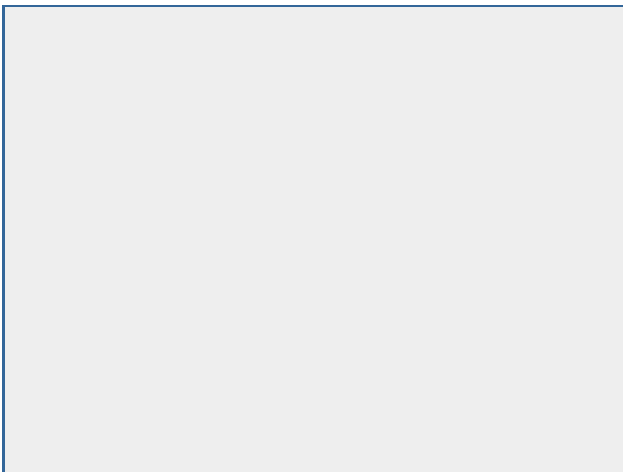
However, the results also suggest that changes in neighborhood characteristics will have a greater impact on walking than on driving. Increased access, more alternatives to driving, improved safety, traffic calming, and enhanced sidewalk networks may all lead to more walking, researchers found.

Although this study does not definitively prove that land-use policies can reduce driving and increase walking, it provides new evidence that supports the adoption of such policies.



Sprawling pattern of retail development promotes vehicular traffic

**MORE OF A GOOD THING: Increased Access to Telecommunications Leads to More Travel**



Conventional wisdom says that an increase in telecommunications would go hand-in-hand with a decrease in travel. After all, that's the theory behind telecommuting and teleshopping; policy makers develop public policy strategies to encourage telecommuting and use of telecommunications devices with the expectation that it results in less travel.

But ITS-Davis post-doctoral researcher Sangho Choo's dissertation findings suggest that the opposite may be true, that the most significant causal relationships between travel and telecommunications are complementary. That is, as telecommunications use and access rise, so does associated travel, and vice versa.

Choo developed a conceptual model that considered previous research on travel, telecommunications, land use, economic activity, and socio-demographic variables. Then, he applied structural equation models using time-series data spanning 1950



Pat Mokhtarian with Sangho Choo

to 2000 to examine the aggregate relationships between telecommunication and travel. He explored possible relationships between transportation (cars, public transit, and airlines) and telecommunications (local telephone calls, toll calls, and mobile phone subscriptions) modes, for both pair-wise and composite comparisons.

How does he explain the counterintuitive findings? Consider, for example, telecommuting. "Yes, people save time because they don't commute. But that gives them more time for different recreational and leisure activities, some of which may involve travel," he explains.

In offering another example, Choo notes that without a phone, one can't make appointments right away. "You have to wait, which means you probably do not travel." More typical of today's world with mobile phones, he adds, "You can reach your friends and make plans right away. And that usually generates travel."

Choo's research is ground-breaking. Traditional travel demand research has considered other factors such as family income and household size, but not the relationship between telecommunications and travel, and in such great detail.

Studying this relationship, Choo believes, will improve current travel demand forecasting models. One challenge to forecasters, however, is a lack of data. When the Bureau of Transportation Statistics does its next nationwide travel survey, as it does every five years, Choo hopes researchers will incorporate questions about telecommunications into the travel survey. "I will try to reach them, and if there's a chance to get involved, I would like to do that."

Choo currently is seeking a position in academia. He came to UC Davis about five years ago from Korea, where he had worked as a transportation planner for the Korea Transport Institute. It is true that we are living in a digital society. "I found several papers by Dr. Mokhtarian, and knew immediately that I wanted to study with the world authority on this subject."

## TRANSPORTATION PUBLICATIONS FROM UC DAVIS: Hot off the Presses

Following is a list of reprints and research reports published since October.

### Reprints

**Inferring Origin-Destination Trip Matrices with a Decoupled GLS Path Flow Estimator.** Nie, Yu, WW. Recker, H. M. Zhang. *ITS-Davis and ITS-Irvine* . July 2004. UCD-ITS-RP-04-25

**[Hydrogen as an Energy Carrier: Outlook for 2010, 2030, and 2050.](#)** Ogden, Joan. *Pew Center on Global Climate Change and the National Commission on Energy Policy* . March 2004. UCD-ITS-RP-04-24

### Research Reports

**A Methodology to Assess the Reliability of Hydrogen-based Transportation Energy Systems.** McCarthy, Ryan. *ITS-Davis* . December 2004. UCD-ITS-RR-04-36.

**Using Natural Gas Transmission Pipeline Costs to Estimate Hydrogen Pipeline Costs.** Parker, Nathan. *ITS-Davis*. December 2004. UCD-ITS-RR-04-35

**[Conceptual Design of Optimized Fossil Energy Systems with Capture and Sequestration of Carbon Dioxide.](#)** Ogden, Joan. *Report to the United States Department of Energy*. *ITS-Davis* . September 2004. Publication No. UCD-ITS-RR-04-34.

**[Hydrogen Delivery Model for H2A Analysis: A Spreadsheet Model for Hydrogen Delivery Scenarios.](#)** Ogden, Joan. *Report to the United States Department of Energy*. *ITS-Davis*. May 2004. Publication No. UCD-ITS-RR-04-33.

[The Price of Regulation](#). Sperling, Dan, Ethan Abeles, David Bunch, Andrew Burke, Belinda Chen, Ken Kurani, Tom Turrentine. *Access Magazine*. Fall 2004. UCD-ITS-RR-04-32

[Automobile Buyer Decisions about Fuel Economy and Fuel Efficiency](#). Final Report to United States Department of Energy and Energy Foundation. Kurani, Kenneth S. and Thomas Turrentine. ITS-Davis. September 2004. Publication No. UCD-ITS-RR-04-31.

**Publications can be ordered by fax, e-mail or mail. Most recent publications are available online.** ITS-Davis is in the process of getting all research reports in downloadable pdf format online.

**Ordering information:** <http://www.its.ucdavis.edu/publications>

**E-mail:** [itspublications@ucdavis.edu](mailto:itspublications@ucdavis.edu)

**Fax:** 530-752-6572

**Mail:** Publications, Institute of Transportation Studies, UC Davis, One Shields Avenue, Davis, CA 95616-8762

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## Education Highlights

### RETURNING TO SCHOOL? Applications Due Soon

Applications for the 2005 - 2006 academic year are due March 1, however a much earlier deadline, January 15, looms for those seeking UC Davis graduate fellowships. Learn more at: <http://ttp.ucdavis.edu/TTPAdmissionInstructions.htm>

### ALUMNI PROFILE: Konstadinos "Kostas" Goulias, Ph.D. Civil Engineering, 1991

Shortly after receiving his Ph.D., Konstadinos "Kostas" Goulias accepted an assistant professor position at Penn State. By 2002, he had become a full professor in Civil and Environmental Engineering and director of the Mid-Atlantic Universities Transportation Center, which is a regional consortium of universities. But after 12 years in the Northeast, Kostas was yearning for change - and for California. He returned to UC Santa Barbara last spring and began teaching in the Geography Department last fall.

Having worked in a more traditional academic engineering program has impressed upon him just how unique the UC System, and UC Davis in particular, is.

"Engineers think about components and systems and often forget they're designed for humans, which means you have to account for human capacities and limitations. Davis takes into account a much more integrated approach.

"My move from a College of Engineering at Penn State to a College of Letters and Sciences at UCSB is heavily influenced by this. I feel like I belong equally in engineering and social sciences."

A UC Davis student before ITS-Davis formally existed, Kostas studied transportation demand and modeling with an emphasis on stochastic processes and statistics with Ryuichi Kitamura. His colleagues, Ram Pendyala, Ken Kurani, Tom Turrentine, Mark Delucchi, Michael Quanlu Wang, and Randy Guensler, were also involved in multidisciplinary research that broke the typical engineering paradigm and set new standards in designing transportation systems.

"None of us thinks just in terms of engineering, or policy, or psychology. We developed this approach at UC Davis, and it's not at all typical of other institutions."

Kostas believes there is a great deal more interaction among researchers at UC Davis than elsewhere. "More than anything else, that's the most valuable element - many researchers, from varied disciplines, exchanging ideas. That's the unique element of ITS-Davis."

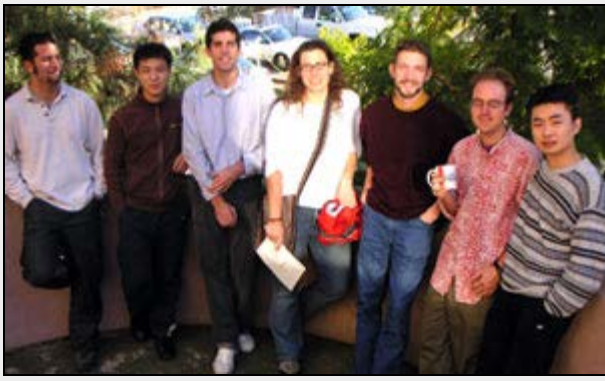
Here Kostas says he also developed important skills, including how to work in a team and how to conduct research. "At Davis I had a chance to develop an idea, write the proposal, get the money, and run the research project. By doing that before graduating, I had the tools to go anywhere and be successful. Not every other university does this."

There was also a certain air of optimism here. "With respect to environmental issues and broader social problems relevant to transportation, everybody instilled a positive view that with scientific engineering, we can solve these problems. There is no cynicism that I see elsewhere."



Konstadinos "Kostas" Goulias

### GET INVOLVED! ITS-Davis Student Council Plans 2005 Activities



ITS-Davis Student Council Members: Justin Regnier, Steven Ma, Jonathan Weinert, Carrie Ashendel, Darius Roberts, Chris Congleton, Peng Wu; Not pictured: Brent Riffel, Shyam Mennon, and Brett Williams

The newly formed ITS-Davis Student Council is planning activities around recruitment, student community building, class quality, and external relations in 2005. In each topic area, students are developing ways to enhance the academic and educational experiences and build ITS-Davis's link to the outside community. Their plans include building an interactive Web site, planning a recruitment day, mixers and social outings, clinics with faculty advisors, an online student confidential discussion group, and coordinating with professional associations and government agencies. Jonathan Weinert, a Transportation Technology and Policy Ph.D. student, established the ITS-Davis Student Council and pulled together a team of eight committee chairs who are helping to implement this new organizing and outreach effort.

### COMING SOON: UCTC Student Conference

The Eleventh Annual University of California Transportation Center (UCTC) Student Conference is coming up February 5 - 6. Graduate students at UC Irvine are this year's hosts. The conference, "Signs Ahead: Emerging Themes in Transportation Research," will be held at the Atrium Hotel, directly across from the Orange County Airport.



Dan Rubins and Justin Regnier at last year's UCTC Student Conference, hosted by ITS-Davis

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### Development Update

#### FRIENDS OF ITS-DAVIS: 2004 Fundraising Report



The *Friends of ITS-Davis* annual fund ended 2004 on high notes, surpassing its goal by raising more than \$53,000. Three foundations provided significant support through matching grant programs. A total of 78 individuals or couples, some with employers' matching gifts, contributed. Forty-three were first-time donors.

The McWick Technology and Otto Family foundations supported the main *Friends* fund, contributing \$20,500 to match gifts of \$100 or more on a one-to-one basis. "We received news on December 30 of a generous gift that put us over the top. It was a wonderful way to end the year," said Associate Development Director Renee Pearl, who manages *Friends*.

A third matching grant, from the Joseph Beggs Foundation for Kinematics, offered \$7,500 via a three-to-one match specifically for the *Challenge X: Crossover to Sustainable Mobility* student vehicle design team. It targeted alumni of the Mechanical Engineering department's hybrid electric vehicle teams (formerly the FutureTruck and FutureCar competition projects). By December 31, \$2,790 in individual pledges claimed the entire match, resulting in more than \$10,000 raised for this year's *Challenge X* team. "Making this match was a real team effort, and uniting HEV program alumni with current students was very gratifying as well," Pearl said.

Created in 2003, *Friends* funds competitive student research and project grants, conference travel funds, computer resources, and awards to recognize outstanding papers and teaching assistants. Donations are welcome any time. [Learn more about the program](#) or [download the contribution form](#).

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### ITS-Davis and Campus Highlights

## THE PATH TO A HYDROGEN FUTURE: ITS-Davis Contributes to Hydrogen Highway Blueprint Plan

In a few short weeks, Gov. Arnold Schwarzenegger will unveil the Blueprint Plan for implementing his Hydrogen Highway proposal to jump-start the fuel cell transportation industry in California. UC Davis, site of the official Hydrogen Highway program launch last April, has continued to play a key role over the last eight months in developing the implementation plan.

Professor Joan Ogden, co-director of ITS-Davis's Hydrogen Pathways research program, has served as the academic representative on the 15-member Implementation Advisory Panel appointed by the governor. Joining Ogden on the panel were leaders of the state's environmental, energy, and transportation agencies, a U.S. Department of Energy representative, senior executives of energy and automotive companies, and environmental NGO representatives.

"The process has been quite interesting," Ogden says. "ITS-Davis researchers have been involved in every aspect of formulating the Hydrogen Highway Blueprint Plan."

In addition to Ogden's work on the panel, ITS-Davis students and researchers contributed to all five different Topic Teams formed to address specific issues, accept public input, and recommend strategies to incorporate into the Blueprint Plan. The Topic Teams examined issues such as technical options for producing and delivering hydrogen, societal benefits and costs associated with a transformation to hydrogen, codes and standards, and safety considerations.

"Our researchers and students contributed invaluable technical backup. Our calculations and technical input played a significant role in developing the Blueprint Plan. UC Davis was, by far, the dominant academic contributor," Ogden says.

The steps for launching a shift toward hydrogen as a transportation fuel are complex. As Ogden and ITS-Davis Director Dan Sperling have stated in numerous public forums, the challenges of safety, storage, distribution, cost, and market transformation are significant. Equally as significant are the potential societal benefits, including cleaner air, reduced greenhouse gas emissions, and energy security.

"If not hydrogen, then what?" posits Sperling. There is no long-term option that is more compelling than hydrogen; now is the time to lay the foundation, he says. The California Hydrogen Highway Blueprint Plan represents a first step.

"We see a tremendous opportunity in the future for building a California high-tech clean energy industry, notably with hydrogen and fuel cells," Ogden adds. To see that clean-tech success, however, the state must build on its foundation by investing in research capabilities, she says. "Investing in research will be critical to our state's economic future, to a hydrogen economy future, and to a clean, secure global environment."

For more info: [www.hydrogenhighway.ca.gov](http://www.hydrogenhighway.ca.gov)



## REACHING OUT: ITS-Davis Presents to U.S. Senate Caucus

While in Washington for the annual TRB conference in January, ITS-Davis professors Dan Sperling and Joan Ogden and Hydrogen Pathways associate director Anthony Eggert, together with a representative from the California Fuel Cell Partnership (CaFCP), are meeting with the Senate Hydrogen and Fuel Cell Caucus. The Hydrogen and Fuel Cell Caucus, co-chaired by Byron Dorgan (D-N.D.) and Lindsey Graham (R-S.C.), is a bipartisan group whose mission is to bring attention to hydrogen's role in long-term national energy and environmental security. The CaFCP's Catherine Dunwoody will discuss recent hydrogen and fuel cell activities in California. Ogden and Sperling will focus on clean, low-cost strategies for hydrogen production and delivery, and policy options for fuel cell vehicles.

## AWARDS & ACCOMPLISHMENTS

**ITS-Davis Director Dan Sperling** has been selected as a 2004 National Associate of the National Academies. The program recognizes extraordinary contributions to the National Academies through pro-bono services to the National Research Council (NRC) and Institute of Medicine programs. Sperling was chosen for his service on a number of National Academy of Engineering and Transportation Research Board committees, including transportation finance and hydrogen committees during 2004.

**Professor Robert Johnston** has been appointed to a National Academies Committee on Determination of the State of the Practice in Metropolitan Area Travel Forecasting. The committee will meet over the course of a year and produce a report. The group's first meeting was held early this month.

**Bryan Jungers**, a Civil and Environmental Engineering master's student, was one of 70 student leaders nationwide who attended the Youth Energy Leadership Summit in early January in Washington, D.C. The conference was sponsored by Energy Action.

## ALUMS & STAFF IN JAPAN: ITS-Davis Well Represented at Conference



Anthony Eggert with Nippon Oil's Jun Uehara, Tomonari Komiya, and Kenichi Odama

In November, ITS-Davis alum and [Hydrogen Pathways](#) research program associate director Anthony Eggert, alum and Hydrogen Pathways researcher Tim Lipman, and alum David Friedman, now working with the Union of Concerned Scientists, participated in the 2004 Frontiers in Engineering conference in Kyoto, Japan.

The invitation-only conference, jointly hosted by the National Academy of Engineering and Japan Science and Technology organization, is designed to foster information and knowledge transfer between scientists and engineers from the two countries. The topics of the conference were hydrogen energy, biotechnology, and information technology for the elderly.

While in Japan, Eggert also took the opportunity to meet and discuss recent Hydrogen Pathway research activities with program sponsors Nissan, Honda, Toyota, and Subaru. He also visited the Nippon Oil hydrogen fueling station in Yokohama.

## WINTER SEMINAR SERIES: More Great Speakers

ITS-Davis kicks off its Winter Quarter Seminar Series at a new time and place. All seminars will now be on Fridays, from 2:30 p.m. - 3:45 p.m. in 55 Roessler Hall. The seminars are free and open to the public.

### January 21

Shannon Baxter, Hydrogen and Alternative Energy Advisor, CALEPA  
*California Hydrogen Highway Network*

### January 28

Nicholas Lutsey, M.S./Ph.D. Student, Transportation Technology and Policy, UC Davis  
*Air Resources Board New Greenhouse Gas Law*

### February 11

Chris Congleton, Ph.D. Student, Transportation Technology and Policy, UC Davis  
*Modeling the Collective Safety Benefits of Non-Motorization*

### February 18

Arpad Horvath, UC Berkeley  
*Title to be announced*

### February 25

Brian Taylor, Assoc. Prof. and Vice-Chair, Urban Planning, UCLA  
*Title to be announced*

### March 4

David Robertson, Chair and Professor, English, UC Davis  
*Title to be announced*

### March 11

Charles Rivasplata, Ph.D. Candidate, Transportation Technology and Policy, UC Davis  
*Transit Integration in Britain*

## BRINGING WORLD VIEWS TO DAVIS: Visiting Scholars Add Perspective

ITS-Davis is fortunate to have visiting scholars from international academic, corporate, government, and nongovernmental organizations who come to Davis for as little as a month or as long as a year. They offer formal and informal seminars, participate in research, and occasionally teach courses. Several scholars have recently been or are currently on campus.

### Thomas Fabian

Berlin University of Technology  
2004

### Mirko Meyer-Grünefeldt

University of Applied Sciences HTW, Germany  
2004 - 2005

### Antoine Simonnet

TOTAL, France  
2004 - 2005

### Paulo Isabel Dos Reis

Petrobras, Brazil  
2004 - 2005

### Eunmi Park, Ph.D.

Mokwon University, Korea  
2004 - 2005

### Lihong Zhu

Tianjin Institute of Power Sources, China  
2004 - 2005

### Sangu Gu Kim, Ph.D.

Yosu National University, Korea  
2004 - 2005

### Attilio Pigneri

Universita di Lecce, Italy  
2004 - 2005

### Seon Ha Lee, Ph.D.

### Satish Sahasrabudhe

Transport Commission, Mumbai,

Yongju National  
University, Korea  
2004 - 2005

India  
2004



The ITS-Davis Board of Advisors met in October 2004 on the UC Davis campus. 1st row (L-R) Hani Mahmassani, Ph.D., Neil Otto, Dan Sperling, Eldon Priestley, Ph.D., Jan Sharpless, Wendy James, Rutger Friberg. 2nd row (L-R): Rick Zalesky, Jr., Paul Howard, Geoff Ballard, Ph.D., Larry Johnson, Ph.D., Paul MacCready, Ph.D., Tony Finizza, Ph.D., Larry Orcutt, Andreas Truckenbrodt, Ph.D.

### EXTRA! READ ALL ABOUT IT! ITS-Davis and UC Davis Researchers in the News

Anthony Eggert, in *San Francisco Chronicle*, December 20, in a science feature on the hopes and challenges of hydrogen fuel for transportation

Pat Mokhtarian, on *National Public Radio Morning Edition*, November 24, in a feature story on "Super Commuters" who travel 50 or more miles per day

Anthony Eggert, on *MSNBC.COM*, December 6, in a feature on home-fueling with hydrogen, and the hope for a hydrogen transportation future

Anthony Eggert, in *Outside Magazine Online*, November 19, in a story about New York's plan to lease two Honda fuel cell vehicles

Tod Kershaw, in *The Sacramento Bee*, October 27, in an article on increasing interest in using biodiesel as an alternative fuel

Dan Sperling, on *EV World.com*, October 16, in a feature article on his debate with author Joe Romm on the future of hydrogen at the Electric Drive Transportation Association annual meeting

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