Cover Page

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Biographical Sketch
Kevin J. Krizek, Ph.D.

Kevin J. Krizek, assistant professor, teaches courses in land use, transportation, and urban planning at the Humphrey Institute. He directs the Active Communities / Transportation (ACT) research group at the University of Minnesota-a collection of students and researchers focusing on land use-transportation policies and programs that influence household residential location decisions and travel behavior (including cycling). Krizek has published in the areas of transportation demand management, travel behavior, neighborhood accessibility, and sustainable development. His work has appeared in journals spanning urban planning, public health, and transportation. These journals include: the Journal of the American Planning Association, the Journal of Planning Education and Research, American Journal of Health Promotion, Transportation, Housing Policy Debate, Transport Reviews, and Transportation Research part D.

Before joining the Institute, Krizek worked for the American Planning Association as part of the their Growing Smart Initiative, the Teton County (Wyoming) Planning Department; and a transportation engineering consulting firm (Jackson, Wyoming). He is the immediate past Vice-President of the board of the Minnesota Bicycle and Pedestrian Alliance and currently secretary of the Transportation Research Board committee on transportation and land development.

Krizek earned a Ph.D. in Urban Design and Planning and M.S.C.E. from the University of Washington in Seattle. His master's degree in planning is from the University of North Carolina at Chapel Hill and his undergraduate degree is from Northwestern University.

David M. Levinson, Ph.D.
David Levinson is an associate professor of Civil Engineering. His principal interests are in network growth and travel behavior. Levinson's work addresses questions about the underlying the cost structure, the financing mechanism, and the price charged for use of various transportation mechanisms and innovations. These questions depend on the available technology, while the rate of technological change cannot be separated from the industrial organization and market conditions which spawns it. Benefits from deploying new infrastructure in an area with little or no service may have far-ranging impacts involving restructuring the other aspects of industrial and human activity patterns.

Levinson has conducted research into travel behavior and worked as a transportation planner, developing integrated transportation - land use models used in Montgomery County, Maryland and applying those models for multimodal network planning and for growth management. Recent research focuses on road pricing and network growth. He earned his Ph.D in Transportation Engineering at U.C. Berkeley in 1998.

Networks and Places: Integrating Transportation, Land Use, and Urban Design
University of Minnesota

1) Introduction narrative

Concerns about auto-reliance, vehicle emissions, traffic congestion, and sprawl have generated considerable interest about the location and character of development. Urban planning and transportation engineering education in North America have long embraced the need to address such concerns—they comprise the reasons why many students choose to pursue careers in transportation related fields in the first place. But does the manner in which we are teaching remedies to these problems do justice to the different rationales and strategies that target such problems? Are they consistent with Smart Growth strategies?

A topic that has received increased attention over the past decade from practitioners and academics alike is integrated land use and transportation. In response, we now see a burgeoning number of courses in planning programs offering specializations that bridge these two topics. A graduate course offered at the University of Minnesota, *Networks and Places* (co-taught by Krizek and Levinson), is designed to provide students with an overview of land use and transportation planning in the U.S. and where appropriate, from international settings. The focus is on how to use planning tools, policies, or other infrastructure investments to design places and networks that are consistent with the goals and objectives of community planning programs or Smart Growth initiatives. The overall mission is to introduce students to: (1) practices and debates in various substantive areas of land use and transportation, (2) different players (agents) involved in decisions, including their motives, behaviors, and decisions, and (3) the interrelationships between each of these players, especially when evaluating public policy options.

The laboratory component of the course (comprising 33 percent of the grade) provides an opportunity to apply these ideas to a land use plan, with a focus on smart growth principles. The intent of the lab is to heighten students' understanding of the connection between transportation and land use through network analysis and design as well as common procedures and considerations that are used to create many land use plans. For the semester project, groups of three or four students use their planning and creative skills to design a "land bridge" over an assigned section of Twin Cities freeway. A land bridge is reclaimed land using what is essentially a large bridge over a freeway.

Land bridges have been used in the past four versions of the course for three reasons. First, they offer a blank slate for new land uses in a developed urban area. Second, they provide the opportunity for innovation in using planning ideals to advance smart growth principles. Third, land bridges have been promised by public figures since the beginning of the interstate highway system. Students design a land use plan for the reclaimed land based on an analysis of the existing conditions in the neighborhood, meetings with neighborhood stakeholders, analysis of the traffic and transit impacts of new development, economic considerations, regulatory constraints, and (most importantly) their own creativity.

While the land bridges comprise a relatively specific application, many of the central tenets could be easily applied to other settings. For example, many of the applications, skills, or exercises are easily transferable to applied to lab exercises focusing on, for example, greenspace development, the design of a light rail transit stop or developing neighborhood-scale land use-transportation plan. The core principles and learning outcomes similar. The aim is to provide students with an actual case setting for which there is data and the opportunity for innovation.

The below discussion focuses on two parallel parts of this course: the classroom portion and the laboratory portion (the land bridge).

Educational components

We begin by drawing attention to the degree of reductionism that exists within typical urban planning courses and to a certain extent, entire programs of study. A signature element of planning education lies in its ability to draw on closely aligned disciplines such as engineering, public policy, architecture, and sociology. Students in planning programs repeatedly mention their interest in synthesizing perspectives from multiple disciplines and applying what is learned to target important social problems. To help educate students in a focused and disciplined manner, it is has become standard practice to encourage planning students to choose coursework aimed towards at least one specialization of planning. This course—in the true spirit of smart growth—aims to bridge multiple specializations.

The mantra of planning education has always been to train students to be generalists first and specialists second; but is it the case that this mantra could be turned on its head? It is important to recognize—and address—the deficiencies of an educational system that channels students down paths to master independent specializations of urban planning, possibly at the expense of a broader understanding of central concepts. Anecdotal evidence from discussions at faculty meetings in many programs suggests that specializations may be fostering tunnel vision in which students graduate with little to no exposure to closely aligned planning approaches.

Many planning strategies hinging on "sustainable development", statewide growth management or “smart growth,” require integrated approaches, combined methods, and synergy between specializations. Affordable housing by itself holds little merit without roads (transportation), public services (land use), employment opportunities (economic development), clean water (environmental), or other amenities. This is point brought forth by Birch (2001) who calls for:

> “an entirely different kind of planner than in the past ... one who is enriched with knowledge and skills emanating from a variety of disciplines ... including environmental planning and growth management with its unity of land use, infrastructure investment, and regulation; transportation planning with its understanding of land use, finance, and travel behavior” (page 415).

Aside from a final capstone or workshop course where students are encouraged to apply approaches that integrate various subfields, the opportunities for bridging between fields of specialization may go unrealized.

Smart Growth Principles

While there exist many calls for cross-pollination within the planning literature—too many to recite here—a better understanding of how such calls work their way into planning curricula and planning pedagogy is lacking. Our focus herein is on efforts to integrate two fields of specializations, land use and transportation. We do so not only because this is the course we teach at the University of Minnesota, but also because these are topics requiring increased attention in policy circles.

This is particularly relevant considering that, independently, land use and transportation are among the top five specialization areas for planning students. Interest in these topics is brought about as concerns related to traffic congestion, urban sprawl, and urban growth are now among the most important issues facing the United States, edging out more traditional matters, such as

crime and education. Public officials, business interests, and citizens are aggressively seeking strategies to curb automobile-reliance and the consequences it engenders (e.g., congestion, seas of parking lots, increased rates of natural resource consumption). Many communities are striving for initiatives aimed to de-emphasize the automobile and encourage "smarter" and more "livable" land use planning.

The central hinge of these efforts relies on an often touted—but often unrealized—relationship between land use and transportation planning. There are at least three reasons to suggest increased pedagogical attention should be devoted to integrating these two topics. First, the land use and transportation network of communities are the fundamental building blocks that form the most defining aspects of a community's character. As communities increasingly embrace this relatively abstract notion, land use and transportation is likely to play a prominent role.

Second, the act of travel occurs because someone wants to do something somewhere else. This idea, suggested by Jules Dupuit (1844) who wrote "*The ultimate aim of a means of communication must be to reduce not the costs of transport, but the costs of production"* was rearticulated in several later writings, and prompts us to consider that the nature of travel (i.e., transportation) is derived from the amount and nature of activities (i.e., land use). Thus, an individual's location vis-à-vis the distribution of sites of potential activity is an important determinant of travel behavior and location decisions.

Third, the skills and knowledge gained from students combining both land use and transportation are among the most sought after (at least for transportation professionals). A recent survey of transportation practitioners asked those involved in hiring decisions for professional transportation planners to rate the importance of different topics and skills for entry-level planners. The top five topics in descending order of importance were: transportation and land use connection, regional transportation planning, public involvement, professional ethics, and land-use planning. The appearance of land use twice in this list is notable and is likely attributed to the spread of contemporary planning initiatives derived from tenets hinging on both transportation and land use perspectives (e.g., minimum parking requirements, infill development, jobs-housing balance, location efficient mortgages, pedestrian friendly design, smart growth).

It is therefore not surprising to find land use-transportation initiatives front-and-center in an increasing number of planning documents such as comprehensive plans, community planning goals, and urban modeling applications. The topic of land use-transportation initiatives has even formed the backbone for many community based political campaigns. One can quickly see how a thorough understanding of land use-transportation patterns and interaction is the foundation for understanding:

(a) the potential of land use planning to moderate (or exacerbate) the demand for travel,
(b) the value of concurrency or adequate public facility regulations ,
(c) the impact of transportation facilities (e.g., second and third ring highways) on development,
(d) roads, highways, and parking as significant land uses themselves with environmental and quality of life effects.

The well-versed urban planner must adhere to an interdisciplinary perspective that integrates knowledge of development patterns, spatial structure, household preferences, and the circulation patterns that result. The land use planner is now expected to embody at least rudimentary knowledge of regional circulation patterns and travel behavior; transportation planners are expected to understand—and play a role in addressing—the generators of such traffic.

The marriage between land use and transportation is a natural one. Unfortunately, however, it is one that has traditionally been underserved in planning curricula. Only recently has there been an increase in the number of programs offering courses that bridge these two disciplines.

The focus on the land bridge as part of this course, by its nature, is also a smart growth planning tool. All of the sites selected are in center-city neighborhoods bifurcated by wide Interstate highway trenches in Minneapolis or St. Paul. As a result, a land bridge provides students with a ready-to-build site that encourages students to implement smart growth principles. First and foremost, the bridge provides a creative infill redevelopment opportunity, incrementally reducing the demand for development on the urban fringe and increasing opportunities for open space preservation by intensifying the use of an existing urban space. This community reinvestment requires the participation of the established neighborhoods surrounding the site, an element incorporated into the class project. Students meet with neighborhood groups to discuss community history, goals, and vision.

The high construction cost of a land bridge requires students to think carefully about the highest and best use for the land, just as if they were redeveloping a brownfield site with high remediation costs. Students are encouraged to use their imaginations when designing the bridge, but also to consider financial feasibility. This consideration, along with students' own planning ideals, leads to the implementation of smart growth principles such as mixed-use buildings, compact building design, and high densities. Using policies and skills learned in the broader discussion of Networks and Places, most projects include provisions for non-motorized travel, including pedestrian and bicycle connections.

Skills and Data

The classroom portion of the class provides the opportunity to introduce students to practices and debates in each substantive area, and to make clear their interrelationships. In this light, basic skills that appear to be stressed are: (a) knowledge of land use-transportation interrelationships, (b) ability to succinctly articulate and consider multiple perspectives and partied about each topic, and (c) an understanding of how such land use-transportation initiatives fit into the larger milieu of planning strategies.

Community members play a vital role in the land bridge projects. The course teaching assistant contacted neighborhood leaders in each study area to provide students with the opportunity to engage in a small-scale stakeholder participation effort. Each group met with at least one neighborhood representative (usually the president of the neighborhood association) at least once to discuss neighborhood history, goals, and vision. Students came to the meetings prepared with background knowledge from regional, city, and neighborhood planning documents. Performing a thorough stakeholder analysis is emphasized as a vital part to creating a successful neighborhood design or plan

The technical skills needed for land bridge project are much more concrete. They include GIS; understanding how to find, use and apply data used by planning practitioners; using design features to achieve network goals; zoning analysis; benefit-cost analysis; parking requirements; and local traffic analysis. These skills are introduced in weekly lab sessions and most have a brief assignment for evaluation. The final project combines these skills and brief assignments into a final paper and presentation.

The land bridge project relies heavily on the use of GIS, and therefore requires a substantial amount of local data. To gain a basic understanding of the existing conditions in their study area, students begin the project by creating land use and demographic maps of a one-mile radius

surrounding the land bridge site. They are provided with GIS shape files delineating highways, local roads, land use, areas and points of interest (parks, schools, etc), transit routes and stops, bicycle trails, sidewalks, and digital orthophotos (aerial views). Depending on the locale, tracking down these data may require a substantial amount of effort. In the Twin Cities, much of this information is distributed freely on the web by MetroGIS, a consortium of metro-area public agencies that share GIS data (www.datafinder.org). For demographic maps, national data are readily available through the U.S. Census and ESRI's Geography Network (www.geographynetwork.com).

Other data sources can enhance the level of analysis. ReferenceUSA, an online service that many public and university libraries subscribe to, allows users to download address and other information for all businesses in a geographic area. Students can then geocode these addresses using GIS and map the types of businesses in their study area. Combined with demographic information, this tool helps students justify the mix of uses provided on the land bridge. The project also requires data on exiting traffic counts on surrounding streets. Ideally this would be in the form of a GIS layer, but can usually be found through city, county, or state web sites.

Roles and Expectations

The class takes place on two parallel tracks. The classroom portion, taught by the course professor, takes on the broader topics of the relationship between transportation and land use. The syllabus includes weekly readings, lectures, discussions, and student-led case studies (shown as part of an abbreviated schedule below). Students are expected to complete a mid-term and final examination, an individual term paper, and a final group project (the land bridge project). This final project, the other parallel track, takes place throughout the semester in the lab portion of the course. The course teaching assistant leads this effort.

Peer review plays an important part of work in the class. At two times during the semester, students are responsible for reviewing two abstracts and two draft term papers from your peers. At a minimum, their review should consist of two copies of a single spaced one-page writeup (one copy handed to the instructor) describing: (1) their understanding of the paper's focus, (2) its strengths, (3) its weaknesses, and (4) at least two pointed strategies for how the work could be strengthened. In addition, students are encouraged to correspond with their peers verbally throughout this process.

An additional set of partners entered the process upon presentation of the final products. Staff and citizen representatives of the City of Minneapolis served on a panel during final presentations, providing comments and questions as if they were a city council reacting to a development proposal. This process encouraged students to think about the political feasibility of their projects in addition to fiscal and other considerations.

2) Course Outline(s)

Course outline for classroom portion

Week		
1	Introduction and Framework for Course	Case Studies and Guest Speakers
2	Overview of Individual (Household) Behavior	
3	Individual and Household) Decisions – long term (finding a home, finding a job)	

4	Individual (household) decisions – medium term (traveling)	
5	Individual (household) decisions – short term (scheduling)	
6	The Siting of Businesses (Firm Behavior)	
7	The Selling of Goods (Retail Behavior)	
8	Exam Week (or other)	
9	Overview of Government Behavior and Evaluation Strategies	
10	Government Initiatives – Supply Considerations (Assembling Infrastructure)	
11	Government Initiatives – Allocation / Pricing Considerations	
12	Government Initiatives – Administering Legislation	
13	Government Initiatives – Architecting Land Use and Transportation	
14	Student Presentations	
15	Conclusions	Final project presentations from laboratory exercise

Course outline for land bridge portion

Week 1

Project introduction.

Description of the semester project. Fill out surveys for group assignments.

Week 2

Group assignments and data resources.

In this lab, your group and land bridge location will be assigned. You will also be introduced to land use and transportation data for your study area.

Your assignment for next week: create a current land-use map of your project area.

Your assignment Week 7: Write up a 2-3 page report describing the current conditions of the project site based on your visit. What is the character of the surrounding neighborhoods? What is your group's impression of the housing, businesses, transportation infrastructure, or overall feel of the area? What problems or opportunities does your group see? This report should not be based on census or other hard data—this report should describe what you see. Be as detailed as possible. Try to look past the simple things and look for the "bigger" picture around the land bridge. Be prepared to discuss what you saw.

Week 3 *Turn in land-use map

More data resources

This lab will focus on additional data resources. Groups will collect and analyze census data, parcel data, aerial photos, and other useful data for analysis.

Your assignment for next week: create demographic maps of your study area.

Week 4 *Turn in demographic maps

Planning documents: The Comprehensive Plan, Neighborhood Plans, and Regional Plans

In this lab, your group will read and analyze neighborhood, city, and regional plans to determine how they may affect your land bridge. What are existing planning goals and how can they be incorporated into your plan?

Community participation is an important component of almost any city plan. In this lab, each group will be assigned a different organization to meet with in order to better understand neighborhood goals.

Assignment due Week 8: Prepare a 2-3 page write-up discussing the various planning documents associated with your study area and how they relate to neighborhood needs as discussed with your neighborhood organization. This will be presented during the eighth week of lab to the other groups.

Week 5
Economic data resources

In this lab we will explore sources of economic data that can help determine what types of businesses are appropriate for your land bridge.

Week 6
Traffic Analysis

Students will learn how to use ITE trip generation books, how to prepare a Local Traffic Analysis, the relationship between land uses and parking.

Week 7 *Turn in visitation analysis
Discussion of site visits

By this time, your group should have visited the project site. Write up a 2-3 page report describing the current conditions of the project site based on your visit. What is the character of the surrounding neighborhoods? What is your group's impression of the housing, businesses, transportation infrastructure, or overall feel of the area? What problems or opportunities does your group see? This report should not be based on census or other hard data—this report should describe what you see. Be as detailed as possible. Try to look past the simple things and look for the "bigger" picture around the land bridge. The visitation analysis is due in this lab. Be prepared to discuss what you saw.

Week 8 *Turn in planning document/organizational visit write-up
Discussion of organizational visits and planning documents

Week 9
Benefit Cost Analysis

Students will learn the art and science of benefit costs analysis for public projects. How to estimate construction costs, social costs and benefits.

Week 10
The Proposal Process, New Projects, Zoning Changes, and Variances

In this lab, the groups will learn the process of proposing projects to the city and how to get zoning changes and variances.

Week 11
Design Elements

Students will explore the design elements useful for traffic control, safety and other goals. How to present design elements on the proposed land bridges.

Week 12
Presentations

3) End Products
Of most relevance to smart growth planning, students produce two deliverables, both as part of land bridge project. The first is a professional-looking written proposal and a 15-minute oral/visual presentation to their peers and a guest panel. The proposal includes the following elements:

Neighborhood overview
Discuss the current conditions from your initial visit, neighborhood contact visit, land use map, and demographic analysis. Include spatial and tabular representation of demographic data. Be sure to compare study area demographics to the city or region as a whole.

Current (and future) land use maps
Items to include in land use map:

- Land use
- Highways
- Roads (all or arterials)
- Label areas and points of interest
- Transit routes

Plus at least one of the following:

- Additional areas and points of interest
- Bus stops
- Bicycle trails
- Sidewalks

Summary of Neighborhood, city, and regional plans (as well as information from your neighborhood meetings)

Summarize the main goals and objectives laid out by the plans and your neighborhood group. Discuss how your land bridge will advance those goals

Economic data

Use economic data from the U.S. Economic Census and/or ReferenceUSA to make an argument for your chosen land uses.

The plan

Discuss your plan in detail. Provide well-reasoned and thorough justifications for all land uses and transportation infrastructure. Include comparables (in the form of photographs) of the type of development you are planning. In addition to the site plan mentioned below, you may want to include drawings of computer renderings of the experience of walking through the land bridge. Use your own artistic abilities or try www.streetsections.com.

Traffic analysis

Show with maps, tables, and text how your new land uses will affect daily traffic on nearby existing and new streets. Be sure to incorporate both existing traffic volumes and ITE projections.

Cost-benefit analysis

Students are expected to:

- Include a thorough list of expected benefits
    - You do not have to calculate the actual dollar value of the benefits, BUT..
    - …provide a brief methodology for how the benefit COULD be calculated.
    - The more detail the better
- Include a thorough list of expected costs
    - You just need general costs for the bridge, buildings, and amenities (you do not need costs for building furnishings or anything like that);
    - The more detail the better

Without actually calculating a benefit-cost ratio, include a brief analysis of costs and benefits: would the bridge be worth the cost? Why?

Regulatory Approvals

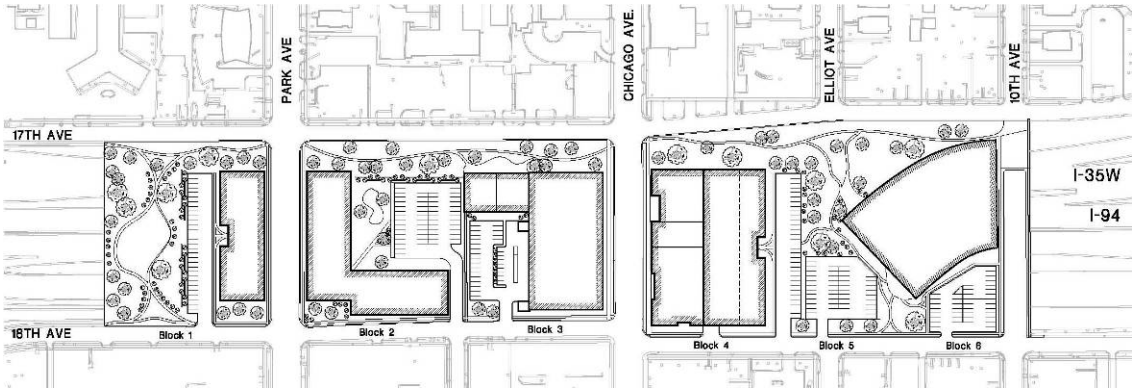
Three items related to regulatory approvals are also required:

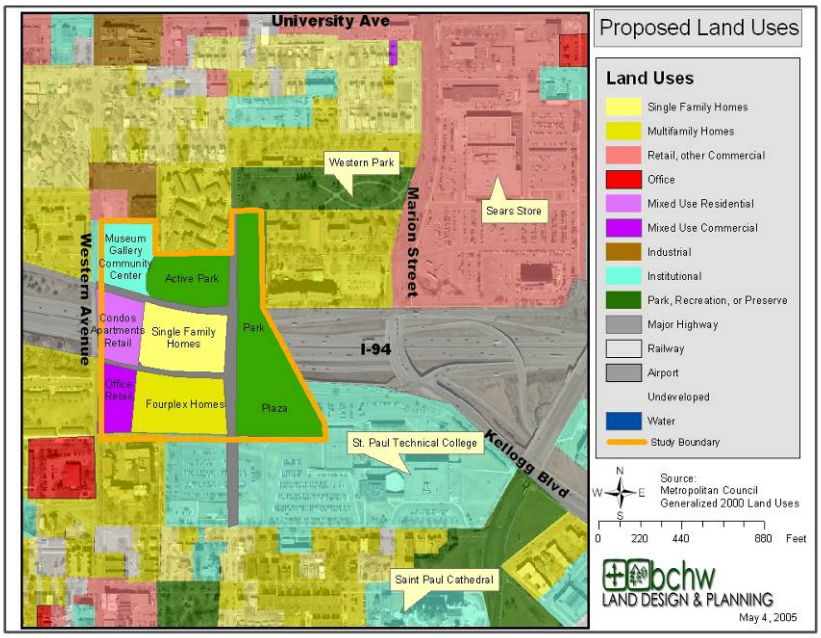
1. Show that the land uses you propose are permitted under the applicable zoning district. If they are not, outline what you will do to gain approval (conditional use permit or rezoning). We will discuss in lab how to determine what zoning districts your land bridge falls in.

2. You should meet the parking requirements for each use on your bridge. If you do not, provide a sound rationale for requesting a variance reducing the amount of required parking. Look for ways to use the code itself to reduce your parking. For example, St. Paul offers a parking reduction bonus if you provide bicycle parking.

3. Create a site plan to submit to the city for review. Site plans are often highly technical, and the drawings are based on exact specifications. You are not expected to follow all of the site plan requirements for your city. Rather, you are expected to submit a *Concept Site Plan*. These are less technical documents than what a city would require for a new development. Your concept plans should show the locations of existing and new streets, buildings (including intended use and size), where parking will be located and the area it takes up, and any other land use. While you do not have to have measurements down to the inch, your plans should fit in the area you are developing.

Examples of Visuals used in Final Presentations





4) **Concluding Narrative**

Not surprisingly, there are myriad ways to present such information and administer such a course. The confined time of a typical semester makes it difficult to cleanly delineate topics, lectures, and lesson plans. This is because many elements are inherently related to one another. As an example, the success of one key tenet of smart growth--transit ridership--is a topic that requires understanding urban density gradients, which in turn depends on understanding why and how development decisions are made, which in turn requires understanding corporate and household location decisions. The circular nature of many such phenomena makes it difficult to discern where to start.

After a few iterations of the course, we have comfortably honed in on a compelling strategy to present the battery of topics that should be covered in an LUTC—and an orderly sequence for doing so. We follow the organization of a course text prepared by the authors titled, *Place and Plexus: Planning for Metropolitan Land Use and Transportation* (to be available in published form early 2006). Our strategy involves fully understanding the motives and behavior of different agents—agents who are often mentioned as the entities responsible for flexing their muscle over the built urban environment. Three agents of note include individuals (households), firms (locators and developers), and government bodies. The activities of a fourth agent, the designer—for example, the city planner, the architect, the engineer or the landscape architect—are matters that could be periodically addressed through the discussion of each agent. The macro-structures we observe in the land use-transportation context all have micro-foundations which are dictated by the actions of agents.

While covering the motives and behavior of each agent, the instructor can cover important issues and dimensions related to metropolitan land use-transportation planning and policy. With respect to individual behavior, these issues play out temporally. For example, it is important to cover factors of long-term choices (five years and beyond) such as residential location decisions, medium term choices (a month to several years) such as employment decisions or the repetition of which mode to use, and shorter term choices (weekly and shorter) such as activity participation, time of day considerations, and route choice. Corporations are the agents responsible for dotting the landscape with the destinations to which individuals travel for purposes of work, shop, play, or other. It is therefore important to understand decisions underlying the location decisions of both firms and developers. Often, the decisions of these agents are in response to household actions or transportation improvements. Finally, government agents affect policy which in turns affects the supply of land use or transportation infrastructure, the demand for travel, or the intersection of the two. This is where the policy interface is emphasized, at the neighborhood, municipal or regional level. It is important to understand the theory, application, and efficacy of different initiatives. These include, but are certainly not limited to urban growth boundaries, transportation capacity expansion decisions (roadways or light rail), travel demand management approaches.

Our final schedule covers the list of topics presented in outline described above. This represents approximately ten lectures that hold together the core intellectual foundations of the course. These lectures are supplemented on the second day of the week with in depth case studies, practical applications or guest speakers. The case studies prove especially valuable in an applied discipline such as urban planning where students are forced to learn about and examine actual behavioral decisions or policy initiatives in light of the lecture material presented on the previous class day. Specific case studies that have proven particularly rewarding include examining school desegregation and busing, welfare to work programs, light rail expansion projects, congestion charging in London, corporate location decisions, and new urbanism sites. Many times these are

cases in our own backyard. Other examples draw from national or international projects for which there is good reading material available.

Finally, the additional laboratory component of the course allows students an opportunity to apply a variety of intellectual and practical skills to advise part of an applied land use/transportation plan. The intent is to heighten students understanding of the transportation and land use nexus through network and spatial analysis and design. Example projects that students have completed in past years involve designing a land bridge over a designated sunken freeway section, which are common in the Twin Cities. Land bridges are used in this project for a number of reasons. First, they present a blank slate to take advantage of each group's talents and creativity. Second, they are an innovative planning tool that can achieve many social and physical goals of planning. Third, land bridges have been promised by public figures to Twin Citians since the Interstate Highways were built over 40 years ago. The skills needed for this project understanding and merging with existing neighborhood plans, meeting with community representatives and planners, using GIS, understanding where to find and how to use common data used by planning practitioners, using design features to enhance the connectivity and network considerations of a site, zoning analysis, benefit-cost analysis and local traffic analysis. These skills are introduced in the lab sessions and each has a brief assignment for evaluation. The final project weaves together each of these skills and is delivered as professional presentation and staff report that details the proposed land bridge design and other built elements, the network effects of the project on the surrounding community, a discussion of the planning goals of the project with supporting arguments and other elements. Leaders of local community groups and planners from local agencies are invited to final presentations to comment on the applicability, feasibility, and other considerations as posed by the final student projects.

Final comments

Both anecdotal and empirical evidence suggests that in many planning programs there is a growing recognition that the topics of land use and transportation should be approached in an integrated manner. We believe that an integrated land use transportation course is an important part of planning curricula. This paper provides much needed information on the level of educational activity addressing these topics. At least two major points are important to take away from this research.

The first guards us against the degree of reductionism that is easily fostered in planning education. The many specializations embedded within the planning profession enable the process whereby students graduate with tunnel vision. It is difficult for students to traverse fields of specialization; the curricular demand for other classes or the lack of an integrative course may prevent it. Planning is interdisciplinary by its very nature and it is important for planning pedagogy to not lose sight of this asset. Rather educators should facilitate the process of breaking down these barriers. The importance of breaking down such barriers are perhaps no more important than those relating land use and transportation. Central tenets of many smart-growth and anti-sprawl programs and initiatives strongly hinge on this relationship. Their understanding is inextricably linked to how effective planners will be in their ability to integrate different topics relating city planning, infrastructure, and public policy. A land use transportation course is inevitably a socio-technical endeavor, and requires integrating planning and geographic knowledge with aspects of transportation technology. Bridging the barriers between the engineers and planners should, we believe, be a central tenet of the course.

The second is that there appears a need for additional attention to be devoted to understanding where and how such a course best fits into a larger planning curriculum. Theoretical foundations in economics, behavior, and design for the course require substantial development for which

many students are unprepared (analytical students may not appreciate design and vice versa). Other topics will gain in importance as instructors gain more experience with the course and the priorities of society shift. It will be interesting to review this survey after some time and see how the land use transportation course has evolved. We will need to monitor whether LUTCs become more or less specialized, and whether prerequisites are more or less stringent.

A land use transportation course provides a forum to synthesize knowledge from two core planning specializations, and an opportunity to bridge the chasm between planning and engineering. However, its land use orientation will place it in planning programs rather than engineering. Institutional barriers to integrating the courses are probably minimal, it is more likely that resource constraints (lack of funding, lack of full-time-equivalent faculty members, lack of the right/motivated people to teach the class) are the reasons that it is not more widespread. However these resource constraints are historically embedded in the decision-making processes underlying transportation and land use. Transportation decisions are generally state level decisions in engineering-oriented Departments of Transportation. Land use decisions are made by local government planning departments and their elected supervisors. Nominally, metropolitan planning organizations are charged with reconciling this schism, yet despite the improvements to the planning process over the past 40 years, there is still much to do. The future employer for students of a land use transportation program are thus not crystal clear, in the same way that individual land use or transportation courses would be. However, as it becomes clearer to professionals in both fields that they are interdependent, and that skills in both domains, and in integrating them, is of value, we would expect that the demand for these courses would grow.

References:

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