

A Call for the Integration of Transportation and Land Use Planning

David Bonk

The coordination of land use and transportation is an issue that has received increased attention as concerns about the impacts of suburban sprawl, the cost and supply of energy, air pollution and traffic congestion continue to be debated. Transportation planners are now beginning to recognize the depth of the relationship between how land is developed and how people travel. Similarly, increased attention to public transit services has just begun to focus on the relationship between land use decisions and transit ridership.

While the relationship between land use patterns and transportation would seem apparent enough, it has been only recently that land use/transportation linkage has been given more attention. The rigid separation of land use planning within planning departments, transit planning within transit agencies and roadway planning within traffic engineering departments has tended to result in little coordination.

During the energy crisis of the early 1970s there had been some analysis of the transportation impacts of alternative land use patterns, concentrating primarily on transportation use and energy consumption. Various studies concluded that more compact development patterns would result in reduced auto mileage and energy consumption. More recently, Robert Cervero's detailed study of suburban transportation problems in *Suburban Gridlock* and his later *America's Suburban Centers*, re-emphasized the transportation/land use linkage and illustrated the degree to which transportation problems have resulted from a lack of coordination with land use planning.

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Neo-traditionalism

At the same time as discussions about the land use/transportation relationship have been re-kindled, there has also been increased interest in "neo-traditional" or traditional neighborhood planning. These concepts, promoted by Andres Duany and Elizabeth Plater-Zyberk in their Seaside development, and applied by a variety of others in similar developments, have caught the attention of the public and elected officials alike as an alternative vision for future development.

Neo-traditional planning borrows much from previous planning practices. Neo-traditionalists have identified Raymond Unwin, an early 20th century urban planner associated with the Garden City, among others, as inspiration for their concepts. In *Town Planning in Practice*, written in 1909, Unwin commented on the evolution of design and the growing impact of the automobile, stating that "the character of modern traffic, particularly the present character of motor traffic, has rendered frontage to the main road anything but desirable for residence." Unwin also seems to have anticipated the modern suburban environment, writing "there is nothing whatsoever in the prejudices of people to justify the covering of large areas with homes of exactly the same size and type. The growing up of suburbs, occupied solely by any individual class is bad, socially, economically and aesthetically . . . it leads, too, to a dreary monotony of effect, which is almost as depressing as it is ugly."¹

The proponents of neo-traditional planning have concentrated on the social and environmental benefits of the traditional neighborhood or village design. They have also correctly maintained that the compact nature of village planning will result in greater incentives for pedestrian movement and reductions in auto use due to the close proximity of commercial activities. Very little connection has been made between neo-traditional planning principles and public transporta-

tion, however. The combination of increased focus on the transportation/land use relationship and continued interest in neo-traditional planning offers an important opportunity for transit planners to pursue land use policies that will result in transit-friendly environments.

A closer examination of the basic tenets of neo-traditional planning reveals that the emphasis on higher density, compact residential development served by a grid-like street system that surrounds an intensely developed commercial/office core is an ideal environment for successful public transit services. The Urban Mass Transportation Administration (UMTA) has recognized the importance of the land use/transit relationship. UMTA has identified "suburban mobility" issues as a planning priority for local transit agencies. These suburban mobility issues include re-evaluation of land use policies to determine if the suburban environment can be made more transit-friendly. UMTA has also published *A Guide to Land Use and Public Transportation*, which reviews the need for better integration of public transit services into land use decisions. This guide is a reprint of a publication prepared by the Snohomish County (Washington) Transportation Authority. The guide maintains that local communities can derive both direct and indirect benefits from the integration of land use and transit decisionmaking. Transit service can be provided much more efficiently if service is coordinated with development patterns and regulations. Transit-friendly development patterns also tend to promote pedestrian movement and bicycle use, further reducing traffic congestion. Effective transit service can also translate into

increased economic activity through stimulating additional growth.

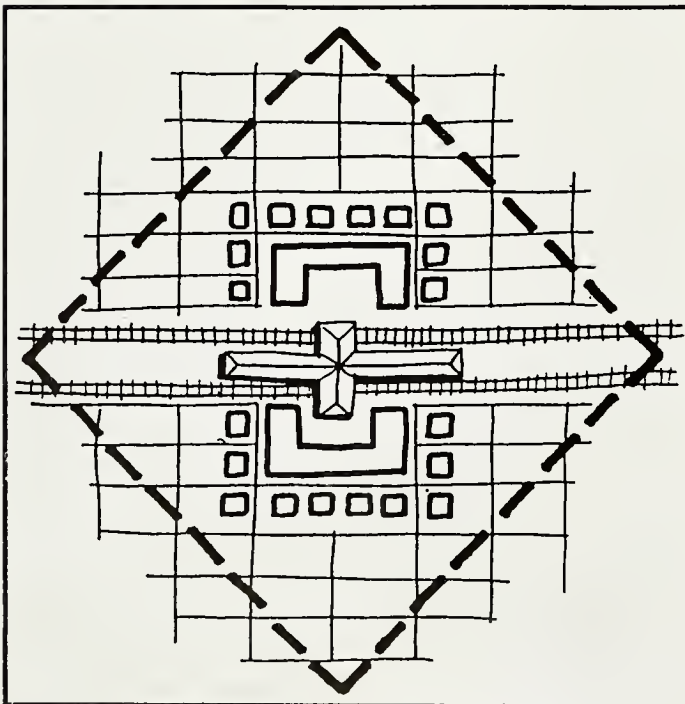
Many of the site design examples used in the UMTA guide are very similar to neo-traditional designs and they illustrate clearly the symbiotic relationship between transit and traditional neighborhood planning.

Pedestrian Pockets

Peter Calthorpe, a San Francisco-based architect and urban designer, through his "pedestrian pocket" design concept has attempted to make a direct connection between transportation issues, specifically public transit, and neo-traditional planning. His pedestrian pockets have been designed within a one-quarter mile walk from a central activity core. These activity cores are designed to provide for intense commercial and office uses in close proximity to higher density residential uses. The different uses are linked by a road system that provides multiple routes between neighborhoods and the activity core. The Calthorpe design envisions a series of pedestrian pockets linked together along a corridor by a fixed guideway transit system, such as light rail. The non-residential uses within individual pedestrian pockets would vary, with one pocket developing a large office base, while an adjacent pocket encourages commercial uses. As Calthorpe has described them:

A Pedestrian Pocket does not function as a self-sufficient town. People are not expected to work in the same Pocket in which they live or to find all their shopping needs or recreation within the hundred-acre development. In fact, the Pockets are meant to weave back together the currently isolated parts of our suburban environment; to put the elderly and kids without cars within reach of old downtowns as well as new shopping malls, parks and other Pockets; to allow workers access to exiting and new job opportunities through regional transit, not just within a single town.²

The design of the pedestrian pockets are highly compatible with the provision of public transit services. Calthorpe has proposed that a series of these residential/commercial/office areas, none larger than 160 acres, be aligned along a fixed guideway system, such as light rail, to provide for movement between the different pockets and a larger downtown location. The size limit of 160 acres reflects a realistic reflection of a quarter mile as the maximum distance most pedestrians are willing to accept. A quarter mile is also used by many transit agencies to provide the maximum distance patrons are willing to walk to access public transit service. While this quarter-mile standard is widely accepted, actual willingness to walk varies greatly with the mode of public transportation. The Portland transit system has found that while patrons are only willing to walk a quarter mile to access bus routes, many are willing to walk up to one-half mile to a light rail station. The design of the local street systems within



The Snohomish County Transportation Authority's guidelines call for the development of activity centers around neighborhood rail stations. Activity centers include "convenience" establishments and higher density residential uses.

these pedestrian pockets increases the viability of local bus service, and the proximity of the fixed guideway stations to the surrounding residential areas encourages bicycling or walking to access the transit service.

Sacramento

Sacramento, California, which constructed a light rail system during the late 1980s, retained the services of Peter Calthorpe to refine the pedestrian pocket concepts and to relate them directly to public transit systems. Sacramento has reinforced the transit/land use relationship in their neo-traditional planning by focusing on transportation goals in the development of their design guidelines. The marriage of neo-traditional planning and transit planning has produced a detailed concept called Transit Oriented Developments (TODs). These TOD guidelines, released in September 1990, are based on a careful evaluation of future regional needs and the following principles:

- Maximize the use of existing urbanized areas
- Reduce consumption of non-urban areas
- Link land use with transit
- Reduce the number of auto trips and regional vehicle miles traveled (VMT)
- Reduce air pollutant emissions
- Provide for a variety of housing types
- Design the urban area efficiently

The Sacramento guidelines identify two types of TODs: a more intensely built up Urban TOD and a slightly less dense, more residential Neighborhood TOD. These TODs are surrounded by secondary development areas that are less densely developed and more auto-oriented but still able to take advantage of the services within the TOD through an interconnected street system.

The impact of these neo-traditional guidelines on Sacramento is yet to be fully felt, but at least one developer, with a previously approved site plan that reflected a typical 1980s suburban design, chose to entirely redesign his development to incorporate the TOD concept completely. As a result of this redesign and Sacramento's commitment to provide transit service to the surrounding area, Apple Computer has announced their intention to relocate a portion of their operations to the non-residential area of the TOD.

Research Triangle Study

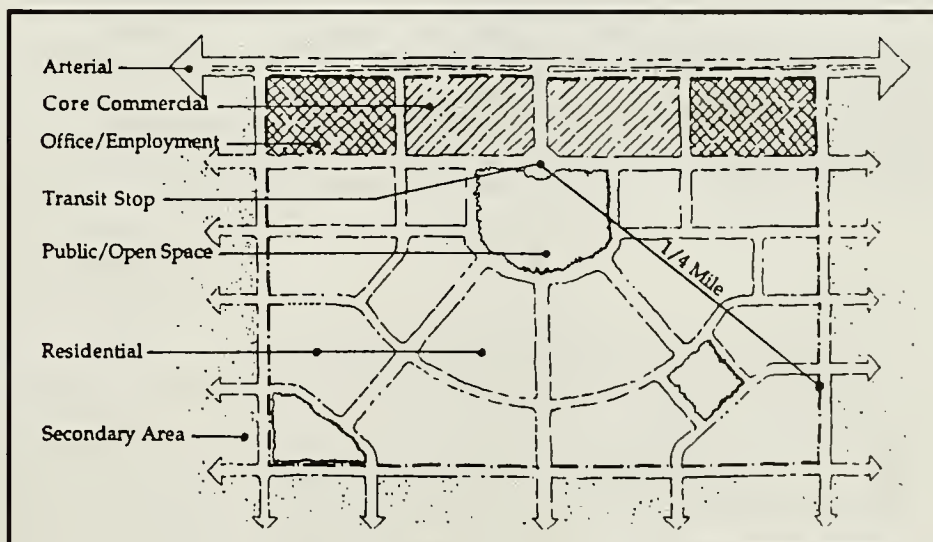
In 1986, the Transportation Advisory Committees from the Raleigh Urban Area and the Durham-Chapel Hill-Carrboro

Urban Area created a series of subcommittees made up of local transportation and planning staffs to explore various issues related to developing regional public transportation services. One of these subcommittees was charged with reviewing the linkage between land use and public transportation, with special emphasis on fixed guideway transit. The land use subcommittee determined early in the process that any effort to develop fixed guideway public transit should be linked closely to land use decisions.

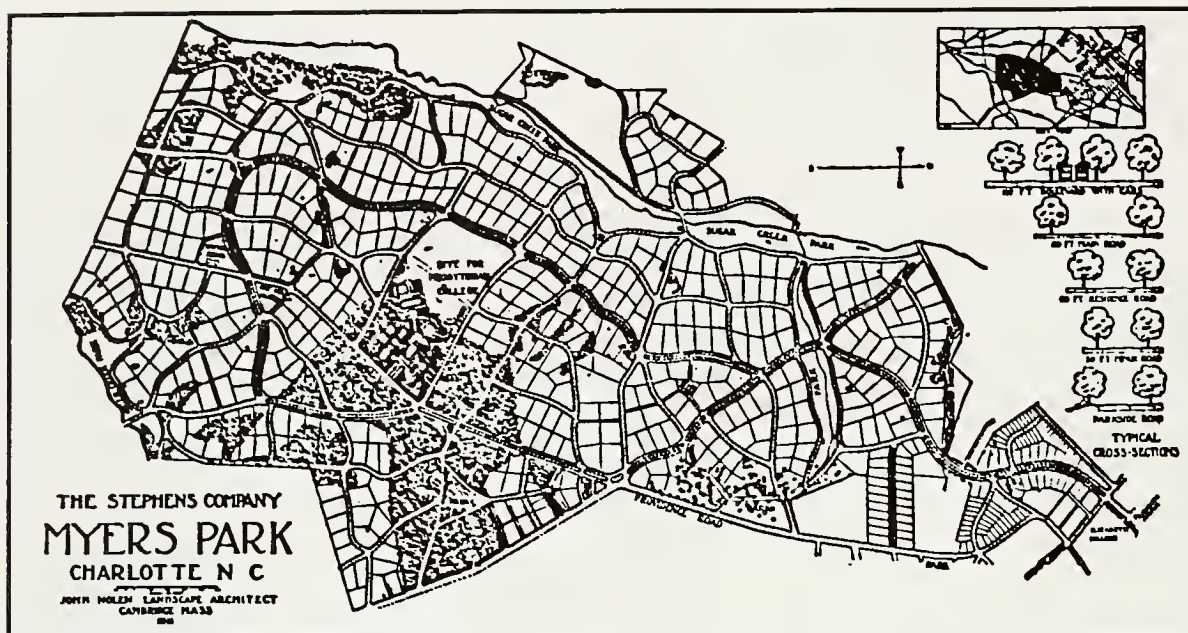
In the fall of 1990, this land use subcommittee released its findings, including a detailed report by Barton-Aschman Associates of Washington, D.C. This report analyzed the land use/public transit relationship, specified development guidelines to support light rail/busway fixed guideway systems, and evaluated the feasibility of fixed guideway development along specific corridors.

The Barton-Aschman report reviewed the limited land use information available from the cities that have developed light rail/busway systems, and suggested generalized guidelines for development density and mix based on ridership necessary to support the operation of a fixed guideway system. Barton-Aschman reviewed the ongoing work of Calthorpe and Sacramento County in preparing their analysis, including an overview of Sacramento's TOD guidelines as an appendix to their final report. The report identified the Calthorpe pedestrian pocket concept and the translation of that concept into actual development guidelines in Sacramento's TOD policy as a model that should guide the further development of land use policy in the Triangle area.

Once density and design guidelines were established, Barton-Aschman evaluated existing land use projections along four light rail/busway corridors in the Raleigh-Durham-Chapel Hill Region. The consultant compared year 2010 development totals within each corridor to minimum ridership levels. The corridors assumed a two-mile area of impact along a



Guidelines for Sacramento's Transit Oriented Developments (TODs) show a pedestrian orientation around a public transit node.



This plan of Myers Park (in Charlotte, N.C.) illustrates the way in which many turn-of-the-century developments were built around a public transit system. The wider streets support a trolley system.

fixed guideway line, with the greatest potential for ridership occurring within the first quarter mile from a station location. Not surprisingly, only one corridor showed a marginal potential to support fixed guideway ridership in 2010. The other three corridors fell short of the ridership requirement.

Barton-Aschman then re-evaluated each corridor, but rearranged development within each corridor to better conform to the land use standards they had previously developed. No additional development was projected for the corridors, nor was development from outside the two-mile limit of the corridor transferred into the fixed guideway corridor. When development was redirected, each corridor showed an ability to support fixed guideway transit systems.

The Barton-Aschman study illustrated clearly the impact of alternative land use arrangements on fixed guideway transit services. The Barton-Aschman study emphasized the importance of pedestrian access and increased residential density surrounding fixed guideway stations. While the study proposed increased densities in specific areas that would be served by a fixed guideway system, it also used local examples of residential projects that reflected those densities.

Conclusion

A process of linking land use policies and development with public transit services, particularly fixed guideway public transit, is not a new concept. The construction of street car lines at the turn of the century was closely associated with adjacent residential and commercial development. In some cases the street car lines preceded intense development and actually acted as a tool for directing development. Those cities in North Carolina that boasted extensive street car systems in the early part of the century, such as Charlotte and

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Greater emphasis on the land use/transit connection will be necessary to ensure that the opportunities for influencing travel patterns presented by neo-traditional development are not lost. Transit agencies that are seeking to maximize existing transit services and to ensure greater ridership must coordinate

with land use planners.

The greatest opportunity for meshing neo-traditional land use and transit may lie with the development community itself. Neo-traditional development, combined with strong transit services could result in exciting new development opportunities, particularly in a period of sluggish growth and continuing concerns about no-growth sentiment that stems from transportation congestion. □

Notes

1. Raymond Unwin, *Town Planning in Practice* (New York: Scribner and Sons, 1909), p. 294.
2. Calthorpe Associates, *Transit Oriented Development Guidelines* (Sacramento County, CA: September, 1990), p. 5.

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