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THE FOUR LEVELS OF TRANSPORTATION PLANNING

The description of various physical, operational, and policy aspects of cities and their transportation systems in the preceding sections indicates that most current problems are created by a failure to understand transportation as a system that interacts with most other activities in cities. To analyze the types of deficiencies in the process of transportation system planning, design, and operation, it is useful to analyze how the relevant activities — policy, planning, financing, construction, and operation — are performed at different levels, from individual facilities to the complex interrelationship of the transportation system with the city or metropolitan area. This section classifies and analyzes the present state of planning at different levels.

Planning, organization, and operation of urban transportation can be classified by its objects, scope, and domain into four levels, from individual system elements to the overall city/urban area level. The four levels, shown schematically in figure 2.14, are:

Level IV: Individual Facilities

such as a boulevard, intersection, pedestrian area, or bus line;

Level III: Single Mode Network or System

for example, a street network, network of bicycle lanes, or regional rail system;

Level II: Multimodal Coordinated System

which incorporates streets and freeways, different transit modes, pedestrian zones, and the like; and

Level I: City-Transport Relationship

or coordination between the transportation system and the city, its physical components and all other functions, such as economy, housing, social conditions, and myriad others (the highest level of planning and operational integration).

A review of practices in different cities shows at what levels the most common successes and failures, as well as typical problems, are.

Level IV planning and operation are, in most cases, performed satisfactorily. There are many well-designed and efficiently operated streets, freeways, regional rail lines, and pedestrian plazas. Designing and operating a single facility is technically the least complicated; moreover, it is usually financed from a single source or several pooled sources, and it is performed by a single agency, such as a department of streets, transit agency, parking authority or the like.

Level III requires more coordination than Level IV, but networks of individual modes are usually under the same jurisdiction, with joint financing and unified control. If

jurisdictional problems do not exist (for example, street networks are shared by different municipalities, or there are two different transit planning agencies), inefficiencies may occur.

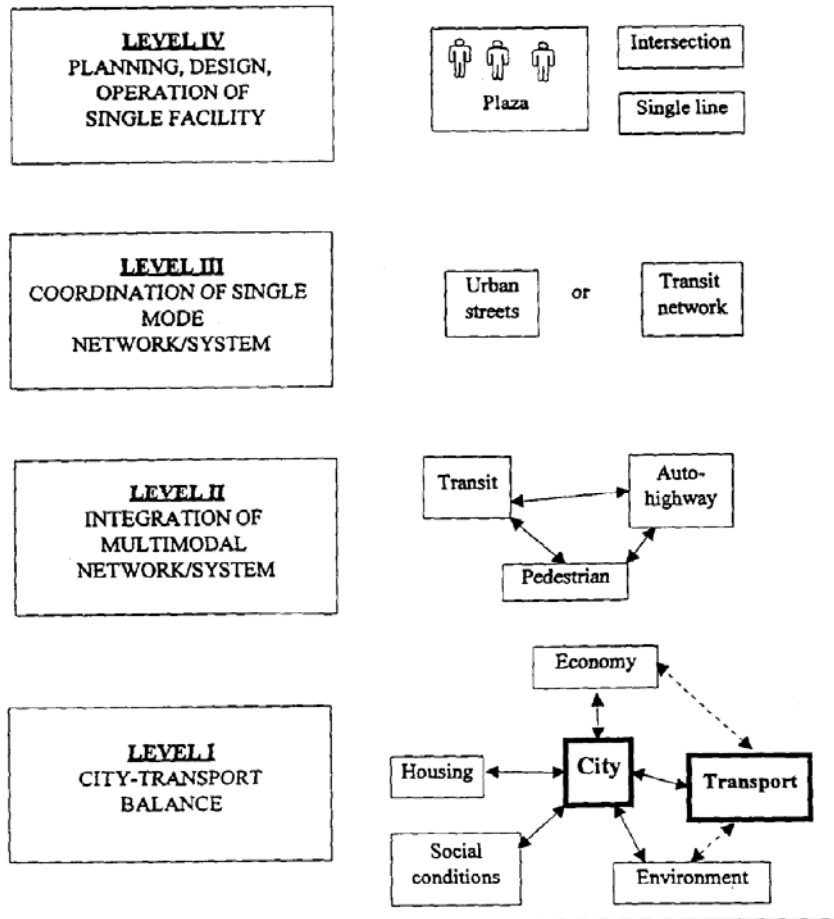


FIGURE 2.14
Conceptual classification of urban transport planning

Level II supersedes single-mode jurisdictions, such as a street or highway department, a trucking or a transit company. It involves a higher-level organization, usually a regional or state government agency. The need for Level II planning has increasingly been recognized in recent decades. For example, the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) placed great emphasis on intermodal coordination. In practice, however, many problems remain to be solved before the necessary cooperation, particularly in cities and metropolitan areas, can be achieved.

The obstacles to this higher level of transportation system planning include much more complex, technical, and operational considerations in coordinating different modes than are required for single modes, and they involve separate jurisdictions for different modes. Another serious obstacle is often the narrow, modally oriented mentality of personnel and

professionals in many agencies in charge of different transportation modes. The extensive debates about “highways versus transit” or “bus versus rail,” created by the narrow single-mode expertise of many professionals as well as by the emotional biases of some professionals and others, are often stronger than efforts to develop efficient, well-coordinated multimodal systems.

Some persons working for individual agencies, such as highway, bus transit, or regional rail, have limited knowledge of other modes and even harbor biases against them. Instead of cooperation among different modal agencies, this attitude often leads to counterproductive intermodal competition, highway-versus-transit attitudes, treatment of pedestrians as “obstacles to vehicular traffic,” and so on. The emotional bias toward or against individual modes of transportation is also strong among theoretical analysts of urban transportation, as discussed in chapter 5.

Level I is the highest level of urban planning and development coordination. This is where transportation as a functional system is planned in relation to other activities, such as residing, economic and social activities, and the environment (figure 2.14). This planning is the most complex, both theoretically and practically; but, in the long run, it is most important for metropolitan areas. Special arrangements are required for organizing, financing, planning, and implementing transportation systems and for their coordination with other activities. Without Level I planning, cities can seldom achieve satisfactory levels of efficiency and livability. The increasing efforts to achieve more sustainable forms of urban development will further increase the need for such planning.

The problem in most cities is not only insufficient or inadequate planning at Level I, but inability to implement its results. The planning — including land use, zoning, transportation networks, and facilities — usually is performed by regional or official metropolitan planning organizations (MPOs) according to legal mandates. In many states and countries, however, these regional governmental organizations lack the power to implement plans if individual counties, townships, and other local units do not comply. Thus, local interests and political and lobby pressures tend to defeat much of Level I work, which is most critical for achievement of both transportation system efficiency as well as a city’s livability.

This classification of urban transportation planning can provide insight into its scope and organization. The conceptual schematic diagram in figure 2.15 shows the relationship of different components of planning. Projects at Levels IV and III are within modes — highway or transit; Level II planning is intermodal and encompasses, for example, pedestrians, transit, and auto/highway; and finally, Level I planning relates the entire transportation system, consisting of all modes, to all other activities in the city. The long-range impacts on the city of individual modes or their combinations are analyzed at this level. In general, transit systems tend to create conditions for concentrated activities, while an auto/highway system influences predominantly the dispersal of activities, as shown in the diagram.

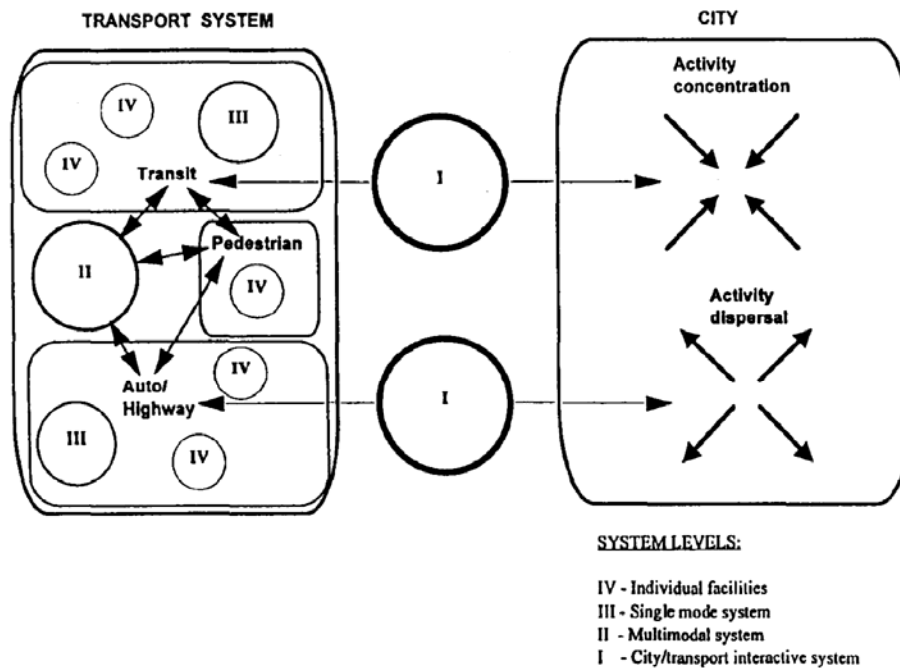


FIGURE 2.15
Schematic presentation of urban transport planning levels

This difference in the impacts of the two systems on the social character of an urban area is pointed out by Weyrich and Lind (1996): “Historically, transit helped foster community just as the automobile helps undermine it.” They point out that when people use transit, they walk from their homes to transit stops, often meet neighbors face to face and get to know each other, which helps a neighborhood become a community. “In contrast,... the average [car] commuter gets in his car in his garage, turns on the heat or air conditioning and radio, hits the bar on the garage door opener, and sallies forth. He does not see any neighbors; at most he sees their cars... Each driver is isolated in his car, which does nothing to build a sense of community. Indeed, it works against it.”

The concept of four planning levels can be related to real-world activities. For example, the ISTEA requirement for intermodal systems development is intended to raise the level of planning to the transportation system, or Level II, and to include its impacts on the urban environment and livability, i.e., Level I, rather than support independent projects at Levels IV and III only.

On the other hand, transit deregulation in Great Britain was based on the claim in the White Paper entitled “Buses” (Department of Transport 1984) that transit deficits represent the most critical transportation problem in British cities. That claim placed the focus of attention on a problem at Level III (transit system) while ignoring the fact that Britain had been far behind most of its European peer countries in coordinating its

multimodal transportation systems with urban development. In other words, it had neglected activities at Levels II and I. Indeed, one of the results of the British deregulation of buses has been prohibition of multimodal transit companies, which represents legal prevention of constructive work at Levels III and II. Deregulated bus systems have thus been degraded to Level IV planning and, to some extent, Level III. Planning and system management at Levels II and I are eliminated from the planning and organization of urban transportation systems.

This classification can also be used to gain a proper perspective on the overall handling of urban transportation and its role in cities. If planning focuses on individual facilities (Level IV) while their interactions with other modes and their impacts on the city (Levels III, II, and I) are not considered, such a transportation system may stimulate urban development that is neither efficient nor livable. This sequence of planning, based on Level IV, has been the cause of many problems and conflicts between transportation and cities.

The theoretically correct sequence of planning is shown in figure 2.16. Definition of the type of society and city should be developed first on the basis of societal goals; that definition (overall character and physical form of the city) should then be used to determine the optimal composition of transport modes. With basic balance among modes defined, planning should proceed to individual system networks and facilities.

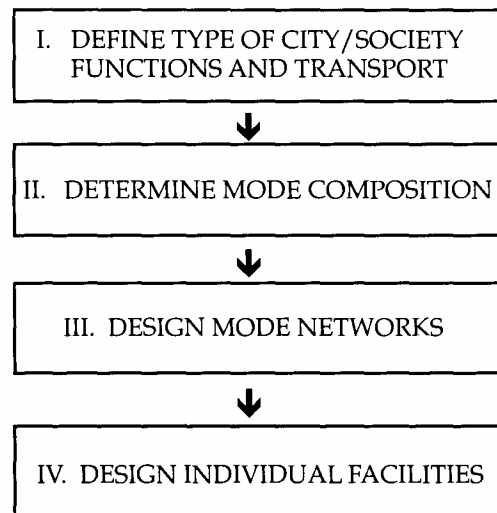


FIGURE 2.16
Planning sequence in urban transport