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The Transportation Manager: An Evolving Concept

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Solutions to the new transportation needs of the United States require the development of problem-solving skills, which augment the historical role of the highway engineer and highway planner. This new role, the transportation manager, is the direct result of several factors in our environment and, more particularly, in our transportation systems. For example, although vehicle kilometers of travel are projected to increase by 39 percent by 1985, resistance to new highway construction is increasing, and mass transit is severely limited in its ability to serve peak-hour commuter needs by using expensive vehicles and full-time labor. As a result, the focus of transportation activities is shifting to improved management techniques. The new transportation needs will require individuals who have a different perspective and approach than that of the traditional engineer or planner. The new management emphasis will address more day-to-day decision making and have the opportunity to initiate low-cost, incremental changes to systems that are reversible on short notice. Cost/benefit analyses of detailed planning efforts associated with such incremental efforts reveal that the transportation manager will consume less resources in examining the data and undertaking corrective action. The paper will trace the development of public involvement in transportation to demonstrate the evolving needs of transportation and the orientation toward the professional urban transportation manager.

Public transportation programs have changed in the last few decades, and in the 1980s we will witness a major shift in the emphasis of public transportation. At the turn of the century, public transportation frequently consisted of a county commissioner who supervised the construction and routine maintenance of roads. Maintenance was a very large expense because many dirt roads required constant care. During the first half of the century, emphasis was placed on construction of upgraded

hard-surface roads, which were funded by all levels of government. This effort reached its peak with the Interstate highway program, which was initiated in 1956 and is now almost complete. This emphasis on construction of highways created the era of the civil engineer, who was responsible for the survey, design, and construction of massive new infrastructures.

By the early 1960s, the Interstate highway program had elevated highway decision making from a local concern to a regional and national concern. This ushered in the era of the highway planner, who became responsible for the coordination of highway activities of surrounding jurisdictions to create a coordinated, cooperative, and continuous long-range planning process. Before the end of the decade, elements of society had begun to express major concerns regarding the loss of control of transportation activities to the professional planner. This concern resulted in the development of the environmental impact statement and full implementation of the previously required public hearing process.

During this evolutionary period of highway development, public mass transportation was also undergoing a parallel but distinctly different evolutionary process. Intracity and rail commuter service evolved rapidly with the development of streetcars. Since the electric trolley frequently was developed by the same organization that built and operated power-generating companies, both organizations were given a public franchise. Streetcar companies were regulated as to entry, exit, competition, fares, and schedules.

Although the civil engineer was essential for design and construction of facilities, the main public involvement was through the attorneys who wrote and administered the regulatory process. The attorneys constantly monitored rates to control excess profits and, in many cases, required the streetcar companies to maintain streets and to provide street lighting. Private companies were able to continue to provide service under the locally granted monopoly until the 1950s. Decline in ridership, increases in operating costs, decreases in population density, and rapid suburbanization created severe financial difficulties for public transportation.

The Transportation Act of 1958 was designed to facilitate discontinuance of intercity rail passenger service. However, the mayors of New York, Boston, and Philadelphia realized that the accompanying loss of rail commuter service would make it difficult for the central cities to remain viable and made a major effort to obtain federal funds to support rail commuter service and subsequently to broaden the mass transit funding to include city bus lines (1).

When public funds became available, cities used the money to purchase declining private bus companies. Thus, the focus shifted from franchise and regulation of private providers to the planning and operation of systems by use of the highway planning techniques then in vogue.

Highway planning was in the long-range comprehensive planning phase when the transition was made to mass transit; therefore, planners attempted to apply tools and approaches for mass transit that were similar to those that they applied to highway planning. It was only natural that large rail systems were designed with little attention to factors such as marketing, labor relations, private-public coordination, service for the transportation disadvantaged, service to suburbs, and the most effective means of providing service. Taxis, school bus fleets, air ground-transport providers, the intercity bus industry, and all other providers largely were ignored because the planners were anxious to build publicly owned mass transit systems similar to the comprehensive highway networks. Resources were diverted into the development of high-technology systems for use in the urban areas. Planners, at that time, envisioned a technological solution to the problems of urban mass transportation. They felt that it was possible to substitute speed for the inherent advantages of the automobile, such as flexibility (2).

Ironically, at the very time that mass transit lobbyists were appealing for more funds to develop new mass transit facilities, government was continuing to regulate and to tax heavily the last remaining private operations. Rather than intentionally taxing and regulating the private sector out of business, local governments, in most cases, simply did not address the impact of taxes and regulation on the private sector while they were preoccupied with buying and building public bus companies.

While the transportation interests were busy combining highway design and planning with government operation of transit, social service agencies and others were faced with a critical dilemma—how to deliver services to clients when existing public transportation networks did not meet the needs of the clients. Agencies procured services from taxicabs, volunteers, or casual carriers, but they soon found that the regulatory process and insurance presented formidable barriers to low-cost operation. Thus, pressure was placed on government to provide vehicles under Section 147, 16b2, of the Federal-Aid Highway Act of 1973 and other programs. However, the inflexibility of state and local laws restricted the ability of social service programs to obtain service. The only feasible option available was government ownership of fleets of vehicles and centralized operators under purchase-of-service contracts to other agencies. The high cost and extensive managerial effort required to operate the many different systems led to new efforts to coordinate services.

Thus, in the name of coordinating transportation for the disadvantaged, traditional highway planners and regulators have favored the establishment of a single operator of a single type of service under one management, like a public utility, with the assumption that, if all service is provided by the same management, coordination will ensue. Inherent in this approach is the need of a regulatory body (be it public utility commission, local transit authority, or elaborate public hearings and planning) to protect the public interest.

Social service agencies, on the other hand, often feel that the best way to coordinate is to have as many options as possible so that the service that best meets the needs of the clients may be selected. Agencies feel that the franchise system sets arbitrary service standards, and, if clients cannot use the franchised systems, no other option is available for them. Thus, the major question for the 1980s is, Should all public money go to a single system, or should various agencies be able to select from a wide range of services the one that best meets their needs?

Concurrent with this evolution in public transportation was the evolution of thought on airport operations. The Airport and Airways Development Act of 1970 made money available for airport construction. The primary emphases were on obtaining public money and on consideration of the design and construction techniques. Not until 1970 did environmental issues, intermodal coordination, noise levels, and public resistance to new airports assume paramount importance in relation to construction as a management problem.

Traditionally, the movement of urban goods has been handled by zoning requirements and by the designation of loading zones. With the continued shift from rail to truck for most nonbulk goods, the delivery of goods into shopping centers, industrial parks, and downtown areas can be a major generator of congestion, parking, and

environmental problems. Therefore, the management of truck traffic is becoming a major component of transportation activities within urban areas.

EVOLVING PROBLEMS

Conditions are rapidly changing; no longer is the planning and construction of new facilities the central focus of transportation activities. Perhaps the sentiments expressed by former Secretary of Transportation Brock Adams best summarize the direction of federal commitments in the future (3):

> We [U.S. Department of Transportation (DOT)] are shifting from an agency that builds systems to one that is concerned about how those systems serve people.... Moving from an emphasis on new construction does not mean slowing down. Our energies must focus on the improvement and integration of the services of the various transportation modes, on increasing operational efficiency, and on eliminating wasteful redundancy in existing facilities.

New forces are focusing on the management of facilities that are already in place. This emphasis is being driven by the following.

Public Resistance to New Construction

Whether it is the completion of I-40 through Overton Park in Memphis, the building of the Westside Highway in New York City, the widening of a local intersection in Knoxville, or the extension of I-66 in Washington, D.C., the public turns out in large numbers to voice opposition. In many cases, projects are delayed for long periods of time, if not totally abandoned. New airport construction generally is limited to expansion of existing terminal facilities or the construction of remote regional airports far removed from residential areas. Even new mass transit construction is receiving increased public opposition.

Dramatic Increases in Transportation Maintenance Costs

New transportation facilities, like new machines, require minimum maintenance for the first few years. Today the highway system has reached the point where maintenance costs are beginning to increase rapidly (4). Now emphasis is on pothole repair and bridge replacement. Age and the increased travel weight of the larger trucks will continue to have a major impact on maintenance cost. Besides the increasing emphasis on maintenance of superhighways, the rehabilitation of rural roads is receiving increasing attention. The Highway Trust Fund is simply not adequate. The nation is now painfully aware of the consequences of deferring maintenance on the railroads and probably will be reluctant to let highways, port facilities, airports, or other transportation facilities follow the same path.

Increase in Vehicle Kilometers of Travel

With the increase in female participation in the work force, increased disposable income, and decreased family size, the number of vehicles in use is increasing rapidly (4). Prior to the oil shortage of 1979, vehicle kilometers of travel were expected to increase by 39 percent by 1985 and by 75 percent by the year 2000 (4). (Assuming a continuation of present government policies and programs, moderate population growth, healthy economic growth, and no significant changes in lifestyle, automobiles in use will increase by 24 percent by 1985 and by 56 percent by the year 2000. Licensed female drivers are projected to increase by 49 percent by the year 2000 compared to a 25 percent increase for male drivers.) Traditionally, congestion has been controlled by new construction. But, with this option restricted, stronger focus will be on increasing the rates at which vehicles can use existing highways or on increasing vehicle occupancy through ride sharing. If this is not done, individuals must make their own efforts to control congestion by moving their residences closer to their places of work. This could increase the number of residences in downtown areas; however, the probable outcome will be greater decentralization as businesses, industries, and support services move to suburbs and smaller communities.

Evolving Safety Issues

The 1974 oil embargo and its accompanying reduction in highway accidents brought a short recess in concern over highway safety. However, highway deaths are climbing once again (4). (Highway deaths are expected to increase at almost twice the rate of population growth until the year 2000.) In addition to concern about vehicle design, attention will probably turn to three new areas.

Efforts to cope with new energy concerns have encouraged larger trucks and smaller automobiles. This difference in truck weight plus the increased distance required for larger trucks to stop (almost twice that for automobiles) is creating a serious safety problem, especially in the case of rear-end accidents. The 121-brakes were supposed to help, but there is now a moratorium on 121-brake standards. This almost certainly will lead to new management techniques for restricting trucks to a single lane, to restricting hours of truck operations, or to other ways of minimizing safety problems.

A second major safety problem is the habitual offender who, due to drugs, alcohol, or poor driving attitudes or skills, persistently is involved in accidents or violations (4). Currently, judges are reluctant to take away a license for fear that the person will no longer be able to get to work. Thus the judge is confronted with the dilemma of a potential welfare family or potential future fatalities. The new emphasis invariably will be on the development of new risk-management programs, using driver training, commuter pools, and other programs to control the use of highways by habitual offenders.

Many traffic management programs are made impossible by current legal enforcement requirements. A parking ticket, for example, can be given to a vehicle, but a moving violation must be issued to the driver. This eliminates the use of radar, closed-circuit television, and video tapes to obtain pictures of speeding vehicles, single-occupant vehicles in carpool and bus lanes, and other violations. New technology will focus on complementing the new traffic management schemes without requiring high-speed police chases on crowded highways.

Rapid Increases in Cost

The increased public involvement in mass transit has helped the public sector discover a concept that the railroad commuter lines learned in the 1890s: It is extremely expensive to transport commuters by using full-time labor because much of the peak-hour demand is over before the vehicle and workers can return for a second run. Like rail commuter service, transit systems continue to have fewer riders per vehicle kilometer operated every year. As a consequence, operating deficits increase by 800 percent between 1970 and 1976, but vehicle kilometers of travel in new service increased by only 1.5 percent (4). Thus, public ownership has not substantially changed the economics of privately owned mass transit—it has only made more money available to

finance the decline. While many proponents of transit argue that city officials should pay little attention to the size and increase of transit deficits because such services are similar to police and fire protection, the question that must be addressed is whether this is the most effective use of scarce resources.

Another area of rapidly increasing cost is the construction of new highways and subways. The environmental and political delays that normally are encountered in such activities result in costs inflated substantially beyond original estimates. As a consequence, many projects that initially are priced reasonable become exceedingly expensive. With the advent of Proposition 13 in California, competing demands for social programs and local budget crunches, many transit and highway projects may be constrained heavily by financial pressures.

Labor Issues Involved in Providing Public Transportation

As planners wrestle with new approaches to the cost of providing public transportation, they are forced to comply with Section 13c of the Urban Mass Transportation Act of 1964, as amended, which was designed to protect the bargaining rights, jobs, and salary levels of existing employees. As the act currently is being administered, prior agreements must be negotiated with the transit employees as a condition for receiving public funds. In practice, this procedure has become an effective mechanism for ensuring that only members of the local transit union will be able to operate the new services (5). Thus, Section 13c is administered in such a manner as to create a closed shop on all publicly funded transportation projects nationwide. There is little concern about the long-term financial impacts of guaranteeing job protection, bargaining rights, pension rights, and salary levels, including the six-year guaranteed income protection in case of layoff. In addition, this closed-shop approach makes innovations using public funds difficult.

Increased Concern for Those with Special Needs

No longer is it sufficient to provide airports, highways, and mass transit systems; services must be accessible to all people regardless of their handicap. Since 70 percent of mass transit ridership is commuter service, there has been extensive discussion about its ability to serve the elderly and handicapped. U.S. Department of Health, Education, and Welfare (HEW) programs spent $1.8 billion (HEW estimate of federal and state funds spent on HEW transportation program) on specialized transportation (6). This does not include U.S. Department of Labor, Appalachian Regional Commission, U.S. Department of Agriculture, U.S. Department of Housing and Urban Development, Urban Mass Transportation Administration (UMTA) or Federal Highway Administration (FHWA) programs for special groups; nor does it include the requirements of Section 504 of the Rehabilitation Act of 1973 or school busing programs to achieve racial balance or other social objectives. Public transportation goals have expanded greatly during the last decade.

Airport Noise Abatement Programs

Concern over noise abatement programs at airports has produced new ways of managing noise, such as modifying flight paths and controlling climb rates.

Limitation of Regulatory Process

According to traditional regulatory procedures, government sets the standards whereby businesses must operate if they are to retain the privilege of operating in the area where that government has jurisdiction. The new trend is to place greater reliance on market forces to provide a broad array of transportation services from which customers may select the service that best meets their needs (7). The Civil Aeronautics Board, first by regulatory decisions and then by legislation, has opted to decrease regulation significantly, and airline profits and service levels appear to be substantially higher. Government efforts to improve automobile fuel economy standards appear to be controlling the amount of fuel used by the private automobile. The Transbus standards, on the other hand, have put AMC General out of business, and General Motors' bus division has indicated that it will cease operation rather than meet the standards. Perhaps one of the major dilemmas of the future is to determine how much regulation can be imposed on industry without becoming counterproductive. The result of overregulation appears to be that the government, in effect, must federalize the industry it regulates out of existence and become the provider of last resort.

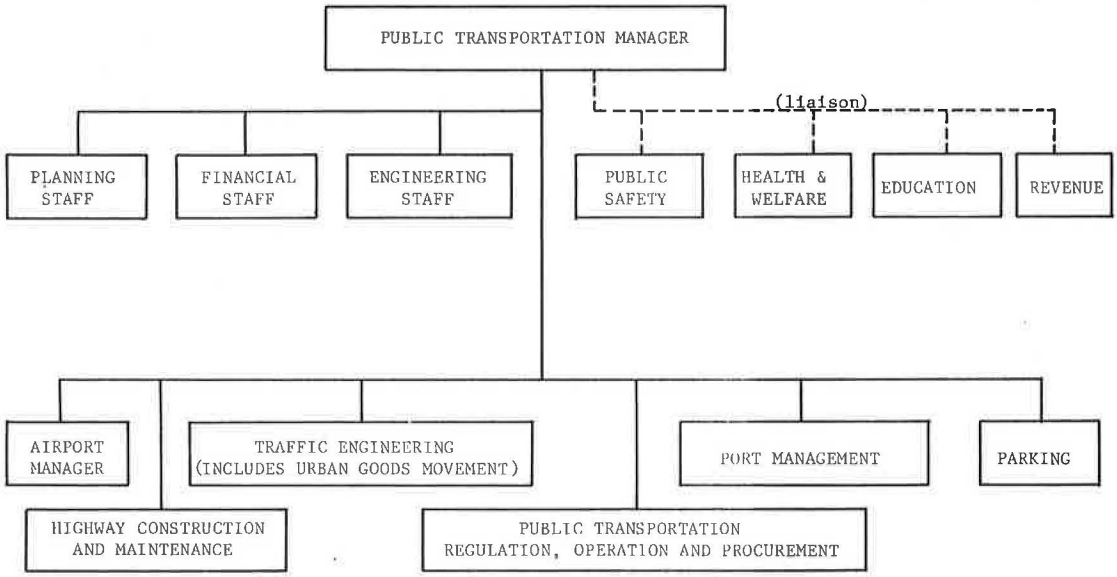
RESOURCE MANAGEMENT APPROACH TO TRANSPORTATION

These nine items are not meant to be inclusive but to present examples of the major issues that affect the evolution of transportation activity in local areas. Because of the evolving new issues, a new emphasis on transportation resource management is developing. The new approach will focus not on the coordination of transportation planning and construction activities, but rather it will focus on how to solve specific local problems effectively and at the lowest cost. Highway emphasis already has begun to shift toward transportation systems management, including channelization, computerized traffic control, ride sharing, and maintenance procedures for existing facilities (7). Other possibilities include promotion of flexible work hours, exclusive lanes for high-occupancy vehicles or large trucks, zoning to limit the number of parking spots, restraints on business delivery hours, standards for off-street loading zones, planned decentralization, transportation brokerage, and other options that have yet to be conceived.

These same factors will force traditional transit operators and policy boards to expand their thinking to include not just the 64 000 current mass transit vehicles but to integrate all 114 million privately owned vehicles into the public transportation system. Budget crunches will force them to develop strategies for getting business and community groups to operate their own programs in an effort to minimize the cost to government. Labor agreements, coordination with private operators, constructive regulation, entrepreneurial planning (developing plans for getting private enterprises involved in providing transportation), purchase-of-service contracts for social service transportation, and many other programs probably will be developed.

Airport management will focus increasingly on local standards set in cooperation with airlines to protect local interests and to protect airlines from the uncertainties of what is necessary to prohibit litigation. Urban goods movement also may undergo major changes in policy. The direction will depend largely on regulatory changes at the state and federal levels.

Figure 1. Organizational chart for transportation manager.



EVOLUTION OF THE PUBLIC TRANSPORTATION MANAGER

Just as businesses go through phases, so must public bodies. Most firms start out as production-oriented or market-oriented, then they usually pass through a period of financial focus before they effectively learn to coordinate all functional levels. Part of this focus generally includes the evolution of the traffic manager into a distribution manager. Where the traffic manager was responsible for getting a truck line to pick up the product, the distribution manager is responsible for getting the product from the production line into the customer's hands according to a service level established by the company. The distribution manager is charged with transportation, warehousing, inventory control, sales order processing, packaging, and demand forecasting. The distribution manager is placed on the same level as the production, marketing, or financial managers in the company.

Cities will probably find that a new level of professional is required to cope with transportation in the local areas. At the University of Tennessee, the individual is called a public transportation manager. Through training, the individual will be thoroughly familiar with

1. Highway design and planning;
2. Traffic engineering;
3. Contracting and procurement procedures;
4. Economic regulation of transportation companies;
5. Labor relations and labor law;
6. Economics of operating various modes of transportation;
7. Traffic regulation, enforcement, and control;
8. Taxing policy and its effect on private firms;
9. Market segmentation techniques for working with young, elderly, handicapped, and poor clients (8);
10. Public hearing procedures;
11. Public finance issues;
12. Accounting procedures;
13. Channel relationships for the distribution of products and services;
14. Public administration; and
15. Insurance principles and legal standards of care.

The transportation manager should be on the same level as the directors of education, public safety, health, welfare, or revenue, and the transportation manager will oversee a department that may be organized as shown in Figure 1.

The public transportation manager will meet with other department heads to develop strategies for solving urban problems. Each department will be given a mission to perform, with specific measures for determining success. The public transportation manager then will meet with each bureau head in transportation to determine the best way of accomplishing the transportation component of the strategy and will assume responsibilities for accomplishing the task. This makes the transportation manager mission oriented. When the community has a problem, the public transportation manager has the mission of solving the problem. This is in contrast to the modal orientation that currently exists in many areas, where each problem is seen as another reason for placing more funds with that mode, often with limited evaluation as to whether the mission is being accomplished. The financial evaluation staff will be responsible for ensuring that the most cost-effective methods are used.

SUMMARY

In summary, public transportation has evolved through the legal regulation stage, the engineering and construction stage, the planning stage, the environmental impact stage, and the public hearing stage. Now it appears that the new emphasis will be on improved management. This does not imply that each of the stages is no longer important, but rather that it is now important to integrate all the preceding stages into a unified, mission-oriented approach to solving transportation-related problems. The individual required to serve in this new role will require a very broad background. This probably will require major changes in the transportation curriculum offered by most schools today.

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Abridgment

Components of a Transit Marketing Program

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In spite of a marketing consciousness that has emerged among transit planners and operators, there has been little discussion of what a marketing program should include, or how it should be organized. Such terms as market research, user information, and target markets are widely used; however, little attention has been directed toward how these and other elements might be integrated to achieve a unified transit marketing program.

ORGANIZING TRANSIT MARKETING ELEMENTS

The first step in coordination of the marketing program is organization of its components. The following types of marketing activities are available to the transit operator: (a) market research, (b) market planning, (c) service planning and development, (d) pricing strategies, (e) communication channels, (f) public relations, and (g) passenger amenities and other services.

Market Research

Market research helps to complete the communication cycle between buyers and sellers by providing feedback from customers to providers of the good or service. It provides information on consumer attitudes and needs as well as pointing out service opportunities. Marketing studies that apply to transit include (a) demographic profiles and target market research, (b) attitude surveys, (c) communication effectiveness evaluations, (d) evaluations of service performance, (e) concept test research, (f) alternative pricing strategy research, and (g) promotional program evaluations.

The Marketing Plan

The marketing plan provides a blueprint for phasing, organization, and control of the marketing program. The plan components would include

1. Establishment of objectives to give the program direction and purpose;
2. Situation analysis to identify current and future market position under various conditions;
3. Setting of priorities to channel resources toward specific objectives;
4. Development of detailed programs to enumerate program components, budget requirements, staff assignments, and project phasing requirements; and
5. Regular update of the plan.

Service Planning and Development

The process of service planning and development includes the addition of new services, deletion of obsolete services, and service modifications. Service planning and development should ensure that local transit services serve the travel desires of the community. The process would include (a) searching for new service ideas, (b) impact assessment, (c) development of a service prototype, (d) planning and execution of a market test, and (e) an evaluation of the potential for full-scale implementation of the service.

Although there are benefits to a good service development program, there are also obstacles to the development of such a program. Extensive service development programs can increase short-term expenses and require expensive new equipment; consumers may be slow to accept and use new services; and, if there have been many past failures, the company may be reluctant to at-