through the UCOST program. These test runs were based on an existing transit system that has approximately 25 lines, 675 runs, 51 buses, and 69 drivers. The vehicle and staffing routines were first tested by executing these routines on the existing timetable for this transit system; 49 vehicles and 68 drivers were obtained as the requirement for this system. The system was then modified by implementing constant headways for each time period, by splitting the system into two companies, and by extending all service for the duration of the 19-h day. The complete version of the UCOST program was then run. At this point in the process of implementation, certain routines (such as generation of deadhead times and transfer demands) had not been completed. The solution was 53 vehicles (31 for company A and 29 for company B, less a 10 percent surplus for spares) and 88 full-time drivers and 36 part-time drivers. The increase in workers was due to the increased service in the off-peak hours caused by the modifications.

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**Mr. Roark was with Schimpeler-Corradino Associates when this research was performed.*

Abridgment

Nonevent Planning

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The traditional urban planning process is the sequential development of (a) goals, (b) inventory, (c) forecasts, (d) plan development, (e) system simulation, (f) evaluation, (g) adoption, and (h) implementation (and appropriate feedback loops). One of the major accomplishments of the process has always been the formal adoption of the project-specific plan by the appropriate elected body. The introduction of the continuous planning effort has created some conflict between the adoption of a specific plan and the implementation of the continuous process. After a plan has been adopted, most political bodies are unwilling to modify the plan on a short-term, periodic basis (2 to 5 years). This has created the existence of plans that are no longer realistic or appropriate and has also led to unnecessary conflicts between planning and programming functions.

The nonevent planning concept suggests that political bodies should adopt transportation goals and criteria rather than a project-specific plan. This would precipitate public discussion and involvement in goal adoption rather than in the individual aspects of specific projects. The process also suggests the existence of two types of goals: (a) those that have a high probability of remaining important and (b) goals (some of which may be unidentifiable at this time) that may change in their importance as time passes. The assumption is that, although goals may vary with time, they represent a more stable set of parameters than does a set of individual projects.

The concept also emphasizes the use of probability theory to identify realistic ranges for forecasting primary variables. These ranges should be used throughout the process to identify probable ranges of demand (by mode, if that is desired). Alternatives would be developed, as is traditionally the case, and measured against the probable ranges and the adopted goals. Since some projects are probably justifiable throughout the realistic range of future demand, the process would then identify those components. Alternative themes would be developed for components that are justifiable only under some conditions of or assumptions about future demand. The continuing planning process would then operate on this second set of projects.

The nonevent planning concept is based on the need to identify and analyze goals and to make these activities the primary political activities in the planning process. Decisions about individual projects would then become short-range planning (programming) functions, performed on a continuous basis. The political difficulty of officially updating project-specific plans has left many

urban areas with plans that do not adequately reflect:

1. Changes that have occurred in urban development since their adoption;
2. Changes in government regulations and public concern;
3. Changes in technology and management expertise in transportation systems; or
4. Current estimates of likely conditions and demands for the future.

The philosophical basis for nonevent planning rests on a belief that legislative action is most effective when it is related to policy and goals rather than to detailed project development.

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Implementing Transportation Policy: Lessons From the Interstate Highway Program

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Traditionally, state and local governments have responsibility for the implementation of federal highway programs and policies. The effectiveness and outcomes of these programs, therefore, largely depend on the complex relations between federal and state highway agencies and policies that are directly affected by individual differences in state political and socioeconomic conditions. To investigate differences in state highway policy implementation, data on political and economic conditions, highway revenue and expenditures, federal aid, and highway program development were compiled and analyzed. The relations among these variables are examined using factor and path analyses methods. The findings of this research suggest that the implementation of highway policy is weakened by inflexibility and internal contradictions between federal and state policies caused by differences in state and local transportation needs and categorical federal aid policy. In particular, the Interstate highway program depended on attractive federal aid matching incentives that were not necessarily responsive to or appropriate for state and local transportation requirements. A transportation trust fund that is subdivided into a hierarchy of separate interstate, regional, and urban transportation funds is recommended. The trust funds would promote the integration of the different transportation networks and would permit transportation agencies to draw on these funds as needed to match their individual problems to appropriate solutions, unhindered by categorical or model restrictions. Future policy decisions should include provisions for testing and evaluating results and performance.

In the past 20 years, about 54 700 km (34 000 miles) of rural and 14 500 km (9000 miles) of urban Interstate highways have been constructed. The total cost of the Interstate highway system (IHS) may exceed $80 billion. The project has preoccupied federal highway policy since the system was first authorized by the Federal-Aid Highway Act of 1956. This act also created the Highway Trust Fund, which provided the means for the construction of the Interstate highways. The trust fund has been a unique and efficient means for producing the fiscal resources and stability required to build the vast Interstate system. The implementation of federal highway policies and programs has traditionally been the responsibility of state and local governments; the founders of the program, therefore, included powerful incentives by providing 90 percent of the costs of construction. Such strong, single-purpose incentives inevitably created equally strong constraints to balanced transportation planning. Other transportation problems, impacts, and alternative modes were neglected (1). Indeed, the creation of the U.S. Department of Transportation (DOT) and the Urban Mass Transportation Administration (UMTA) was a response to the need for greater integration and balance in transportation programs (2).

The original purpose of the IHS, for example, was diverted for the purpose of building urban freeways simply because large amounts of federal aid were available. Although only about 20 percent of the IHS is within urban areas, urban areas absorbed nearly 50 percent of the total cost of the system. Transportation decisions were thus suboptimized by focusing too narrowly on federal aid for Interstate highways regardless of whether the solution was appropriate for specific local and regional transportation problems.

The thesis of this paper is that transportation development decisions must provide appropriate solutions to specific urban, regional, and national transportation network problems without unnecessary restrictions on category or mode. Federal aid programs must be flexible enough to allow decentralized decision making, planning, and implementation of transportation systems.

HISTORICAL PERSPECTIVES

The Federal Highway Act of 1921 set the pattern of cooperation between federal and state governments by requiring the development of state highway departments and creating the primary and secondary highway classification system as a basic framework for federal highway aid (3). The highway system grew rapidly as engineering practices and technology improved. The Federal-Aid Highway Act of 1944 created a national system of Interstate highways, not to exceed 64 000 km (40 000 miles) in length. No construction funding was authorized. The idea gained momentum and support during the early 1950s under Project Adequate Roads, which was broadly supported by highway user groups. In 1954, President Eisenhower appointed the Clay